



House of Commons
Science and Technology
Committee

Forensic science

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Additional written evidence

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Science and Technology Committee

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Written evidence

Written evidence submitted by Professor Sue Black

My rationale for offering a view is that I am a specialist expert witness in forensic anthropology who is called upon to assist in casework throughout the UK and therefore I am able to offer a comparative perspective with the landscape of working in Scotland.

1. The answer to this question is a resounding no. The level of investment in R&D within the UK as a whole is pitiful. There is no robust forensic research strategy within RCUK and much research that purports to operate under the ‘forensic’ banner is substandard. My research funding (currently around 5 million Euros) is all EU based or I have emergent research which is classified as ‘unfunded’ which is frowned upon by the University. The costs for this are subsidised through my income from casework through the grace that the University gives me to do so. This is not a common picture for many academics. There is no governmental support and there is limited provider support in this area. Compared to the current US investment in forensic science the UK is unquestionably falling very far behind on the global market.

2. I am not in a position to comment.

3. I admit to being aware of no effect on R&D as the level of investment has always been low. I have of late been very conscious of some very poor standard procedural and analytical work with some providers but whether this can be laid at the door of the FSS closure is not clear.

4. The Forensic Regulator’s role is vital. With a market open now to commercially driven providers and in-house police provision, his office is the key to maintaining and driving standards. He is however hampered by an inexplicable lack of mandatory powers and I believe these are vital if we are to maintain any credibility in the quality of our output in the global market.

5. I cannot comment on the size but in terms of stability there is a clear distinction between the North and the South. The landscape within the North which has SPSA forensic provision is stable and progressive. South of the border there appears to be a very budget driven approach to provision, rather than Justice driven. This makes working in the English sector feel quite alien and at times very uncomfortable. We have been brought in by police now on several English cases to consider the work of the providers and in some of these instances there have been quite considerable disagreements. I am uncomfortable about being used as a benchmark in this way and it was not something that occurred prior to FSS closure. Whether this is a symptom of a changing market or of the closure, I do not feel qualified to have an opinion upon.

6. Procurement for my services, which are specialised, tend to come directly from the Police in England and Wales. Often this comes through recommendation from the advisory sector of NPJA who are absolutely vital to the police in terms of finding the ‘less obvious’ expert or for advising them to think differently about their investigation strategy. I am recruited in the South through defence providers but as both major crown providers have in team anthropologists, I tend not to be involved in their work unless brought in through cold case review or to oversee reports. As a collective group of specialists (forensic anthropology) we are in the process of self-directing our professionalization and accreditation process through the Royal Anthropological Institute as our professional body. The role of the Regulator in this process has been vital and we need to not only keep our focus clearly on standards and procedures but also on our experts.

7. Yes I do think this has happened. There are several practitioners who have either gone into early retirement or moved abroad—Australia seems to be popular. Some have unquestionably been retained within UK organisations and so I think this diaspora has been mixed.

8. I am not in a position to comment.

December 2012

Written evidence submitted by Professor Peter Sommer

1. This submission concentrates on the position of the forensic examination of digital evidence. It describes challenges to current forensic science policies by the government and police service in applying to digital evidence notions of regulation, standardisation and competitive tendering.

QUALIFICATIONS

2. I am currently a Visiting Professor at de Montfort University and a Visiting Reader at the Open University. For 17 years I was first a Visiting Research Fellow and then a Visiting Professor at the London School of Economics. For almost 20 years I have acted as an expert witness in many trials involving complex computer evidence; many of these would probably not be regarded as E-Crime or Cyber-Crime. My instructions have included global hacking, terrorism, “phishing” and software piracy but also murder, large scale illegal immigration, art fraud, state corruption, money laundering, insurance frauds, conspiracy to sell firearms, theft of gold bullion and paedophilia.

3. I have provided advice for the UK's National High Tech Crime Training Centre, was the external evaluator and then external examiner for the MSc in Computer Forensics at the Defence Academy at Shrivenham which is widely used for police training. While it existed I was the Joint Lead Assessor for the digital element in the Home Office-backed Council for the Registration of Forensic Practitioners. I currently advise the Forensic Science Regulator on matters of digital evidence.

4. The Committee will recall that I have provided evidence to them before, notably for their inquiry into Malware and Cybercrime.

DIGITAL EVIDENCE

5. Digital Evidence now occurs in large numbers of “ordinary” criminal trials, as my own experience bears out, because deployment of computers, smartphones and tablets is now extremely widespread and during their use they capture very many activities. By mid-2012 PC ownership was over 80% of the population and household internet take-up was at 80%. There are over 130 mobile phone contracts per 100 of the population. Smartphone ownership was 39% of UK adults, tablet ownership 11% (likely to have increased considerably over the 2012 Christmas season). Each household in the UK averaged 3 internet-connected devices¹. At the same time the cost of data storage—and hence potential source of evidence—drops 50% every 18 months. The cost of a 500 GB external hard drive is now (December 2012) £40 with a comparable impact on hard disk sizes in bought PCs and laptops. A 16 GB USB memory stick costs under £8.

