

# Biometrics and Forensics Ethics Group



Biometrics & Forensic  
Ethics Group

Annual Report  
2021 – 2022



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## Chair's introduction

This is my third year and annual report as Chair of the Biometrics and Forensics Ethics Group (BFEG). As ever, I first must thank the members of BFEG for their continued high levels of engagement and for continuing to share their expert knowledge and deliver high-quality advice.

This year I have had the pleasure of welcoming five new members to the BFEG. I am excited to work alongside them and look forward to engaging with the wealth of experience and insight they will bring to the work of the BFEG. However, with welcoming new members of the committee, we have also had to say goodbye to three valued members, whose terms have come to an end. I am grateful for their time and the contributions they have made to the BFEG, during the course of their membership. Their commitment to the BFEG has been evident, with agreement from members to co-opt until the completion of projects they were engaged with.

This year has seen the BFEG provide advice to a broader range of Home Office policy areas than the last; as an example, this year the BFEG engaged with the Migration and Borders Group to provide ethical advice on the Future Biometrics programme. This expansion of the working relationships of the BFEG, within our remit, has been welcomed. As we look forward to next year, the BFEG will continue to build a presence within the Home Office and further develop the strong engagement and expansion of working relationships observed this year.

In May 2022, the commission for the year 2022/23 was received. This promises to be an exciting year, with new projects to be established as part of the self-commission and the progression of work in existing commission areas, as requested by our Policy sponsor. This balance will allow the BFEG to share expertise in areas which they are familiar, providing the opportunity to deliver with real impact, while also providing the opportunity to explore new biometric and forensic subject areas to provide insight and advice on topics which have vast potential applications in the future.

The BFEG and I are excited to commence another successful year.



**Biometrics & Forensic  
Ethics Group**

A handwritten signature in black ink that reads "Mark Watson-Gandy".

**Professor Mark Watson-Gandy**  
Chair, Biometrics and Forensics Ethics Group

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## What we do

The Biometrics and Forensics Ethics Group (BFEG) is an advisory non-departmental public body sponsored by the Home Office. It provides independent ethical advice on issues related to the collection, use and retention of biometric and forensic material, and on the use of large and complex datasets and projects using [artificial intelligence \(AI\)](#).

The Home Office has commissioned The BFEG to consider the ethical impact on society, groups and individuals from:

- the use of large datasets within the Home Office, including the implementation of systems using [machine learning](#) and [AI](#);
- the collection, retention and use of human biometric identifiers, such as DNA, fingerprints and [facial recognition](#);
- the retention and use of forensic data such as extracted [digital forensic material](#);
- policy and projects from the [Forensic Information Databases Strategy Board \(FIND SB\)](#); and
- relevant projects from the [Home Office Biometrics \(HOB\) programme](#), including advice on [Data Protection Impact Assessments \(DPIAs\)](#).

The BFEG also considers:

- issues raised by key stakeholders such as [FIND SB](#), the [Biometrics and Surveillance Camera Commissioner](#), and the [Forensic Science Regulator \(FSR\)](#); and
- issues raised by members of the BFEG as part of its self-commissioned work (roughly 30%).

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## 2021/2022 Commission

In 2021/22, the BFEG 2020/21 commission was extended, and the BFEG was asked to continue the work of its existing following working groups:

### **Home Office Biometrics Ethics Working Group (HOB EWG)**

The HOB EWG advises the [Home Office Biometrics \(HOB\) programme](#) and related Home Office initiatives on projects at an early stage of their development and advises on HOB [DPIAs](#).

### **Complex Datasets Working Group (CDWG)**

The CDWG advises on projects considering the adoption and/or use of explainable data-driven technology and may be asked to assist with development of a discipline-specific ethics framework for use by those commissioning, designing and using [machine learning](#) applications.

### **Data Ethics Advisory Group (DEAG)**

The DEAG considers ethical issues in Home Office data projects and provides a source of advice and guidance for project teams. Specifically, the Group advises on projects, especially security projects, using advanced data processing techniques and/or large and complex datasets.

## Biometrics and Digital Forensics Working Group (BDF WG)

The BDF WG advises on the ethical implementation and use of new and emerging biometric recognition technology by policing. The Group also advises on ethical considerations related to the retention of biometrics and forensic material.

In addition, the Home Office asked BFEG to provide ethical advice to support Policy colleagues working on the digitisation of services in the border, immigration and citizenship system.

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## Overview of activities

### Demission

The following long-standing BFEG members concluded their final terms in 2021 and 2022.

#### **Professor Jennifer Temkin, CBE**

In October 2021, following a period of co-option to the BFEG, long-standing member Professor Jennifer Temkin concluded her final term with the Group. Professor Temkin was a committed and valued member of the BFEG, and Chair of the Ethical Principles Working Group and Biometrics and Digital Forensics Working Group. Professor Temkin was co-author of the [BFEG Ethical Principles](#) that should apply to the use of biometric and forensic published in 2018, the “[Should we be making use of genetic genealogy to assist in solving crime?](#)” report published in 2020, and advised on approaches to the collection, use, retention and deletion of different biometrics and of extracted digital forensic material.

#### **Isabel Nisbet MPhil BPhil MA**

In June 2022, following a period of co-option to the BFEG, Isabel Nisbet concluded her final term with the Group. Isabel has been a dedicated and essential member and Chair of HOB EWG for seven years. The HOB EWG has provided essential ethical advice to the HOB programme on its various biometric projects, including the Algorithm Bias Review.

#### **Dr Adil Akram**

In July 2021, following a seven-year term as a member of the BFEG and its predecessor, the National DNA Database (NDNAD) Ethics Group, Adil Akram concluded his final term with the Group. As well as providing impeccable insight and ethical considerations, Adil also helped to update the BFEG Ethical Principles by proposing that they should explicitly state that procedures should not deliberately or inadvertently target or selectively disadvantage people or groups on the basis of ‘protected characteristics’ as defined in the Equality Act 2010. Adil is also a member of the DEAG and has agreed to be co-opted to ensure that specific projects can be completed.

