Chapter 1

Introduction

Introduction

The scope of this Report

1.1 In the policing of crime, state authorities increasingly rely on scientific technologies and, in particular, biotechnologies. Fingerprints, footprints and fragments of fibre have been used in the investigation and prosecution of crime since at least the end of the 19th Century. However, it is the development over the past two decades of the science and technology underpinning genetic 'fingerprinting' and now DNA profiling that has been the main reason for the dramatic increase in the use of bioinformation in the investigation and prosecution of crime. These biotechnologies are sometimes supplemented by other 'biometric' technologies that rely on the analysis of biological information such as iris scanning, voice analysis and gait analysis, and the comparison of facial images. Together, these resources have the potential to be combined to build 'multi-modal' identification systems. These might enable the police to link together several separate biometric and other databases. Platforms such as IDENT1 (which hosts the UK national fingerprint database, see paragraph 1.17) are already in place, which could greatly increase the power of these tools in the future by allowing linkage across databases and so facilitate the speed and efficacy of identification.

1.2 Since the implementation of the Police and Criminal Evidence Act 1984 (PACE) the powers of the police to take and retain fingerprints, DNA profiles and biological samples have been steadily increased, and until very recently the United Kingdom had the largest forensic DNA database in the world, the National DNA Database (NDNAD). (The US CODIS database has become slightly larger in terms of number of samples.) The increase in police powers has been achieved by piecemeal legislation. Although some proposed changes to PACE have been preceded by public consultation exercises and limited parliamentary debate, the lack of data on public attitudes to issues such as these was highlighted in 2005 by the House of Commons Select Committee on Science and Technology.[1] The establishment of the police DNA database was considered at the time an 'operational' decision and therefore was not considered to require public debate. Subsequent extensions to police powers, expansion of the NDNAD and further uses to which the NDNAD is now put have also lacked accompanying public discussion. There have been recent calls for a full public debate on the collection and use of bioinformation by the police, particularly on the uses of the NDNAD, and the Home Office has emphasised the need for clearly defined ethical standards:

> "In the application of science and technology, the [NDNAD] Strategy Group recognises the fundamental importance of ensuring that science and technology is used by the police only to enhance civil society. That is, in the sense of people's safe and secure enjoyment of their lives and property without intrusion that would breach their civil rights or scientific ethics."[2]

1.3 The aim of this Report is to provide an in-depth analysis to assist policy-makers and to raise public awareness of the issues. Our public consultation aroused widespread interest and we have benefited from written responses from organisations and members of the public, as well as from meetings with a number of key stakeholders (see Appendices 1 and 2). These reveal strong differences of opinion as to when fingerprints and biological samples should be taken and when these, and also DNA profiles, should be retained, and the uses to which potentially sensitive genetic information should be put. Our respondents fell into three broad groups:

- Those who wholeheartedly welcome the continued expansion of forensic bioinformation databases.

1. House of Commons Select Committee on Science and Technology (2005) *Forensic Science on Trial* (Norwich: The Stationery Office).
2. Home Office (2003) *Police Science and Technology Strategy 2003 to 2008* (Home Office Science Policy Unit), p14.

- Those who view the increase in police powers and use of bioinformation with deep suspicion.
- Those who take a middle position. They welcome the contribution that the new technologies and databases can make to crime control but they are concerned at the absence of effective governance. They want the utility of the databases to be maximised, but they also want their potentially harmful effects, such as threatening privacy, diminishing the requirement for informed consent, undermining social cohesion and engendering discriminatory practices, to be minimised. They seek safeguards against 'mission creep', particularly where the NDNAD is used for familial searching (searching the NDNAD for relatives of the person from whom DNA has been found in order to identify suspects), for making inferences about ethnicity from biological samples collected from crime scenes, and for research into criminal behaviour.

1.4 Those who are most enthusiastic about the forensic use of bioinformation place primary emphasis on the expectation that these technologies will contribute significantly to effective and efficient crime control by facilitating more speedy police investigations, as well as improving the rates at which crimes are detected and successfully prosecuted.[3] This emphasis on the contribution of bioinformation to crime control is usually accompanied by a number of detailed views, including some or all of the following:

- the police should have maximum access to DNA profiles from as many individuals as possible;
- consent should not be required to collect samples;
- the police should be able to retain all samples and profiles;
- all obtained profiles should be available for speculative searching on a database;
- current methods of DNA profiling are adequate;
- the levels of statistical certainty offered in support of DNA matches are adequate;
- DNA evidence is safe to secure conviction; and
- there is no reason to believe that enthusiasm for the use of DNA intelligence or evidence leads to miscarriages of justice.