6. Digital evidence is important to investigators not only to identify specific files which might be directly criminal but also in indicating *mens rea*, planning, research, a course of conduct, a chronology of events or “bad character” for the purposes of Criminal Justice Act 2003, Part 11 Chapter 1.

7. Although “digital evidence” also includes communications data and evidence from banks and other large companies obtained by PACE Production Order, the main forensic activity is in the examination of computer hard-disks, data storage devices, mobile and smart phones and tablets.

8. Material typically sought includes: substantive files/documents, emails, records of internet activity including web-browsing, artefacts associated with file-sharing and downloading, and the use of social networking. It is also possible to recover deleted versions of the above.

9. A particular characteristic of digital forensics is that it is in a state of constant development, reflecting fast changes in computer hardware, operating systems, application programs and the social and commercial use of computers and phones. One result of this is that the rate of change is often faster than the speed at which peer-reviewed articles on digital forensics can be written and published. The same is true of the time necessarily taken to test new forensic tools. There are implications here as the courts move to Daubert-type testing of scientific evidence². I have written about this in *Forensic Science Standards in Fast-Changing Environments*³.

TRIAGE

10. In response to the ever-increasing quantities of potential digital evidence, the police are embarking on what is referred to as “triage”. This takes a number of forms. One is an attempt at the scene of crime or execution of a seizure warrant, to assess which computers, storage media etc can be safely discarded. This approach requires the presence of an experienced officer or civilian and runs the risk that at trial the defence will claim that material which might have assisted them was not collected. A second approach is to use automated or semi-automated tools to search a computer. For example where there are suspicions of the sexual abuse of children a computer program can search a computer for the presence of previously known images of child abuse, using hash sets. A similar technique can be used in suspected piracy of movies, music, software. Other automated programs can search for apparent credit card numbers. The problem with this technique is what follows thereafter: is a positive result used to charge immediately (and with cost-savings) or simply used as a trigger for further more detailed examination (more expensive but likely to produce evidence the automated route may have missed)?

SUPPLY OF DIGITAL FORENSICS SERVICES

11. Historically digital forensics grew out of the enthusiasm of individual police officers and not within conventional forensic science. Until recently most UK police forces had a hi-tech unit which included digital forensics and would be staffed by a combination of police officers and civilians. There is now a trend to regional facilities, shared by several police forces. These have all been under pressure partly because of the growing quantities of material to be examined and budget planning had failed to forecast the growth. In addition, there has been a general 20% reduction in overall police budgets. Recourse has been made to external suppliers, of which more below.

¹ http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf

² Law Commission's Consultation Paper No 190 The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales: a new approach to evidentiary reliability

³ Science and Justice 50:11, 12–17, March 2010

12. Elite and specialist law enforcement units—PCeU, SOCA, SO15—have their own in-house units; CEOP used to but I believe has not had its own resource for some time. The Metropolitan Police has a Computer Systems Laboratory which both carries out its own examinations and also manages outsourcing contracts.

13. Commercial digital forensics services are now widely available; the companies have been set up by a combination of former police officers, former police civilian employees, those with a background in computer services including security and large general forensic laboratories such as LGC who believe that they should be providing digital expertise along with other services such as DNA, paint, fingerprint analyses. The FSS, while it existed, offered a small team of examiners.

IMPACT OF CURRENT POLICIES

14. The Committee will be familiar with the general trends of policy towards the supply of forensic science: the FSS is closed down, police have the choice of running their own services in-house or going outside for competitive tendering. The Forensic Science Regulator sets standards to which suppliers to law enforcement will have to comply. Accreditation will depend on compliance, which will be assessed by UKAS, the United Kingdom Accreditation Service. The standards are based on ISO17025 which is essentially about the reliable, safe and secure operation of laboratories. There are more detailed proposals for various sectors; I have been in an advisory group for digital forensics.

15. The policies have to be seen against the 20% reduction in the overall policing budget and the arrival of elected Police Commissioners⁴ which must also impact on funding for forensic science and the particular features of digital evidence, outlined above.

16. Standards Compliance Although high standards are in principle essential, there is a risk of standards bloat—the addition of detail to demonstrate that those who have contrived the standard have done a good and thorough job. But the greater the level of detail the higher the cost of compliance and subsequent accreditation. There is a danger that those devising standards do so in isolation from assessment of likely danger from “bad evidence” and economic cost. Too high a cost will act as a deterrent to potential suppliers of forensic services, particularly at a time when fee levels are under pressure. One outcome may be that the market will eventually consist of only a small number of large providers. Individuals current offering digital forensic services to the criminal justice system have the options of concentrating on private, civil and corporate work—or of using their skills in the broad fields of cyber security.