### Appointments

In March 2021 a recruitment competition for five additional members commenced, this concluded in Autumn 2021. Between October 2021 and January 2022, BFEG appointed the following five members. Full member profiles are in Appendix 2.

- Professor Niamh Nic Daeid, Professor of Forensic Science and Director of the Leverhulme Research Centre for Forensic Science at the University of Dundee.

- Professor Ann-Maree Farrell, Professor of Medical Jurisprudence at Edinburgh Law School.
- David Lewis, retired Deputy Chief Constable of Dorset and Devon & Cornwall Police, and previous National Police Chiefs' Council (NPCC) lead for ethics and national lead for forensics performance and standards.
- Professor Nina Hallowell, Professor of Social and Ethical Aspects of Genomics at Oxford University (previously a member between 2011 and 2020).
- Professor Sarah Morris, Professor of Digital Forensics, School of Electronics and Computer Science, The University of Southampton.

## Meetings

The BFEG has held four full committee meetings in the period covered by this annual report. The [minutes of these meetings](#) are publicly available on the BFEG's GOV.UK website.

## Speakers

The BFEG welcomes external and internal speakers to maintain a broad and up-to-date understanding of the ethical issues in forensics, biometrics and the use of data-driven technologies.

Individuals or organisations with a relevant topic for discussion at a BFEG meeting would be welcome to contact the BFEG secretariat at: [BFEG@homeoffice.gov.uk](mailto:BFEG@homeoffice.gov.uk).

At the October 2021 meeting, the BFEG heard updates/presentations from two different business areas of the Home Office. Details of the presentations are shared below.

### National Police Data Laboratory

At the October 2021 meeting of the BFEG, a representative from Home Office Digital Data and Technology (DDaT) presented to the BFEG on a project being developed to better enable the Home Office to work with national police datasets.

### Future Biometrics

A representative from the Migration and Borders Group of the Home Office joined the BFEG, at the October 2021 meeting, to present to members on the Future Biometrics policy.

The BFEG was informed of the Home Office's ambition to require all visitors and migrants to the UK to provide their biometric facial images and fingerprints under a single global immigration system ahead of travel. The representative informed the BFEG that remote self-enrolment technology would capture these biometrics from those who do not require a visa. The representative noted that those requiring a visa would continue to attend a visa application centre to enrol their biometrics.

The representative informed the BFEG that the Home Office has been assessing the maturity of industry's biometric self-enrolment technology capabilities and trials were carried out in November and December 2021. The findings of these [biometric self-enrolment feasibility trials](#) have been published on gov.uk.

Members of BFEG were invited to advise on the ethical considerations around the initial trials and further advice would be sought regarding future activities.

## Forensic Archive Limited

At the June 2022 meeting, the BFEG heard from a representative from Forensic Archive Limited (FAL) who provided an overview of the role of the organisation in the retention and archiving of forensic material.

The BFEG was informed that FAL is a government-owned company and was set up to manage the archive of the Forensic Science Service (FSS) on its closure in 2012. FAL holds forensic case files, retained material (such as microscope slides, tape-lifts, recovered hairs and debris, body-fluid stains excised from fabrics) and DNA extracts.

A recent Transforming Forensics (TF) report on retention and archiving highlighted the issues with forensic archiving across the criminal justice system, including Forensic Science Providers (FSPs) and police forces undertaking their own forensic work, and recommended measures for improvement. The BFEG was asked if the new Forensic Science Regulator Act could advise on the retention and archiving of forensic material. It was noted that the NPCC was considering the TF report and had published [guidance for retention and storage of forensic evidence](#) in 2021. It was noted that there is no UK accreditation body offering ISO accreditation in the area currently. The BFEG suggested adopting international standards for forensic sample retention and archiving from other jurisdictions, such as Australia.

## Working Group meetings

In 2021/2022, the BFEG sub-groups met virtually to progress their individual areas of work. The HOB EWG and BDF EWG each met on two occasions, while the CDWG met once. In this reporting year, the DEAG met most frequently, hosting meetings on four occasions. The working groups' activities are reported to the BFEG at the quarterly meetings and reflected in the minutes of those meetings.

At the October 2021 meeting, BFEG members agreed to rename the Facial Recognition Working Group to the Biometric Recognition Technologies Working Group to better reflect the remit of the Working Group, which covered consideration of all biometric recognition technology, including voice and gait.

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## Stakeholder engagements

The BFEG routinely provides advice and guidance to the [FIND SB](#) and to the [HOB](#) programme. The BFEG also provides advice as required for other relevant departments in the Home Office.

## Forensic Information Databases Strategy Board

The FIND SB provides governance and oversight over the operation of the NDNAD and the National Fingerprint Database. In the 2021/2022 reporting period, the BFEG was asked to advise on ethical issues arising in connection with the [Forensic Information Database Services \(FINDS\)](#) business on the following three topics.

## Case-specific submission of DNA extracts to the USA for processing

The BFEG was asked to consider a request received by the Chair of the FINDS Strategy Board. This request was for a small number of DNA extracts to be submitted to the USA for processing. The background was that the processing method, required as part of a research

project, was not available in the UK. The DNA would be purchased from a biobank, only the extract DNA would be sent to the USA and it would be fully anonymised through the removal of any identifying information. It was confirmed to the BFEG that the provider was working towards ISO 17025 accreditation and that the DNA would not be retained by the overseas service provider. The BFEG concluded that the extracts could be sent, provided they were fully anonymised, and that no personal data was shared with the service provider in the USA.