1.5 However, other respondents are much less convinced by the benefits of using bioinformation to enhance and extend existing methods of crime control. These critics of the increasing use of DNA profiling and databasing have particular concerns with the ways in which scientific and technological advances need to be accommodated within 'due process' considerations that are central to contemporary criminal justice systems. This concern leads to a different series of ethical and operational preferences, including some or all of the following:

- the power of the police to obtain DNA profiles from individuals should be limited to those cases in which DNA evidence is relevant to the investigation;
- informed consent to DNA profiling should be regarded as foundational to the sampling of all persons, including criminal suspects;
- samples and profiles from those excluded from investigations should be destroyed;
- speculative searching of profiles on databases should be proscribed or at least time limited;
- current methods of DNA profiling should be regarded as inadequate and changed to increase their reliability;

3. Beyleveld D (1997) Ethical issues in the forensic applications of DNA analysis *Forensic Science International* 88: 3–15.

- the difficulties experienced by courts and jurors in evaluating the weight of forensic evidence should be recognised;
- 'match probabilities' (see paragraph 2.11) may be confusing and can result in unwarranted importance being attached to DNA evidence; and
- it is unacceptable to convict an individual using DNA evidence alone.

1.6 We put forward our own views and recommendations on these issues, not as the end of the debate, but hopefully as a contribution to the development of well-informed public engagement. We suggest means by which the public interest in crime control can be balanced in a proportionate way with other values (discussed in Chapter 3) such as liberty and autonomy, privacy, consent and equal treatment, and the legal protection of human rights and civil liberties. We have limited our investigation to two technologies: DNA profiling and fingerprinting. These are the two identification technologies most often relied upon in criminal investigations and criminal trials. Emergent biometric technologies such as iris identification, facial 'mapping' or voice recognition are yet to be accepted as fully reliable or useful for criminal investigation. However, pilot schemes and security systems are increasingly investing in the use of such technologies. Thus, although we concentrate on the two currently most robust technologies, we are not blind to other possibilities for the future.

1.7 We deal solely with issues raised by the forensic use of bioinformation in the criminal justice system. Ethical issues that arise with other 'forensic' uses of bioinformation, such as disputes about paternity or immigration, border security, or civil legal disputes fall outside our terms of reference. We do not consider the use of DNA or fingerprints to identify the dead or those missing after disasters: this use of bioinformation is generally seen as less controversial. Members of the public generally welcome the potential use of science for identifying loved ones. We have primarily focused on the legal situation in England and Wales, referring where appropriate to the separate legal provisions and databases in Scotland and Northern Ireland, where there are significant differences. We also make some comparisons with other European systems.

1.8 In this chapter we explain what is meant by 'bioinformation' and explain the technologies of fingerprinting and DNA profiling. We give a brief account of police powers to take biological samples and fingerprints, and of the NDNAD and the fingerprint database. In Chapter 2 we outline the scientific basis for the use and interpretation of bioinformation in forensic settings, including potential scientific developments. Chapter 3 outlines the ethical values and human rights that underpin our discussion. In Chapter 4 we consider the collection and subsequent uses of bioinformation during police investigations, and in Chapter 5 its use in criminal trials. Chapter 6 concentrates upon three particularly controversial uses: familial searching, inferring ethnicity and research into criminal behaviour, while Chapter 7 focuses upon governance and regulation of forensic databases and forensic services more broadly.

What is bioinformation?

1.9 Bioinformation may be derived from the analysis of a range of physical or biological characteristics of a person. It is most often used in efforts to identify individuals, or at least to differentiate individuals from each other. In particular, it is used:

- to ascertain whether somebody is the person they claim to be, or deny being; and
- to ascertain whether a person may have been in a particular place(s) or has been in contact with another person or object.

1.10 Bioinformation for determining whether a person is who they claim to be can involve, for example, the use of photographs, fingerprints or iris scans. The person in question is normally

Box 1.1: Current DNA profiling methodology

A DNA profile is obtained by:

- extracting the DNA from a sample (blood, saliva, semen, sweat or other biological material);
- measuring the amount of DNA obtained;
- producing multiple copies of specific areas of DNA of interest (these correspond to the 'markers' referred to below); and
- cataloguing the size of each marker in the particular individual from whom the DNA came.