17. ISO17025 covers every aspect of laboratory work and seems focused on situations where lab technicians concentrate on carrying out work on vulnerable, easily contaminated, evidence. In the case of DNA analysis, one can see the need for extreme care in handling very small samples, ensuring clarity of continuity (to avoid confusing samples from different sources), absence of contamination and clarity of audit of activity. However these procedures apply only in the first stages of most forms of digital evidence examination—when an original computer, hard disk, phone, tablet is forensically “imaged” (copy of made of all storage sectors). Thereafter detailed analysis is carried out on the copy image, not on the original, with much lower levels of risk.

18. Yet the worry is that compliance with approved standards may be required of all forensic disk examiners, including those who simply work on images and do not touch original evidence.

19. Nature of Digital Forensic Examinations We can distinguish between several classes of forensic examination. One consists of a limited exercise using standard procedures for such matters as testing for the presence (or absence) of particular substances or of matching tendered samples of DNA, blood, paint, fragments of metals etc against known information. But a second is much more concerned with establishing and reconstructing a sequence or chronology of events. The first needs robust laboratory procedures, the second analytic skills plus the ability to explain and justify conclusions.

20. Much of digital forensic examination consists of the latter—sometimes it is sufficient merely to establish the existence of a particular file, more frequently it is critical to explain how and when the file arrived on the computer, whether one can reasonably infer that an accused was aware of the file’s existence, and whether the file is extant and normally visible or if it had been deleted but subsequently recovered by a technician.

21. A further issue is rate of change, referred to above at paragraph 9. One of the requirements of laboratory standards is that procedures have been tested and verified. Again for most purposes this is a very important ambition. But where new internet protocols and computer applications appear, full verification and testing may be difficult to achieve before cases dependent on them come before the courts. There is then a dilemma: should relatively untested forensic tools be restricted from deployment but run the risk that a guilty person is not properly prosecuted? In practice this dilemma can be averted, not by the activities of forensic regulation but by adversarial testing before a court. Both prosecution and defence experts owe and over-riding duty to the court⁵ and there are arrangements under which opposing experts can hold pre-trial discussions—CPR 33.6

22. Impact of Competitive Tendering In theory competitive tendering between commercial suppliers of forensic services appears to provide value for money. However an essential requirement of any such tender is that the tenderer has good knowledge of what is required and can create an unambiguous specification. In the

⁴ Under the Police Reform and Social Responsibility Act, 2011

⁵ Criminal Procedure Rules 33.2

case of digital forensics this task is often left to a police OIC (Officer in Charge) and their knowledge of what is feasible and possible in the examination of computers, phones and tablet is defective because the roll-out of police training in “mainstreaming” digital evidence is incomplete.⁶ In a competitive situation an digital forensics supplier will only carry out work as specified. Often there may be a significant geographic separation between police investigator and forensic examiner; they are thus unable to confer with each other—the police investigator to give broader background and to have the opportunity to reformulate requirements, the forensic examiner to ask questions and suggest additional lines of inquiry. Under earlier arrangements, where police had more in-house digital forensic capability, these productive discussions could more easily take place. The risk is that important directions of investigation are not identified.

ISSUES FOR THE COMMITTEE

23. Do current plans for Forensic Science Regulation concentrate too much on a “one size fits all” approach at the expense of the particular issues around digital evidence with its constant novelty and an emphasis on reconstruction of events rather simple laboratory procedures?

24. Are the costs of compliance with Forensic Science Standards commensurate with the wrongs in terms of “bad evidence” they are meant to address?

25. Can the desire for competitive tendering, coupled with pressure on costs, lead to circumstances where investigators and forensic technicians do not sufficiently interact, with the consequence that important lines of inquiry are missed?

26. Are there risks in the deployment of triage to select digital material to be examined and the use of automated tools, that corners are being cut to the point where potential evidence is missed and criminals inadequately identified?

I would be happy to enlarge on any of these matters.

DECLARATION OF INTERESTS

As a sole trader I provide services in digital forensics to both prosecution and criminal defence and to parties in civil litigation, for which I am usually paid on a hourly basis.

January 2013

Written evidence submitted by Dr Peter Dean MA, DSC, DPhil, FRSC cchem

Preamble: It is worth saying at the outset that Chi Onwurah, MP received a number of these points from myself just prior to the decision to close FSS. For the record, I am a scientist, inventor and chairman of a small British biotech company (Cambio Ltd) who offer tools for research in molecular biology including DNA for forensic analysis.

1. There was an opportunity to transfer the FSS research unit to the Home Office research facility. Why this was not done leaves one speechless. My point is that the Home Office has no DNA capability.