### **Vulnerable Persons DNA Database**

The Vulnerable Persons DNA Database (VPDD) was established to hold DNA profiles from vulnerable persons and individuals who are considered vulnerable by a parent, guardian or appropriate adult, and are at some risk of harm and/or going missing.

In June 2020, the BFEG was approached for advice on a change in process which would allow law enforcement agencies to routinely search VPDD profiles against DNA profiles from unidentified bodies/part(s) and crime scenes (trophies from potential victims of known serial killers or ‘no body’ murders).

The advisory role of the BFEG would be in reviewing a newly developed consent form for the proposed process.

The BFEG initially provided a series of recommendations regarding the readability and clarity of the consent form, which are in the [minutes of the March 2021 meeting](#) and in the recommendations section at the end of the [2020 - 2021 BFEG Annual report](#).

The recommendations were adopted into the consent form and in late 2021, the BFEG was approached again by FINDS to re-review the updated consent form. The BFEG raised further concerns, both technical and editorial. Further details of these recommendations are provided in the [minutes of the October 2021 meeting](#).

### **International DNA and Fingerprint Data Exchange Policy**

The BFEG was consulted by FINDS on the draft International DNA and Fingerprint Data Exchange Policy. The comments raised by the BFEG for review by the FINDS team are summarised below:

- The proposed data reforms outlined in the consultation from the Department of Media, Culture and Sport (DCMS) could impact the oversight mechanism set out in the draft International DNA and Fingerprint Data Exchange policy.
- The term ‘consent’ and how consent would be obtained should be clarified.
- The BFEG sought confirmation that the exit of the UK from the European Union (EU) had not impacted, through changes or delays, the international sharing of DNA and fingerprint data.

FINDS acknowledged comments from the BFEG and the [International DNA and Fingerprint Exchange Policy for the United Kingdom](#) was published in January 2022.

### **Review of International Civil Aviation Organisation (ICAO) Photo Checker project**

The BFEG was commissioned by The Digital Customer Service (DCS) Team on behalf of His Majesty’s Passport Office (HMPO) to review a DPIA on their proposed fairness assessment on their DCS Photo Checker.

The DCS Photo Checker uses a facial algorithm-based product called FaceTools, which is supplied by IDEMIA. It is used as part of the passport application journey to facilitate the upload of a good quality digital photo. The checker gives the customer an indication of the compliance of their photo against the ICAO standards and hence its acceptability for use in a passport. The



FaceTools product is used to check ICAO image compliance only and is not a facial recognition tool. The product is not used to make decisions about the passport application or eligibility.

The BFEG reviewed the DPIA and provided the DCS Team with their initial ethical considerations, recommending there should be further clarity on what would be done with the results if systemic bias is identified based on gender, age or perceived ethnicity.

### **Scottish Biometrics Commissioner**

At the June 2021 meeting, the BFEG heard from Dr Brian Plastow, the new Scottish Biometrics Commissioner, who introduced himself and provided a high-level overview of his role. The Scottish Biometrics Commissioner returned in the December 2021 meeting to consult with the BFEG on the draft Code of Practice. BFEG shared the responses with the Office of the Biometrics Commissioner, as part of the open consultation.

### **Biometrics Commissioner**

The BFEG continues to engage with the Biometrics and Surveillance Camera Commissioner (BSCC) and works with their Office on ethical issues within the remit of the BFEG.

### **Update to the Surveillance Camera Code**

The BFEG provided comments to the consultation on the update to the Surveillance Camera Code, in addition to those who were statutorily consulted.

### **Forensic Science Regulator**

The [Forensic Science Regulator \(FSR\)](#) is a key stakeholder of the BFEG. The FSR attended the June 2022 meeting to update the BFEG on the work of the FSR and the Forensic Science Regulation Unit (FSRU). The FSR updated the BFEG on the development of the Code of Practice, within the provision of the [FSR Act 2021](#), and explained to the BFEG that the Code of Practice would be admissible in evidence in criminal and civil proceedings in England and Wales.

Moving into the next reporting year, the BFEG will continue to maintain a strong working relationship with the FSR and will continue to offer its ethical advice to the FSR when it is needed.

### **Data and Identity Department – Policy**

In addition to the commissioned work, the BFEG also advises Policy colleagues on an ad hoc basis.

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## **Communications**

### **Freedom of Information Act requests**

The BFEG received 18 requests for information under the Freedom of Information Act.

### **Website activity**

Details of the work is on its [GOV.UK website](#). This website was viewed 1,971 times (1,481 unique views) between May 2021 and June 2022.

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## Budget and expenditure

The BFEG's members are not paid for their work but receive reasonable travel and overnight expenses. Due to increased use of virtual meetings, only one in-person event was held over the timeframe of this report. Table 1 shows BFEG expenditure from May 2021 to June 2022.

**Table 1: BFEG expenditure May 2021 to June 2022**

<b>Expense</b>	<b>Cost</b>
Recruitment	£1,350.00
Members' expenses	£406.60
External venue hire	£1,800.00
Secretariat expenses	£14.15
Food	£781.00
<b>Total</b>	<b>£4,351.15</b>

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## Progress on commissioned work

### **Ethics Working Group (HOB EWG)**

Over the last year, the BFEG's HOB EWG continued to receive updates on the HOB programme and provided ethical advice. The Working Group also continued to advise the HOB programme in relation to the transition in the new product-centric way of working, changes to the biometric regulations, and discovery areas such as mobile biometrics enrolment for immigration enforcement.

The HOB programme is expected to run until at least March 2025. It is expected the Group will continue to provide ethical advice on the existing HOB projects, and projects in the early stage of development under the new product delivery approach.

### **Complex Datasets Working Group (CDWG)**

In June 2021, advice was sought from the CDWG to support the [Child Abuse Image Database \(CAID\)](#) transformation programme. CAID was first announced in 2014 and seeks to identify and safeguard victims, improve the effectiveness of child sexual exploitation and abuse investigations, and support international efforts to remove indecent images from the internet.