The technique currently used for DNA profiling in the United Kingdom is SGM Plus® (SGM+). It tests for ten 'markers', known as short tandem repeats (STRs), and a sex marker. STRs are short sequences of DNA that are repeated in tandem several times, and the number of repeats varies between individuals. The number of repeats is recorded and thus, a DNA profile consists of 20 two-digit numbers (each person has two copies of each marker, one inherited from each parent), and a sex indicator. The probability of a chance match between unrelated individuals using SGM+ is on average less than one in a billion (1,000,000,000). The discriminatory power of the analysis decreases for related individuals. SGM, a technique used before the introduction of SGM+, analysed six of the same markers plus the gender marker and had a lower discriminatory power. A proportion of the profiles on the NDNAD are based on SGM (22 per cent of criminal justice samples and 19 per cent of crime scene samples). When a current crime scene sample matches an SGM profile, the relevant biological sample is retrieved and the profile is upgraded to SGM+. A recent retrospective upgrade of 24,000 cases from SGM to SGM+ found that there were 3,600 cases where the profiles had originally matched using SGM, but no longer matched when using SGM+ profiling. To date, there have been no reports of chance matches between full SGM+ profiles. Chance matches are, however, more likely to arise:

- with partial profiles;
- between closely related individuals;
- as the size of the NDNAD expands; and
- between individuals within an isolated or inbred population.

present when these forms of bioinformation are used. Bioinformation for inferring whether a person may have been in a particular place, or in contact with another person or object may include photographs, images on CCTV cameras, fingerprints and DNA 'profiles' (see Box 1.1). Such 'trace biometrics' or 'trace bioinformation' can be used when the person is not physically present. This may or may not involve the use of a database, such as the police fingerprint database or the NDNAD.

1.11 Retrieved 'trace bioinformation' can also support inferences about what a person did when they were at the scene of a crime, such as handle a weapon or have sexual intercourse. However, the significance of such inferences depends on individual case circumstances, and, where the identity of the criminal remains disputed, it is likely that other evidence linking a suspect to a crime will be sought to support a prosecution. One of the issues discussed in this Report (see paragraphs 5.3 and 5.26) is whether a defendant could be convicted in circumstances where his or her only direct connection to the crime was a DNA match with a crime scene sample. Bioinformation used alone is unlikely to be sufficient to secure a conviction in criminal proceedings where the identity of the criminal is in dispute. An English court is likely to require additional evidence to be convinced that the suspect is the source of the bioinformation and the perpetrator of the offence, while in Scotland corroboration is a legal requirement.

DNA profiles and biological samples

1.12 It is of crucial importance to understand the distinction between a biological sample and a DNA profile. The former is the actual biological sample of body cells taken from a crime scene or from a suspect or a volunteer during an investigation. The latter is a string of numbers stored on the NDNAD (see paragraph 2.8). Generally, use and retention of a DNA profile raises far fewer ethical concerns than the use and retention of the biological sample. The DNA profile characterises only certain very restricted parts of a person's total DNA, and these areas of DNA have been selected largely because they provide no information beyond identifying the individual. Thus access to an individual's profile will not reveal anything of interest about that individual, beyond identification and gender (but see paragraph 2.20 for

a small reservation concerning the sex indicator and Y chromosome markers). This will remain the case while the Single Generation Multiplex Plus (SGM+) profiling system is in use (see Chapter 2 for details), though with the rapid advancement of genetic analysis, and the decreasing cost of profiling greater sequences of DNA, it may not always remain so. The biological sample itself contains the whole genetic sequence of an individual, and is therefore far more sensitive in respect of privacy. Potentially, it might reveal personal, familial and health information, and perhaps even information about behavioural traits. There are a number of other profiling systems available, or in development, and there are moves to expand the amount of DNA that is currently profiled in order to make DNA profiles compatible internationally.

1.13 Another important distinction is made between, on the one hand, taking fingerprints and biological samples for direct use in investigating the offence for which the individual was arrested, and on the other hand, speculative searching against fingerprints and DNA profiles retained from previously unsolved crimes. While the initial taking of such bioinformation raises some ethical issues, it is the retention of this bioinformation in searchable databases that is of more serious ethical concern. In particular, permanent retention of biological samples and DNA profiles each require some further justification.