2. Alastair Logan’s eloquent paper says much that the this committee should take note of <http://www.lawgazette.co.uk/in-practice/practice-points/the-destruction-forensic-science-service> Furthermore, there have been many highly critical articles which point to the dire consequences of FSS closure; eg Evett, Pope & Tully, Law society Gazette Nov 2012 *inter alia*. The following are amongst the criticisms raised by the above authors; Police priorities are a conflict of interest; Cost can be used to shortcut forensic work; There is now a lack of specialist knowledge; There is now a lack of provision of balanced and reasoned views when presenting the results of forensic science, when the requirement is for logic, balance, robustness and transparency; Expert prosecution bias; There is a considerable loss of knowledge both from scientists leaving the FSS and data enabling cold cases to be revisited; Cross force intelligence with regards to forensic data will now be lost. What is needed is a national centre to merge data; a very good example is the need to track sexual offence cases (as was performed by the FSS). This is an urgent matter and particularly apposite in the light of recent allegations surrounding case of Jimmy Savile (*inter alia*)

3. On the question of funding Forensic research (£2M p.a.), surely the Government could spend 1/1000th of its tank research budget on forensic research and not even notice the difference. The Government should be offering prizes to further forensic research, not stifle it. Essential R&D has to be supported somehow. One solution might be to insist that providers tender for specific work to be done. Otherwise research, which is important for progressing forensics in casework, may not be recognised or carried out. We in the UK were the best in the world of forensics, we have made many of the advances in forensic analysis over the last 20 years

4. There is little or no support for research in private forensic companies. They need the cash to assist research to solve problems that they see at the cutting edge. For example, maternal line analysis ie mitochondrial DNA; advances in salivary analysis *inter alia*. One of the problems is that a whole layer of

⁶ See, for example Home Office evidence to Home Affairs Select Committee Inquiry into E-Crime: <http://www.parliament.uk/documents/commons-committees/home-affairs/120828%20eCrime%20evidence.pdf>

experienced scientists has been lost following FSS closure, many of whom have irreversibly entered non-forensic roles. Another serious effect of the closure is that there is a suspicion that storage of retained materials may not be rigorously organised (as it was by FSS). How will this affect cold case reviews? How long are police forces required to keep these materials and at what cost?

5. The FSS archives were a hugely valuable resource. Now no-one can refer back to old cases and no-one can find out even what is there, if anything. The FSS reference collections such as hair types, wood types etc are apparently no longer either available or organised.

6. The company I started in Cambridge (Cambio Ltd) has been working for over 25 years to support Forensic services and promote the idea of an effective database. Professor Sir Martin Evans and I invented not only the first European PCR machine, but also the stabilised DNA standard for use by the FSS without any research funding and both discoveries entirely at our own expense. Because of the closure of the FSS, many companies have lost income, including my own.

7. Every day criminals are arrested because of the strength of the DNA database. Is the Government aware that at the closure of FSS, that the manufacturer's consumables database is destroyed (data protection act) and that cases such as Phantom Heilbron will cause ever increasing and completely unnecessary costs to forensic analysis? It is claimed that this case cost over 50M euros simply because there was no consumables database. The DNA profile of this totally innocent worker making equipment for forensic analysis was mistakenly tracked by a number of police forces as a possible serial killer all because she handled the equipment whilst making it.

8. The information databases and case studies of the FSS were all destroyed because it was considered to be the intellectual property of the FSS and is now no longer accessible to scientists needing to refer to them.

9. Professor Sir Alex Jefferies invented the basis for forensic DNA testing. The first case that came to the attention of the judiciary actually proved that a suspect (who had admitted the two rapes in question) could not possibly have done either. Pitchfork's name came to light only when a national appeal was launched to find the person(s) who had switched blood samples. This reputation for excellence in the scientific method is all due to a method called PCR (Polymerase Chain Reaction). Because the method is now so sensitive, further research needs to be carried out on DNA transfer issues. One of the problems that has arisen recently is that all these advanced methods are having to be explained at length in court since there is poor understanding of the problems in this area.

10. There are criticisms being raised about the quality of the CJS system where forensic scientists proactively work with the CPS. There seem to be too many last minute decisions on work to be done which should have been carried out at the outset of an investigation but were put off because of budget restraints.

11. The government closed down FFS research when it should have expanded it. The same goes for DNA research—we were leaders in this area. The first PCR machine built in Britain by British scientists is not even on display in our Science Museum (it is a Swiss machine made under the name of Roche) and I note with a certain amount of horror that even the structure of the DNA on display is wrong! We led the world in computing (eg Turing's Colossus), and Turing was never given the credit until recently. Is the same going to happen with the DNA story? Even Iceland is showing us how to do it; every Icelander has DNA on a database. The rest of Europe is well ahead of us in funding and goal setting.

12. British science is famous for giving away its inventions. Every diabetic in the developed world (346 million people) needs to monitor their glucose and glycated haemoglobin (HbA1c). The HbA1c test was invented by me in a British Medical School (Liverpool). The University saw neither profit nor academic accolade. The patents went to the USA because no-one was prepared to spend the money protecting the invention and the work is never cited in US (or other) publications. As the inventor, I am disgusted. As a country we should be ashamed. As Margaret Thatcher famously said to the then head of British Technology Group when discussing their failure to patent monoclonal antibodies "you got it wrong". It is still not too late to save Forensic Science research and for once we could get it right.