The CAID programme seeks to transform the current solution to utilise AI to support and improve existing methods for manually classifying the severity of child abuse images.

The CDWG supported the CAID team by considering the ethical issues associated with potential suppliers developing and testing possible classifier solutions. The CDWG would continue to work with CAID as they assessed potential solutions.

### **Data Ethics Advisory Group (DEAG)**

The DEAG was established to advise the Home Office on projects using advanced data processing techniques and/or large and complex datasets.

In this reporting year, the DEAG has worked closely with the PPPT Insight Centre on data exploitation projects carried out in the National Police Data Laboratory (NPDL) to provide

ethical advice. The NPDL works to leverage more information from national policing datasets and develops proof-of-concept solutions to policing challenges.

The DEAG has worked with project teams at the NPDL from the point of considering which projects to take forward, providing ethical advice to assist with selection of projects, and framing data exploitation and analytic approaches.

### **Biometrics Digital Forensics Working Group (BDF WG)**

Over the last reporting year, the BDF WG continued its work to advise on the approach to the collection, use, retention and deletion of different biometrics and of extracted digital forensic material.

At the December 2021 meeting of the BFEG, the BDF WG reported to the BFEG on its commission to advise on the retention of facial images taken in custody and outlined initial points of consideration.

The BFEG's report on the [ethical considerations arising from police use of live facial recognition](#) outlines a framework of ethical principles that should be considered when developing policy on the use of live facial recognition technology for policing. The BDF WG suggested that these ethical principles should also be applied to custody images.

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## Future work

The BFEG received its 2022/23 commission in May 2022. The Group was asked to continue its work on:

- The HOB Programme
- Home Office projects using advanced data processing techniques and/or large and complex datasets
- Policy relating to the collection, use, retention and deletion of biometrics and digital forensics material.

The Group was also asked to continue to respond to ad hoc requests for advice from the FINDS Board on forensic information and database policy and projects.

The BFEG was also asked to present a shortlist of issues relating to its remit that the Home Office should consider for its 2022/23 commission.

In June 2022, the BFEG held an away day and discussed issues of interest to the members in the fields of biometrics, complex data and AI. Following discussions with the Home Office sponsor, the following priority areas were identified and will be investigated over the coming year:

- Support policy development regarding the governance of powerful data-driven technologies in the Home Office. This will include assessment of the application of ethics to specific projects and encompass some of the themes in the House of Lords' Justice and Home Affairs Committee Report: [Technology rules? The advent of new technologies in the justice system](#).
- Advise on the ethical issues in using novel biometric technologies, including gait and voice recognition. It would be particularly useful if the Group could consider applications that could combine multiple technologies to create additional surveillance capability.

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## Appendix 1: Glossary

Artificial intelligence (AI)	In computer science, AI refers to any human-like intelligence exhibited by a computer, robot, or other machine. AI is the ability of a machine to perform a task usually done by humans, such as recognising objects, understanding and responding to language, making decisions, and solving problems.
Biogeographical ancestry	A method of inferring a person's geographical origins based on their genetic ancestry [see <a href="#">genetic genealogy</a> ]. Also known as admixture analysis.
Biometrics and Surveillance Camera Commissioner	The Biometrics Commissioner and Surveillance Camera Commissioner roles were established by the Protection of Freedoms Act 2012, which introduced the regime to govern the retention and use by the police of DNA samples, profiles and fingerprints, and to promote appropriate overt use of surveillance camera systems by relevant authorities in England and Wales. Since March 2021, one full-time commissioner has undertaken these roles.
Data Protection Impact Assessment (DPIA)	A process to help identify and minimise the data protection risks of a project.
Deoxyribonucleic acid (DNA)	The chemical in the cells of an organism that comprises that organism's heritable material used in the development, functioning and reproduction of all known living organisms. DNA is a nucleic acid and comprises two strands coiled around each other to form a DNA double helix and packaged into chromosomes.
Digital forensic material	The information extracted from any digital system or data storage media, rendered into a useable form, processed, and interpreted to obtain intelligence for use in investigations, or evidence for use in criminal proceedings.
DNA-17	A particular type of DNA profiling test that looks at 16 areas of an individual's DNA plus a sex marker [see also <a href="#">STR DNA profile</a> ]. There are multiple, specific profiling chemistries within DNA-17, which have differences in design that can result in slight differences in the resulting profiles. Other profiling chemistries exist that look at different numbers of areas of DNA and/or different areas, but only the information contained within the DNA-17 set are currently retained on the <a href="#">National DNA Database</a> .
Elimination DNA sample	A <a href="#">DNA</a> sample taken from an individual and used to create a <a href="#">DNA profile</a> in order to identify possible DNA contamination.
Facial recognition	Identifying or verifying a person from a digital image or a live video source by comparing it to selected facial features from a known source image.
Familial searching	Searching a <a href="#">DNA profile</a> from an unknown individual against the <a href="#">National DNA Database</a> for profiles that may have come from a close relative. As half a person's DNA is inherited from the mother and half from the father, relatives such as parents, children and siblings will share a predictable amount of DNA.