Fingerprints

1.14 The use of fingerprints by Scotland Yard dates back to the late 19th Century. Their use has been widely accepted for decades, their reliability and trusted status remaining intact in the face of recent critical scrutiny. Fingerprints serve two purposes within the criminal justice system:

- to establish identity and check that identity against an individual's prior criminal record; and
- to try to establish presence at a crime scene by comparison of 'latent' prints at the scene to stored fingerprints or fingerprints belonging to suspects.

It is this second purpose that is the most important for our purposes. However, recent policy on the use of fingerprints has stressed the utility of fingerprints for keeping track of individuals as they progress through the criminal justice system. For example, it is not unknown for individual A to try to impersonate individual B or for C and D to try to swap identities during the course of a police investigation or court proceedings.

1.15 Reforms to the legal provisions for fingerprinting have tackled the problems created when suspects give false details to the police. The previously time-consuming checking of a person's identity has been significantly speeded up with the introduction of 'LIVESCAN' digital fingerprint consoles at police stations. Since 2001, LIVESCAN terminals have automated the process of fingerprinting. The person places a hand on a glass platen, their fingerprints are captured electronically and then sent to IDENT1 for comparison, circumventing the problems associated with 'ink and roller' methods

1.16 The advent of DNA technology, with its discriminatory power and its lesser reliance upon human interpretation, has not diminished the use of fingerprints. Not only are they still used more frequently than DNA, but the development of mobile technology and of IDENT1, with its future capacity and capabilities, mean that fingerprints remain, and are likely to continue as, the dominant type of bioinformation in use in the criminal justice system.

The fingerprint database: IDENT1

1.17 The police currently hold over 6.5 million sets of fingerprints, stored in the 'National Tenprint

Collection' which is hosted on IDENT1, incorporating 20 per cent of the United Kingdom male population, and five per cent of the female population. There are also 1.2 million crime scene fingerprints on the 'Unidentified Marks Collection'. The law governing the taking of fingerprints mirrors that governing the taking of biological samples (see paragraphs 4.3–4.4). Fingerprints and DNA, together with photographs and shoe prints, may be taken at the same time. Similarly, members of the public may volunteer their prints for elimination purposes in criminal investigations.

1.18 IDENT1 is a 'platform' on which the police store databases such as the fingerprint database, a palm print database (PALMS) and a shoemark database. Other biometric databases may be added in time. IDENT1 is used to process 100,000 records of arrests every month. For the 12 months between February 2006 and January 2007, the average number of 'identifications' was 6,324 per month (see paragraphs 4.26–4.27). IDENT1 is used by all the police forces in England, Wales and Scotland as well as the Home Office Immigration and Nationality Directorate. In addition to 45 fingerprint bureaux in England and Wales, the British Transport Police, the Serious Organised Crime Agency (SOCA) and HM Revenue and Customs can access IDENT1. Approximately 1,200 police personnel have direct access to the fingerprint system.

1.19 Many questions about the collection, retention and use of bioinformation apply equally to fingerprints and DNA. Indeed, legislation has almost always linked the two by their joint inclusion in relevant sections of statutes, and since the redefinition of the mouth as a non-intimate area (see paragraph 4.9), fingerprints and other bioinformation have almost always been treated as equivalent matter. While some argue that DNA sampling is not qualitatively different from taking fingerprints, others claim that there are important distinctions between these two forms of bioinformation. In general, the taking and retention of DNA is seen as far more 'sensitive'. This is because fingerprints cannot reveal information beyond identity, whereas with DNA there is the possibility of deriving additional information about an individual by further analysis of their DNA, and about family relationships by comparing profiles. This special sensitivity surrounding DNA means that this Report pays particular attention to the uses of DNA within the criminal justice system. However, the potential 'multi-modal' future of IDENT1 – the ability to combine a series of different biometric databases to increase discriminatory identification power – may heighten concerns by increasing risks associated with the sharing of personal data (see Chapters 6 and 7).

Forensic DNA profiling

1.20 Deoxyribonucleic acid (DNA) is the chemical found in virtually every cell in our bodies. It affects our physical characteristics such as hair and eye colour and is unique to each individual (except identical twins). It also carries genetic information from one generation to the next. The identification of individuals using a technique known as 'genetic fingerprinting' was first used in 1985 during a major police investigation (the case of *Pitchfork*[4]). The potential of the technique, which was developed by Sir Alec Jeffreys, was soon realised, and legislation was introduced to facilitate its routine use. In the early 1990s the new genetic technique of DNA profiling superseded DNA fingerprinting (see Box 1.1).