My answers to the specific questions in your brief:

- (1) The government does not seem to have an effective strategy for forensic science and even that which was working has been closed down for trivial advantages in cost-cutting.
- (2) The closure was done in such haste that the equipment was probably not sold to the best people.
- (3) The impact on the CJS is discussed above and the closure has put a halt to basic forensic research because university departments offering forensic training are not adequately funded to support research programmes.
- (4) The role of the regulator should be to monitor and deal with conflicts of interest as discussed above.
- (5) I have no knowledge of the size of the forensic market (except to say our share of the market is small (less than £2M) but the following companies should give the committee a reasonable idea; LGC, PFS; Key forensics, Cellmark; I gather that several are unable to sustain their employee base at present levels and are making staff redundant so that I would think there is likely to be a shake up in this sector.
- (6) I have no working knowledge of procurement of forensics services by police forces.

- (7) There is no doubt in my mind that the loss of the FSS workforce will result in a continued erosion of justice in this country simply because data bases are now unavailable, the specimen libraries are just one example. The lack of support for cold case reviews is deeply troubling.
- (8) I cannot comment on the archive since we do not access them—all we have been doing is to assist in the PCR amplification of forensic samples and this market has been seriously eroded as a result of the FSS closure.

January 2013

Written evidence submitted by Keith Borer Consultants

FAO SCIENCE AND TECHNOLOGY COMMITTEE

I was forwarded details by the Forensic Science Society of the consultation into the closure of the Forensic Science Service by the Select Committee on Science and Technology, but thought it appropriate to respond directly.

I am a Director of a consultancy which provides forensic science services to the legal profession throughout the UK, Republic of Ireland and overseas, and to some police forces/prosecuting authorities within the UK. Within the jurisdiction of England and Wales, part of our service is “defence examinations” of prosecution forensic evidence in criminal cases. Currently we conduct this exercise in around 2000 criminal cases per year, largely on instructions from solicitors and barristers. I believe we perhaps have a unique perspective derived from a prominent role in the scrutiny and evaluation of the provision of forensic science to police forces in the prosecution of criminal matters.

As regards the questions raised in the consultation document, I would respond as follows.

Q1. Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R & D and criminal justice?

A. In my view the current provision of forensic science services to police forces and the prosecution component of the Criminal Justice System does not represent effective implementation of a coherent strategy. Irrespective of whether the government’s strategy for forensic science, either in research and development or criminal justice, would be effective if properly applied, our experience suggests there is either an ineffective strategy or ineffective implementation.

Q2. Did the FSS transition and closure run smoothly and within budget?

A. I do not have direct knowledge of whether the FSS closure and case transition was within budget, but it is our experience that it did not run smoothly in all cases. Applications to the FSS Archive for copies or delivery of FSS case files, were met promptly in only a small proportion of cases. The process was more often slow and sometimes incomplete. There was also inconsistency in the way disclosure was provided. It was of particular concern to us that, while the archive could usually provide the case file (or a copy thereof), they often seemed unable to recover other retained material. Irrespective of whether the closure of the FSS was considered a success, the integrity of the archive files and materials continues to cause concern.

Q3. What impacts have the FSS’s closure had on (i) the criminal justice system and (ii) forensic science R & D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained?

A. It is our experience that quality standards and accreditation have generally been rigorously maintained. The impact of the FSS closure on the criminal justice system and R & D, has been a reduction in the input of operational forensic scientists into these processes. There seems to be little room within the commercial system currently operating for forensic providers to supply R & D or training input, unless paid to do so. In addition, their input into the criminal justice system is based on authorisation provided by those who instruct them, largely the police, which seems to reduce to a minimum their professional evaluation of forensic results. This has led to the wholesale production of commodity test results but limited attempt in most cases to aid the Criminal Justice system by assessment of what they mean evidentially. This type of evaluation is exactly what is required of us in “defence examinations” and unfortunately we find ourselves producing many more critical reports. This can only be a reflection of either poor provision of information to forensic science professionals acting on behalf of the prosecution or their involvement being limited in a way that excludes professional evaluation of their findings. This professional evaluation of forensic findings can be a powerful evidential tool and has largely become expected by barristers from their forensic experts. There have been some excellent examples of this, generally in high profile cases (examples of which can be provided). We have experience of many more cases, including murders, where the evidential value of forensic provision has been compromised by the current system, in a way that I believe would not have occurred with the FSS (again examples may be provided if required).

Q4. What should be the role of the Forensic Science Regulator?