Forensic Information Databases Service (FINDS)	The Home Office unit responsible for administering the <a href="#">National DNA Database</a> , National Fingerprint Database and Footwear Database.
Forensic Information Databases Strategy Board (FIND SB)	The board providing governance and oversight over the <a href="#">National DNA Database</a> and the National Fingerprint Database. It has a number of statutory functions, including issuing guidance on the destruction of profile records and producing an annual report.
Forensic Science Regulator (FSR)	The official responsible for ensuring that the provision of forensic services across the criminal justice system is subject to an appropriate regime of scientific quality standards. The Forensic Science Regulator Act 2021 makes provisions for a statutory Code of Practice for forensic science activity in England and Wales. The FSR would oversee compliance with this code.
Genetic genealogy	A method using powerful DNA analysis, distinct from <a href="#">short tandem repeat</a> (STR) DNA profiling, to identify individuals who may be related (sometimes distantly) by searching proprietary genetic genealogy databases to find a match with other individuals who share common sections of DNA. The likely relationship between individuals is predicted from the amount of DNA in common. A short list of individuals with common DNA is then used by genetic genealogists to construct family trees and attempt to identify a common ancestor.
Home Office Biometrics (HOB) programme	A programme running since 2014, that delivers services supporting fingerprints, facial images and DNA (the main biometric modalities currently extensively used in the UK public sector). It also develops capabilities across the Home Office, law enforcement and, where appropriate, more widely across the government.
Live facial recognition (LFR)	The automated one-to-many ‘matching’ of near real-time video images of individuals with a curated ‘watchlist’ of facial images.
Machine learning	A branch of <a href="#">Artificial Intelligence (AI)</a> focused on building applications that learn from data. Machine learning algorithms improve their accuracy with experience without being explicitly programmed to do so.
Missing Persons DNA Database (MPDD)	A database containing <a href="#">STR DNA profile</a> records of missing persons, relatives of missing persons (where a reference DNA profile is not available for the missing person), unidentified bodies and some crime stain DNA profile records that may be linked to missing persons or unidentified bodies (for example, a ‘no body’ murder case).
National DNA Database (NDNAD)	Established in 1995, the NDNAD is an electronic, centralised database holding <a href="#">STR DNA profiles</a> taken from both individuals and crime scenes. The database can be searched to provide the police with a match to an individual or a match linking an individual to a crime scene and vice versa.

Near match report	A report created when two <a href="#">STR DNA profiles</a> are identical except for a specific number of values. The NDNAD defines a near match as two DNA profiles where all alleles are identical except one. One source of this difference is where the profiles were generated using two different profiling chemistries [see also <a href="#">DNA-17</a> ].
Phenotype	A term used in genetics to describe observable, physical characteristics that are influenced by genes. For example, eye or hair colour.
Relationship testing	DNA relationship testing, sometimes referred to as kinship testing, is the application of DNA analysis to establish how individuals are related to each other. This may be useful for establishing the identity of a deceased person using DNA from relatives or for establishing the parentage of a child.
Short tandem repeat (STR)	DNA comprises four types of bases known as A, T, C and G. STRs are short sections of DNA that contain repeating sequences of bases (such as AATGAATGAATG). The number of times the sequence of DNA repeats (in this example three times) varies between individuals so it can tell people apart [see also <a href="#">STR DNA profile</a> ].
STR DNA profile	A DNA profile is created by counting the number of times a section of DNA repeats at specific areas in a person's DNA [see <a href="#">short tandem repeat</a> ]. Pairs of numbers will be generated as a person has two copies of DNA (if the number of repeats was five on both copies the profile would be 5,5, if it was five on one strand and six on the other it would be 5,6). The number of areas of DNA looked at depends on the profiling chemistry used [see <a href="#">DNA-17</a> ]. The presence of the sex chromosomes, X and Y, is also tested. The numerical representation allows DNA profiles to be uploaded to a database and compared with other DNA profiles. (For further information, the Royal Society has published a <a href="#">primer on DNA analysis</a> .)
Vulnerable Persons DNA Database (VPDD)	A database containing <a href="#">STR DNA profiles</a> from vulnerable persons who are at potential risk of harm, such as people at risk from honour-based assault or forced marriage, sex workers and those potentially at risk of sexual exploitation, or where the police consider the individual at risk. When a vulnerable person volunteers to provide a DNA sample, consent is sought for the resulting profile to be retained on the VPDD and searched against the NDNAD under specific circumstances.
Y-STR profiling	A form of DNA analysis involving only DNA found on the Y-chromosome. Analysing Y-chromosome DNA can be useful where this is a mixture of DNA from a male and a female, as the Y-chromosome is only found in males. Y-STR analysis can also carry out <a href="#">relationship testing</a> as DNA on the Y-chromosome is passed down the male line (father to son).

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## Appendix 2: Member profiles

### **Professor Mark Watson-Gandy (Chair)**

Professor Mark Watson-Gandy is a barrister at Three Stone Chambers, a leading London commercial chancery set. He was called to the Bar of England and Wales in 1990. He is also a member of the Bars of the Eastern Caribbean (British Virgin Islands) and the Dubai International Financial Centre (DIFC). He was a Junior Counsel to the Crown from 2000 to 2012.

He is a Visiting Professor at the University of Westminster and at the Université de Lorraine in France. He was appointed to the Court of the University of Essex in 2015.

He is one of the Ministry of Justice pro bono 'GREAT Legal Services' Champions who promote UK legal services offering overseas. He is also an associate member of the Home Office Scientific Advisory Council and a member of the Advisory Board of the National Security and Technology Exchange.

Mark was the founder of Kids MBA whose course teaches core business skills to 12-15-year-old children which is presently provided, through its partnership with the awarding body, ABE UK. Forbes Magazine recently singled it out as one of the "five leading global programmes supporting the next generation of entrepreneurs".

Until September 2020, he was chair of Mental Health First Aid England, a spin out from the Department of Health charged with raising the nation's mental health literacy. Growing this social enterprise from 12 staff, MHFA was rated by the Financial Times as one of the top 1000 (537<sup>th</sup>) fastest growing small and medium-sized enterprises (SMEs) in Europe. As at his departure, 1 in 68 of this country's adult population had undertaken Mental Health First Aid training.

He is Chancellor of the British Association of the Order of Malta and is Master of the Worshipful Company of Scriveners, the city livery company which sets standards for one of the two branches of the UK's notarial profession.