The National DNA Database (NDNAD)

1.21 The NDNAD contains DNA profiles drawn from three primary sources:

- **criminal justice ('CJ arrestee') samples** – taken from those arrested for a recordable

4. See Walker C and Cram I (July 1990) DNA profiling and police powers *Criminal Law Review* 478–93, for a discussion of the case.

offence, without requiring their consent;

- **elimination samples** – taken from victims and consenting volunteers to establish that they can be excluded from further investigation, or to identify the source of profiles left innocently at a crime scene; and
- **crime scene samples** – DNA found at a crime scene.

Most DNA profiles on the NDNAD have been taken from persons arrested by the police. A smaller number are from individuals who have witnessed a crime or who have consented to a biological sample being taken in order to eliminate them from a criminal investigation ('elimination samples'). These two categories are not distinguished once loaded onto the NDNAD and are both known as 'subject samples'. Additional DNA profiles have been secured through analysis of trace biological material deposited at scenes of crime by unidentified individuals. All subject samples are entered onto the NDNAD, unless donated by volunteers who have not consented to their DNA profile being permanently entered on the NDNAD. The DNA profile then forms part of that individual's electronic criminal justice record (see Box 1.3). (An individual providing an elimination subject sample will not have an arrest summons number recorded.)

1.22 As we have said, the United Kingdom has for many years had the largest forensic DNA database in the world, incorporating approximately six per cent of the UK population. The FBI's 'CODIS' database in the USA has recently become the world's largest DNA database, but although this is larger in size, it covers a far smaller proportion of the whole population: approximately 0.5 per cent.[5] The next largest forensic DNA database, in terms of coverage of the population, is in Austria, with one per cent of the population on its DNA database. At the end of March 2007, the UK NDNAD held approximately four million DNA profiles from subject samples and over 264,000 profiles from crime scene samples. Over 25,000 of the subject samples were from volunteers. In 2005–6, 715,239 subject sample profiles and 68,774 crime stain profiles were added to the NDNAD. It is estimated that approximately 13.7 per cent of subject samples are 'replicates', so the samples do not represent four million different individuals.[6] Replication may occur where an individual has been arrested on more than one occasion, and, having given a false name, has a further biological sample taken.[7]

1.23 No single legislative instrument or Act of Parliament established the NDNAD or the police powers to take and retain biological samples from citizens. Instead, the growing collection, storage and use of DNA and biological samples has been facilitated piecemeal by successive amendments to legislation, especially amendments to the Police and Criminal Evidence Act (PACE) of England and Wales 1984. Since the enactment of the Criminal Justice Act 2003, the police have been permitted to take fingerprints and biological samples from any individual arrested for a recordable offence, without their consent, whether or not DNA or fingerprints are relevant to the crime being investigated. This bioinformation is retained indefinitely on IDENT1 and the NDNAD databases, irrespective of whether the person is charged or convicted of an offence. These fingerprints and DNA profiles are then permanently available for comparison with others from individuals and crime scenes. Victims and witnesses might also be asked to submit their fingerprints and biological samples for elimination purposes.

1.24 While the number of people being fingerprinted and having biological samples taken has increased dramatically, this still amounts to only a proportion of those arrested. In the year 2004–5, over 1.3 million people were arrested[8] and 34.6 per cent of those arrested had biological samples taken and profiled. At present the person must have been arrested for a

5. As of April 2007, the profile composition of CODIS (the US National DNA Index System) is as follows: total number of profiles: 4,630,929 (4,457,313 from convicted offenders) and 173,616 'crime scene' DNA profiles.
6. House of Commons, Hansard, 10 May 2007, column 431W.
7. There are also records held for almost 1,400 identical twins, and two sets of triplets.
8. Twenty-five per cent of these were aged under 17, whereas 40 per cent were under 21.

Box 1.2: Offence categories

Arrestable offences: The distinctions between 'non-arrestable', 'arrestable' and 'serious arrestable' offences were abolished in England and Wales with the passing of the Serious Organised Crime and Police Act 2005. Thus, the power of arrest now applies to all offences, however minor. Police officers can arrest someone who is about to commit an offence, is in the act of committing an offence, or where the officer has reasonable grounds for suspecting either of these is the case, or they have reasonable grounds to suspect an individual has committed an offence. Section 110 of the Act provides that such powers must only be exercised where a constable has reasonable grounds for believing that arrest is 'necessary'. PACE Code G gives guidance, stating for example that an arrest may be necessary if there are reasonable grounds to believe someone has made statements 'which cannot be readily verified', or may intimidate or contact witnesses.