A. The role of the Forensic Science Regulator, and I appreciate that it would be hugely difficult, should be to attempt to replicate the professionalism and depth of experience provided by the Forensic Science Service in the modern commercially driven forensic procurement/provider arrangements. This may be an almost impossible task at a time of recession. It should be important that Mr Rennison's role is not limited to simply maintaining standards by which laboratories generate examination and test results, but extends to the evaluation of their evidential value. It should also ensure a mechanism by which the Criminal Justice System can benefit from professional forensic evaluation, even when the investigating police forces have chosen not to incur the cost of that provision. Otherwise there is a risk that public confidence in forensic science to provide answers and insight at court, will progressively diminish. If the strategy of an investigating police force is to achieve just sufficient forensic evidence to justify a charge against a person, that should not remain all that becomes available to the Court if they need more. Particularly given the Judiciaries declared preference for the evaluation of forensic evidence to be agreed between prosecution defence experts, where possible prior to trial.

Q5. What is the size of the forensic market and how stable is it?

A. This is not a question I can address given that the size of the forensic market is largely dictated by the procurement process between police forces and the forensic providers tendering for those contracts. Our particular experience is in the scrutiny of the end product. It is evident however, that as Police forces seek to reduce the spend on forensic services, there is an increase in forensic examinations conducted on behalf of defendants (or on Court instructions) largely funded by Legal Aid.

Q6. How are forensic science services procured by police forces and could procurement processes be improved?

A. From my experience it could be improved considerably. We find considerable variation, even between neighbouring Police forces, in their effectiveness in setting forensic strategies and authorising procurement. The provision appears focused on individual test results, which it seems to achieve effectively, but generally neglects the requirements of the criminal justice system. I also believe there has been limited effort applied to informing barristers and solicitors, both prosecution and defence, on how the procurement process has changed forensic science provision and the implications to the criminal justice system that flow from these changes. From my own experience of providing lectures to solicitors and barristers on this precise issue, it is clear that it is not widely understood.

Q7. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)

A. Yes! In addition and perhaps more importantly it has led to loss of intellectual wealth through the process by which many experienced forensic scientists, who could exercise that experience to its full capacity within the FSS, are now restricted to limited forensic science provision. It is perhaps the limitation of input from these forensic science professionals to the investigation of criminal offences and to the criminal justice system, that represents the greatest loss of intellectual wealth at this point in time. Perhaps not surprisingly this issue represents the greatest source of complaint and discussion between our experts and various forensic professionals, when we are scrutinising their findings.

Q8. Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

A. The current arrangements for the provision of case files by the Forensic Science Service archive seems satisfactory although neither swift nor responsive to tight deadlines caused by trial dates. This is however becoming less of an issue over time. We do have concerns regarding their ability to provide retained forensic debris/materials as some requests have been unsuccessful. There should be arrangements in place, or regular reviews, to ensure that not only does the overall integrity of the archive remain intact but also that the retained materials (loose debris, fragments, fibres, hairs, microscope slides containing cellular material etc.) remain available and traceable. These types of materials have previously proved vital for the resolution of long term unsolved crimes and appeals against conviction. Loss of this material or inadequate traceability has potential to seriously hamper future cold case reviews and appeals, particularly if there are advances in forensic techniques.

GENERAL COMMENT

The nature of our work and the number of cases in which we scrutinise the forensic provision of all the major forensic providers to police forces in the UK, means we have a close working relationship with the professional staff of those providers (many of whom previously worked for the Forensic Science Service) and a clear understanding of the pressures that have been applied to forensic provision over the last few years. As a barometer of attitudes, there is clear indication that the overall quality of forensic science provision has not improved in the perception of forensic science professionals, notwithstanding that budgets may have been reduced and some testing may have become more focused. It is our direct experience that forensic science strategies applied to cases (which drive the forensic provision) are not always effective and often result in

wasted resources. We also observe many cases in which important forms of forensic examination and analysis have been omitted when they should not have been. While the relationship that now exists between police forces and forensic science providers may be more focused on the requirements of police forces, it appears to us that the needs of the criminal justice system have not been given appropriate consideration. We would be happy to provide further information or casework examples if the Science and Technology Committee considers it appropriate.

January 2013

Written evidence submitted by Mrs Beryl Burton

1. I am a member of the public. My knowledge of Forensic Science provision is derived from what I have heard and read.

2. I am concerned that Forensic Science is now wholly in the private sector. This means that companies will have to make a profit otherwise they will close down. Due to being in a market environment, decisions on tests required may be curtailed due to cost rather than whether or not a further test would provide more accuracy. In an interview on B.B.C. Radio 4, a member of the Forensic Science Service gave an example of her advice being over-ruled by a member of the police. She felt that the police were taking cost into account. Of course, the police could say that the Forensic Science Service wanted to do another test to make more money, an uncomfortable and unsatisfactory position for both.

I am uneasy about the police being both test result provider and prosecutor. I would be happier if independent providers were doing the testing.