His Holiness Pope Benedict knighted him in recognition of his work for the Catholic Church in 2007 (KSG).

### **Dr Adil Akram (Demitted July 2021, co-opted from July 2021)**

Adil is a Consultant Psychiatrist, based mainly at South West London and St George's Mental Health NHS Trust from 2009 onwards. He is also an Honorary Senior Lecturer at St George's, University of London. He has published on antipsychotics, perinatal psychiatry, parenting with mental illness and the social care needs of women with mental illness. Adil has qualifications in healthcare education and mental health research. He has a long-standing interest in genetics, medical ethics and medical law from his time studying medicine at King's College, University of Cambridge. He has significant experience of dealing with complex ethical dilemmas and risk assessments.

Adil also works for the Ministry of Justice as a Judicial Officer and Medical Member of the first-tier tribunal service, hearing detained patient appeals under the Mental Health Act. He has detailed knowledge and experience of legislation relevant to mental health. His other roles and contributions to public service have included working with the General Medical Council to help to write and develop tests of competency, being an elected Governor of his local NHS Trust and volunteering as a Psychiatrist at the London 2012 Olympic Games.

### **Professor Louise Amoore**

Louise is a Professor of Human Geography at Durham University. Her research expertise focuses on the geographies of biometric and security technologies, with a particular interest in how contemporary forms of data, analytics and risk management are changing the techniques of biometric data collection and analysis. Louise is currently a Leverhulme Major Research Fellow investigating how the foundation of law, ethics and accountability is challenged by new methods of machine learning and automated recognition.

### **Professor Liz Campbell**

Liz is the inaugural Francine McNiff Chair in Criminal Jurisprudence at Monash Law, Australia, having previously been Professor of Criminal Law at Durham University. She is also an adjunct Professor at Queensland University of Technology School of Justice.

Liz is a global expert in corporate crime, organised crime, corruption and biometric evidence. Her research is socio-legal in considering the law in context and often involves a comparative dimension. Liz's research has a significant impact outside academia. The Irish Supreme Court has cited her research, which has been relied upon in arguments before the UK Supreme Court. Her work has also been cited in reports of law reform commissions.

Liz sits on a number of several editorial boards and is a member of the UK's Arts and Humanities Research Council (AHRC) Peer Review College. Liz previously chaired Durham Constabulary's Ethics Committee and served on the NHS Research Ethics Committee (Scotland).

### **Professor Simon Caney**

Simon is a Professor in Political Theory at the University of Warwick. He has worked on a wide range of topics including global poverty, equality, climate change, our obligations to future generations, the social discount rate, liberal neutrality, political perfectionism, multiculturalism, national self-determination, secession, sovereignty, human rights, resistance, humanitarian intervention, war, non-ideal political theory, realism in international relations, and democratic theory. He has engaged with policy makers at the World Bank, the Trades Union Congress, Oxfam America, and the UN, and is a member of the Nuffield Council for Bioethics.

### **Professor Ann-Maree Farrell**

Professor Anne-Maree Farrell is Chair of Medical Jurisprudence at Edinburgh Law School. She is also Director of the School's Mason Institute, which is an interdisciplinary research institute which examines ethical and legal issues at the interface of health, medicine and the life sciences. She is admitted to practise as a solicitor in England & Wales, Ireland and Australia. Prior to entering academia, she worked as a lawyer in private practice specialising in civil litigation. Her research expertise lies generally in health law and ethics. She has specific interests in ethical and legal issues involving human bodies and tissue, health technologies and the management of public health risks. Professor Farrell has published widely in a range of internationally recognised journals and edited collections. Her books include 'Organ Shortage: Ethics Law and Pragmatism' (CUP 2011), co-edited with D Price and M Quigley; 'The Politics of Blood: Ethics Innovation and the Regulation of Risk' (CUP 2012); 'European Law and New Health Technologies' (OUP 2013), co-edited with M Flear, T Hervey and T Murphy; and 'Health Law: Frameworks and Context' (CUP 2017) with J Devereux, I Karpin and P Weller.

### **Professor Richard Guest**

Professor Richard Guest, Professor of Biometric Systems Engineering and Head of the School of Engineering, University of Kent. His research work is in the area of biometric technologies,



examining aspects of systems deployment and algorithm development, usability, standardisation, sample quality and conformance. His work has also examined the use of human identification/verification mechanisms within automated processes. He is also the Chair of the Training and Education Committee of the European Association of Biometrics (EAB) and a Fellow of the British Computer Society (BCS – now The Chartered Institute for IT) and Institution of Engineering and Technology (IET).

He has had significant involvement with biometrics standards development as UK Principal Expert to ISO/IEC JTC1 SC37. He was the Project Coordinator for the AMBER EU Marie Skłodowska-Curie Innovative Training Network (ITN) in Mobile Biometrics and the Kent PI on the Engineering and Physical Science Research Council (EPSRC) Hummingbird Project. He is also a member of the Kent academic team for the PriMa EU Marie Skłodowska-Curie ITN.

### **Professor Nina Hallowell**

Nina is a senior researcher at the Ethox Centre, Nuffield Department of Population Health, University of Oxford, where she is involved in a programme of research on ethical issues arising from the use of big data. She has over 20 years of experience of undertaking research on the social and ethical implications of the introduction of genetic and genomic technologies in medicine and has published widely in this field. She has qualifications in social sciences and medical law and ethics. She taught ethics at the University of Edinburgh and has been a member of a number of research ethics committees in Edinburgh, Cambridge and Newcastle.

### **Dr Julian Huppert**

Dr Julian Huppert is an academic and politician. His research looked at the structure and function of DNA beyond the double helix, and he then served as the Member of Parliament for Cambridge between 2010 and 2015. During this time, he served on the Home Affairs Select Committee for five years and was the Internet Services Providers' Association UK's (ISPA) Internet Hero of the Year 2013. He is now Director of the Intellectual Forum, a new interdisciplinary centre at Jesus College, Cambridge.