Recordable offences: All offences that carry the possibility of a custodial sentence are recordable (or 'notifiable'), plus 52 other, non-imprisonable offences specified in the Schedule to the National Police Records (Recordable Offences) (Amendment) Regulations 2005 (SI 2005/3106). Regulations made before 1997 had listed five non-imprisonable offences as recordable: loitering or soliciting for purposes of prostitution; improper use of public telecommunications system; tampering with vehicles; sending letters, etc. with intent to cause distress or anxiety; and having an article with a blade or point in public place. In 1997, a further 42 offences were added to the list and then in 2000, another five offences were added, and the provisions consolidated. The 2003 Amendment Regulations added offences of taxi touting, begging and persistent begging to the list.

Non-recordable offences: These include all other offences that do not attract a possible custodial sentence, and are not included in the list of recordable offences. These are 'minor' offences such as littering, minor public order offences and minor traffic offences. However, if the Home Office proposals of March 2007 were to be implemented, then all offences could become 'recordable' in the sense that a report of these arrestees would necessitate the creation of a 'record' of that arrest and the related offence.

recordable offence (see Box 1.2) before they can be fingerprinted and have a biological sample taken (nearly all offences are recordable). However, Home Office proposals announced in March 2007 suggest that this restriction may be lifted, with the police permitted to take fingerprints and biological samples from any arrestee, regardless of offence. This would extend sampling to people who have been arrested on suspicion of minor offences, such as minor traffic offences or littering. There are some two million arrests made each year (many of the same individuals), with upwards of 25 per cent of the male population and seven per cent of the female population of England and Wales arrested during their lifetime. With this potential further extension of police sampling powers, the NDNAD could expand dramatically, soon encompassing a fifth or more of the population. We comment upon these proposals later in this Report (see paragraphs 4.21–4.23).

1.25 There are a variety of legal positions taken across continental Europe and internationally about the taking and retention of bioinformation from citizens. These are set out in Box 4.3.

Scotland

1.26 The situation in Scotland, which has a separate legal system and policing tradition, differs from that in England and Wales.[9] Whereas it was once necessary to obtain the authorisation of a police inspector to take mouth swabs, these can now be taken on arrest by a police constable. However, the samples and resulting profiles must be destroyed if the individual is not convicted or is granted an absolute discharge. A recent qualification provides that biological samples and profiles may be retained for three years, if the arrestee is suspected of certain sexual or violent offences[10] even if a person is not convicted.[11] Thereafter, samples and information should be destroyed unless a Chief Constable applies to a Sheriff for a two-year extension. The onus is on the police to show reasonable grounds for retention.[12] Another distinguishing feature of the Scottish position is that while volunteer samples can be retained with consent as in England, this consent can be withdrawn at any time, requiring destruction of the relevant sample and related

9. The principal legislation is the Criminal Procedure (Scotland) Act 1995, as amended by the Criminal Justice (Scotland) Act 2003 and the Police, Public Order and Criminal Justice (Scotland) Act 2006.
10. Including rape, indecent assault and lewd and libidinous behaviour; murder, assault and reckless conduct causing actual injury.
11. S.83 of the 2006 Act, adding S.18A to the 1995 Act.
12. This application must be within three months of the due destruction date. The law does not preclude repeat requests for further extensions of two years. A final appeal is possible to a Sheriff Principal.

information.[13] The Scottish DNA Database, situated within Tayside Police headquarters, holds in excess of 200,000 DNA profiles. During 2005–6, 4,591 crime scene samples were received, and 68 per cent of these matched with subject samples on the local database. The remaining 32 per cent of crime scene samples were then exported to the UK NDNAD.