3. If companies fail in the private sector, how will provision of forensic science services continue? Will they have to be done in other countries which could result in a lack of transparency and control over standards.

4. I understand that very few police forces are accredited at present. This situation must be rectified as soon as possible and their standards monitored. The police are losing ground in the public's estimation and miscarriages of justice will exacerbate that situation.

5. The Forensic Science Service, supported by the Government, has gone. It may well have been top heavy and needed some streamlining and changes of practice such as working hours. However, it was full of knowledge, experience and expertise, and provided a safe, stable, impartial and secure base for the provision of material to put before the courts.

6. The U.K. sees itself as a leading developed country and I see justice for the people as important as education and a Health Service. I am not convinced that either the police or the private sector will be able to provide it.

January 2013

Written evidence submitted by Dr Christopher Maguire BA, MBA, PhD

I was formerly employed by the Forensic Science Service (1981–2010) where latterly my position was that of Senior Forensic Consultant in the International Division.

I am currently employed as a Reader in Forensic Science in the Northumbria University Centre for Forensic Science; my position is primarily a research post. My current research interests include:

- DNA profiling in human identification:
 - Familial Searching, Disaster Victim Identification, Relationship Analysis.
- The “Value” of forensic science in the Criminal Justice System.
- The econometrics of forensic markets.

My research income has included a £285,000 contract with the Department of Public Safety, Canada to advise “A Feasible and Sustainable Model for Forensic Services Delivery in Canada”. This work was completed in April 2012.

These comments may, or may not, reflect those of my colleagues but I understand that a collective response may be submitted to you from the Northumbria University Centre for Forensic Science.

The following comments on some of the questions posed by the Science and Technology Committee are based on my own experiences and research and reflect my personal opinions.

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

I do not believe that the Government has any strategy for the provision of forensic science in England and Wales. The delivery of forensic science has been simply driven by lowest perceived cost.

In the years 1997–2007 the forensic science providers (FSPs) were able to compete for work from police forces on a number of terms; service volumes, turn-round times, added-value services, research and innovation and price. Individual police forces let contracts to FSPs under Service Level Agreements, usually of three years duration. (This is still the way the Northeast police forces operate; they will be tendering for their forensic provision for the first time in March 2013).

The National Policing Improvement Agency (NPIA) established the National Forensic Procurement Project in 2007 to:

“... formulate a strategy for future procurement of forensic analysis, to develop a standardized User Requirement, Specifications and Terms and Conditions and to subsequently undertake an EU procurement to select suppliers under a national (forensic) framework agreement (NFFA)”.

Note that the term used is “forensic analysis”; indicating the desire to commoditize forensic science into a series of “tests” and removing the concept of a “service provider”; downplaying the professionalism of the forensic scientists and the “value” or “contribution” the external FSPs could make to the CJS.

The police forces were to “run mini-competitions within the framework on a regional basis” with the NPIA supporting the procurement process; defining the product to be delivered, the product volumes, the expected turnaround times and the quality standards to be met⁷. There was no value placed on research and innovation or client/service provider partnerships. Under this procurement process the only parameter on which the FSPs could compete was “Price” and setting the NFFA under a regional basis meant that significant revenues could change hands as contracts were won and lost by FSPs.

An initial tender exercise was carried out by the NPIA in order to register FSPs as accredited suppliers, such that when forces or regions wanted to procure forensic science support, very little additional work would be required on behalf of the tendering authority or the FSPs.

FSS Ltd. commented to the Parliamentary Home Affairs Committee (2011):

“In reality, the majority of the tenders that have taken place have selectively utilized parts of the framework, but have also introduced other bespoke elements, meaning each tender is a lengthy and relatively complicated process (and therefore also expensive) for all involved”.

And:

“Police take-up of innovation has ground to a halt and it seems that opportunities to introduce innovative solutions to criminal justice issues are not developed”.

However, the police have realized significant savings in the commoditized product areas, as the competitive tendering model drove down the market price for these tests. For example, in 2005 the price of a DNA database (CJ) analysis was about £40; by 2010 this had fallen to less than £20.

The introduction of the NPIA National Forensic Framework Agreement in 2007–08 created a significant barrier to new entrants. FSPs had to respond to an initial tender exercise to be registered a suppliers under the NFFA procurement. Without this accreditation a firm wishing to enter the market cannot compete for police business. It is not clear to me how a new firm wishing to enter the forensic market can now obtain such accreditation.

In its response to the Parliamentary Home Affairs Committee (2011) FSS Ltd. noted:

“Rather than establishing and cementing a truly competitive, healthy market, the NFFA has contributed to its destabilization, introducing significant uncertainty for existing FSPs and introducing barriers for new entrants”.

It is clear that the stability of the forensic market is now crucial to the Criminal Justice System of England and Wales. In my opinion the forensic market needs significant government regulation and supervision such that the remaining forensic science suppliers can adequately recover their costs, compete to meet the changing market conditions and be incentivized to invest in research and development.