He is also a Director of the Joseph Rowntree Reform Trust Ltd and a Visiting Professor at King's College, London. He was the first Chair of the Independent Review Panel for DeepMind Health and Deputy Chair of the NHS Cambridgeshire and Peterborough CCG.

### **Professor Mark Jobling**

Mark is a Professor of Genetics at the University of Leicester, specialising in human evolutionary genetics, forensics, genetic genealogy, ancestry testing and genetics in historical studies. He has held a series of three consecutive Wellcome Trust Senior Fellowships, is a senior editor of the *'Annals of Human Genetics'*, co-director of the Alec Jeffreys Forensic Genomics Unit and was the University of Leicester's Research Excellence Framework academic lead for Biological Sciences in 2014 and 2021. Mark is lead author of the textbook *'Human Evolutionary Genetics'* (Garland Science) and has published over 150 scientific papers, including recent work on new technologies in forensic DNA analysis.

### **Dave Lewis**

Dave is a senior leader with a portfolio of interests, focused on his lifelong interests in ethics, governance, regulation and leadership. He manages a range of roles across a variety of sectors and also undertakes freelance work.

He served for 30 years as a police officer, retiring as Deputy Chief Constable of Dorset at the end of 2020. As a senior officer, Dave led the Ethics portfolio and was the Forensics Performance

and Standards lead for the National Police Chiefs' Council. In those roles, he oversaw the development of thinking on digital ethics in policing and the implementation of accreditation and quality standards across forensic disciplines. He was also a member of the Forensic Science Regulator's Advisory Committee. More recently, he gave evidence to House of Lords Justice and Home Affairs Committee's inquiry into new technologies and the application of the law, contributing to their 2022 report: 'Technology rules? The advent of new technologies in the justice system'.

Dave is currently a director of the Human Tissue Authority and a non-executive member of the England and Wales Cricket Board's Regulatory Committee. He is the chair of Friends of Ibba Girls School, a charity which funds and supports a community school in South Sudan. He is an Associate of the College of Policing and he chairs and facilitates leadership programmes for the Windsor Leadership Trust.

### **Professor Sarah Morris**

Professor Sarah Morris, University of Southampton. Sarah was previously the head of the Digital Investigation Unit at Cranfield University, which specialises in the identification, acquisition, and analysis of digital devices for a range of investigations. Sarah has had numerous dealings with the government in the field of digital forensics, including being part of round table discussions and giving evidence at the House of Lords Forensic Science Enquiry in 2019. In 2021, Sarah was appointed to the Biometrics and Forensics Ethics Group (BFEG), a non-departmental public body sponsored by the Home Office. As well as traditional academic activities, Sarah is casework active and has worked on cases assisting law enforcement, civil, corporate, media organisations and celebrity clients. Since October 2022, Sarah has been based at the University of Southampton, taking up a Chair in Digital Forensics.

### **Dr Nóra Ní Loideáin**

Dr Nóra Ní Loideáin is Director and Lecturer in Law of the Information Law & Policy Centre, Institute of Advanced Legal Studies, University of London. Her research and [publications](#) focus on human rights and technology, particularly within the contexts of law enforcement and national security in EU and European Convention on Human Rights (ECHR) law, and AI and gender.

Nóra is an Associate Fellow of the University of Cambridge Leverhulme Centre for the Future of Intelligence and Senior Fellow at the University of Johannesburg. Nóra has also been an Affiliated Lecturer in Law and Research Fellow at the University of Cambridge; Visiting Lecturer in Law at King's College London; and a Visiting Researcher at the University of Cape Town. Prior to her academic career, she was Legal and Policy Officer for the Office of the Director of Public Prosecutions of Ireland and clerked for the Irish Supreme Court.

Nóra is a trustee on the Board of the British and Irish Legal Information Institute (BAILII), and an editor of [International Data Privacy Law](#) (Oxford University Press).

Her work in the governance of emerging technologies, EU law and European human rights law has been cited and published by the *BBC*, *The Guardian*, *Science*, the UK House of Lords and the United Nations.

### **Professor Niamh Nic Daeid**

Niamh is a Professor of Forensic Science and director of the Leverhulme Research Centre for Forensic Science, School of Science and Engineering, University of Dundee. She works with forensic science, law enforcement and legal practitioners at local, regional, national and international levels to address critical research needs in forensic science. She is a forensic chemist with specialities in fire investigation and drug analysis. She has research interests that span the

statistical and algorithmic comparison of data specifically relating to pattern matching, the communication of science and statistics to legal practitioners and the public and the development and operational implementation of novel technologies in forensic science.

Niamh has provided expert advice to the UN, the International Forensic Strategic Alliance, the International Criminal Court, the House of Lords and the Scottish Government.

### **Isabel Nisbet MPhil BPhil MA** (demitted July 2021, co-opted until June 2022)

Isabel is a member of the National Statistician's Data Ethics Group and of the Board of Qualifications Wales (the regulator of examinations and qualifications in Wales). She serves on the Board of Governors of two higher education institutions (the University of Hertfordshire and the University College of Osteopathy). She is also a member of the British and Irish Ombudsman Association and from 2004 to 2011 she was an independent member of the Council of St George's Medical School.

Isabel has previously held a variety of senior posts in the civil service, and then moved on to work in the regulation of medicine and education. She has held chief executive and director positions at several statutory regulatory bodies (including Ofqual [Office of Qualifications and Examinations Regulation] and the General Medical Council), giving her extensive experience of dealing with complex and sensitive human rights, fairness and public confidence issues.

Isabel is also an Affiliated Lecturer in the Faculty of Education at the University of Cambridge and is co-author of *Is Assessment Fair?* (SAGE publications).