Northern Ireland

1.27 The Northern Ireland DNA Database operates under different legislation from that in England, Wales and Scotland,[14] but the law mirrors that of England and Wales. DNA may be taken without consent from anyone charged with a recordable offence, aged ten or above, who is taken into police custody. DNA profiles are entered on the Northern Ireland DNA Database (NIDNAD) and biological samples are stored by the Forensic Science Northern Ireland (FSNI) laboratory, which also acts as the Custodian (see paragraph 1.30) of the NIDNAD.[15] The size of the NIDNAD has risen from 17,000 in 2000 to 39,055 in 2007 (this figure is broken down as: 3,355 samples taken from children (those aged under 18) and 35,700 samples taken from adults (those aged 18 and over)).[16]

1.28 Since July 2005, the NIDNAD has submitted its DNA profiles to the UK NDNAD, under a 2006/07 PSNI-FSNI (Police Service of Northern Ireland) agreement, which also allows 'familial' searching (see paragraphs 6.6–6.11) using the Database. The law in Northern Ireland allows permanent retention of all profiles and samples taken from arrested individuals. However, it is not yet police policy in Northern Ireland to use their full sampling and retention powers and the policy of the police is to remove profiles from the NIDNAD if an individual is acquitted or removed from suspicion. These profiles are not then uploaded onto UK NDNAD.[17] While this is the stated policy, the retention of DNA in Northern Ireland in cases where no conviction or caution has resulted is in fact becoming widespread. The retention of DNA from children has particularly attracted attention, with DNA held on approximately 3,000 young people under the age of 18, of whom 1,119 have no convictions or cautions.[18]

Access to the UK NDNAD

1.29 A number of agencies have access to the NDNAD, including:

- Members of the NDNAD Custodian Unit in the Home Office who have responsibility for maintaining the integrity and oversight of the NDNAD (18 staff members).[19]
- Members of the Forensic Science Service Ltd. who have responsibility for providing NDNAD operational services, which includes loading DNA profiles onto the NDNAD to search for matches and reporting these back to police forces (31 staff members).

1.30 There are at present seven organisations accredited by the Custodian,[20] (three of which are private companies, the rest being police or public sector laboratories: see paragraph 7.11) and authorised to generate DNA profiles from subject samples or crime scenes and have

13. S.56 of the 2003 Act.
14. The authority arises from the Police and Criminal Evidence (Northern Ireland) Order 1989, as amended by the Police (Amendment) (Northern Ireland) Order 1995 and the Criminal Justice (Northern Ireland) Order 2004.
15. Forensic Science Northern Ireland (2006) *Annual Report 2005/06*.
16. Paul Goggins MP, Hansard, 15 June 2007, column 1395W.
17. Forensic Science Northern Ireland (2006) *Annual Report 2005/06*.
18. Statewatch (2006) Northern Ireland: DNA data held on 1,119 innocent children, available at: http://www.statewatch.org/news/2006/oct/13ni-dna-children.htm, accessed on: 2 July 2007.
19. Joan Ryan, for the Home Office, Hansard, 9 May 2006, column 199W.
20. A Home Office unit responsible for setting the expected Standards of Performance for forensic science laboratories that provide DNA profiles for the NDNAD and ensuring that these are achieved and maintained. This unit is also responsible for overseeing delivery of the NDNAD operations contract by the Forensic Science Service.

them uploaded onto the NDNAD by the Forensic Science Service.[21] International law enforcement agencies may request permission to search the NDNAD (although there remain problems of compatibility of the NDNAD with databases of other countries) and transfer of data can be arranged, usually via Europol or Interpol (see paragraphs 7.42–7.53).

Box 1.3: What information is stored on the NDNAD?

The NDNAD contains electronic records relating to DNA profiles generated from biological samples. The DNA profiles can be generated from analysis of material from crime scenes, submitted to the NDNAD with accompanying information about the offences and locations with which they are associated. DNA profiles are also generated from 'subject samples' taken from individuals. The biological samples are kept in storage, while the electronic record on the NDNAD contains the following information:

1 an arrest summons number (ASN) providing a link to the record on the Police National Computer (PNC), which contains the person's criminal record and any police intelligence information;[22]

2 information about the police force that collected the sample of DNA;

3 the person's name, date of birth, ethnic appearance (as defined by the police) and their gender;

4 details of the type of biological sample from which the DNA is taken (blood, semen, saliva, etc.);

5 the type of DNA test used;

6 the DNA profile (a string of 20, two-digit numbers and a sex indicator);

7 a unique bar-code reference number (linking to the location of the stored biological sample).

21. These organisations are: The Forensic Science Service Ltd., LGC Ltd., Orchid Cellmark Ltd., Tayside Police Forensic Science Laboratory, Forensic Science Northern Ireland, Strathclyde Police Forensic Science Laboratory, and Lothian and Borders Police Forensic Science Laboratory. Further organisations are currently seeking accreditation.

22. If volunteers have consented to their profile being entered onto the database, a similar record will be generated but will not include an arrest summons number.