### **Professor Charles Raab**

Charles Raab is a Professorial Fellow of the University of Edinburgh, and formerly Professor of Government; visiting positions at institutions in the UK, Germany, the Netherlands, New Zealand and Canada. Co-Director, Centre for Research into Information, Surveillance and Privacy (CRISP). Fellow of the Alan Turing Institute (ATI) and Co-Chair, ATI Data Ethics Group. Member, Police Scotland, Independent Ethics Advisory Panel; member, Digital Identity Scotland Expert Group; Co-Chair, Independent Digital Ethics Panel for Policing (IDEPP, until its 2020 dissolution); member, Europol Data Protection Experts' Network. Research on privacy, data protection, surveillance, governance and regulation, 'smart' environments, identity and identification, security, democracy, data ethics. Many projects funded by the Economic and Social Research Council (ESRC), the EU, and the National Science Foundation (USA). Current UKRI/ESRC project: 'Privacy, Agency and Trust in Human-AI Ecosystems' (PATH-AI), based at ATI.

Books include 'The Governance of Privacy' (2003; 2006); 'Protecting Information Privacy' (2011); '*A Report on the Surveillance Society*' (2006); '*Video Surveillance*' (2012); '*Policing the European Union*' (1995); many journal articles and book chapters. General Co-Editor, Routledge Studies in Surveillance book series.

Charles has written reports and advised the European Commission, many UK and Scottish government departments, the New Zealand Law Commission, the EU Agency for Fundamental Rights (FRA), and research organisations in the UK and the Netherlands. He has provided evidence to several UK parliamentary committees (e.g., the Intelligence and Security Committee, 2014). Specialist adviser, House of Lords Constitution Committee for inquiry, '*Surveillance: Citizens and the State*', HL Paper 18, Session 2008–2009. He is a Fellow of the Academy of Social Sciences and a Fellow of the Royal Society of Arts.

### **Professor Tom Sorell**

Tom Sorell is Professor of Politics and Philosophy and Head of the Interdisciplinary Ethics Research Group in PAIS. He was a Research Councils UK (RCUK) Global Uncertainties Leadership Fellow (2013-2016). He was Tang Chun-I Visiting Professor in Philosophy at the Chinese University of Hong Kong in 2013. Previously, he was John Ferguson Professor of Global Ethics and Director of the Centre for the Study of Global Ethics, University of Birmingham. Before that he was Co-Director of the Human Rights Centre, University of Essex. In 1996-7 he was a Fellow in Ethics at Harvard.

He has published extensively in moral and political philosophy, including four books and dozens of journal articles. His most recent published work takes up (i) moral and political issues raised by emergencies, including terrorist emergencies; (ii) microfinance and human rights; (iii) the defensibility of preventive justice; ethics and artificial intelligence; (iv) digilantism; and (v) bulk collection.

He has worked on many European and RCUK-funded research projects. He has also served as a consultant on security-sensitive material in UK universities and on the committee advising the AHRC on the Internet of Things. He is vice-chair of the Home Office Biometrics and Forensics Ethics Group and is on the data ethics committee of the West Midlands Police and Crime Commissioner. In 2020, he was appointed Chair of the West Midlands Police General Ethics Committee.

### **Professor Denise Syndercombe Court**

Denise is a Professor of Forensic Science at King's College London. Her experience includes scientific research, forensic evidence examination and DNA interpretation, and the civil and criminal justice process, including court presentation as an expert witness. She is a specialist in complex DNA profiling interpretation, forensic genetics and blood pattern analysis. Denise is the Secretary-General of the British Academy of Forensic Sciences and has an active interest in promoting science to a wider audience via television, radio and external lectures.

### **Professor Jennifer Temkin, CBE (demitted July 2021)**

Jennifer is Professor of Law at City, University of London and Emeritus Professor of Law at Sussex University. She is a Bencher of the Middle Temple and a Fellow of the Academy of Social Sciences. Her specialist area is criminal justice, particularly in relation to sexual offences. She has published widely in this field and her books include *Rape and the Legal Process* (2002) and *Sexual Assault and the Justice Gap* (2008) with Barbara Krahe. She has been a frequent contributor to discussion in the media. She has also engaged in training programmes for Crown prosecutors, judges, barristers and doctors. In connection with her work, she has served on the following committees:

- Old Bailey Scrutiny Committee on Draft Criminal Code, 1985–1986
- Home Office Advisory Group on Video-Recorded Evidence in Criminal Trials (The Pigot Committee), 1988–1989
- National Children's Home Committee of Enquiry into Children and Young People Who Abuse Other Children, 1990–1992
- SCOSAC (Standing Committee on Sexually Abused Children), 1993–1996, Patron (with Dame Margaret Drabble)
- Justice Committee on Sexual Offences Law Reform, 1998
- External Reference Group, Home Office Sex Offences Review, 1999–2000
- Scientific Expert, Council of Europe's Committee of Experts on the Treatment of Sex Offenders, 2003–2005

- Expert Group on Rape and Sexual Assault, Victims of Violence and Abuse Prevention Programme, Department of Health and National Institute for Mental Health in England, 2005–2007
- Disability Forum, Disability Protection Project, Handicap International, 2010, Expert Adviser
- Board of Diploma in the Forensic and Clinical Aspects of Sexual Assault (DFCASA), Society of Apothecaries of London, 2010–2012

At City, she now teaches a course entitled ‘Forensic Science and the Legal Process’. She chaired the BFEG’s Working Group on Ethical Principles.

### **Dr Peter Waggett**

Peter is the Director of Research at IBM, making him responsible for all aspects of research conducted in the UK, and represents the UK in IBM’s wider research agenda. He holds multiple patents relating to biometrics and imaging systems and is editor of a number of biometric standards. Peter has a PhD in image processing and was the biometrics lead responsible for specifying, evaluating and testing the UK’s visa waiver system.



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