In reality, following the closure of the FSS there has been little incentive for the forensic science suppliers to invest in significant primary research. In my opinion the current FSPs undertake developmental research which is largely designed to minimize their internal costs and increase their competitive advantage.

I understand that one of the current suppliers purchased an advanced FSS DNA interpretation application in the aftermath of the FSS closure and has deployed this within its own organization. I suggest that it would have been more beneficial for Criminal Justice System in England and Wales to have made the fruits of the (government funded) FSS R&D programme available to all of the forensic science suppliers.

Sir Bernard Silverman suggested that the Research Councils (RCUK) and Technology Strategy Board (TSB) would make funding available to support university-based forensic science research. I have to suggest that this was a naïve view. In my experience it is extremely difficult to make the case for research funding for applied sciences to the Research Councils or to the major sources of charity funding. Even forensic science researchers with particularly strong backgrounds (like Professor Peter Gill) have been forced to move abroad to obtain

⁷ FSS Response to Parliamentary Home Affairs Committee—The New Landscape of Policing (June 2011) <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmhaff/writew/939/nlp15.htm>

satisfactory research conditions. As I state above, I have obtained research funding from Canada and other colleagues have been successful in obtaining funding from the EU.

I suggest you take note of the recent solicitation from the National Institute for Justice in the USA which will fund projects in “Applied Research and Development in Forensic Science for Criminal Justice Purposes” (CFDA No. 16.560). The solicitation states:

With this solicitation, NIJ seeks proposals for applied research and development projects that will: (1) increase knowledge or understanding necessary to guide forensic science policy and practice or (2) result in the production of useful materials, devices, systems, or methods that have the potential for forensic application. The intent of the Applied Research and Development in Forensic Science for Criminal Justice Purposes Program is to direct the findings of basic scientific research, research and development in broader scientific fields applicable to forensic science, and ongoing forensic science research toward the development of highly discriminating, accurate, reliable, cost-effective, and rapid methods for the identification, analysis, and interpretation of physical evidence for criminal justice purposes.

If only the UK Government supported forensic science and R&D in the same way.

2. Did the FSS transition and closure run smoothly and within budget?

In my opinion the closure of the FSS was anything but smooth. The FSS needed to reinvent itself following a succession of years in which it failed to compete in a changing market and in which it continued to lose work to other suppliers. The FSS underwent a significant programme of change involving realignment of services, laboratory closures and staff redundancies to try and maintain an appropriate position in the market.

In December 2010 the government announced the closure of the FSS with effect from 31 March 2012. There was an expectation from the government, the police, ACPO and the National Policing Improvement Agency that the remaining suppliers would be willing to expand their operations to take up the service delivery contracts currently offered by FSS Ltd. The timescales were incredibly short and, in my opinion these companies were under extreme pressure to take on this additional work.

In addition, the major police forces; including the Metropolitan Police (MPS), West Midlands Police and West Yorkshire Police continued to in-source significant proportions of their forensic science provision. In this way the police became “suppliers” as well as “purchasers” of forensic science and became competitors to the traditional FSPs. I also believe that by insourcing such work many of the real costs became hidden; there was a perception that services provided internally by the police would always be cheaper than those procured externally.

The issue as to whether this transition ran to budget is interesting. Does the Government actually know how much the closure of FSS has cost? The Rt Hon William Hague, Sec State for Foreign Affairs wrote to the European Commission in December 2011 stating that the closure of FSS required support of about £100 million. I believe the costs are significantly higher and include:

Support for operational losses	£30 million
Staff exit costs	£55 million
Liabilities	£32 million
Support for transition process	£60 million
Loans written off	£18 million
National Archive (10 years)	£20 million
Provision of lab in West Yorks	£21 million
Met Police forensic science	£60 million ⁸

In addition the government admitted a pension shortfall provision of £20 million but, if it chose to wind up the FSS pension scheme it has a current liability of about £111 million.

The actual costs of FSS closure must lie somewhere between £300 and £350 million if all of the costs of the police insourcing of forensic science activities formerly delivered by FSPs are taken into account. The question is whether the closure of FSS warranted such expenditure. A simple Net Present Value calculation shows that this level expenditure would have maintained FSS *in perpetuity* even if the government pumped in £1 million per month.

3. What is the size of the forensics market and how stable is it?

In 2011 the overall spend by the police in all aspects of forensic science was approximately £450 million per year.⁹ Of this, the Police Sector was worth approximately £275 million and the remaining £175 million was available to the “external” FSPs (termed the “Accessible Market”).

⁸ (£6 million per annum for 10 years—operation of laboratory plus 120 staff)

⁹ House of Commons Science & Technology Committee Report (2011)

At that time ACPO anticipated that the “Accessible Market” was set to shrink rapidly with the overall value estimated to fall to £110 million. This market change was predicted for a number of reasons:

- Falling crime rates resulting in a fall in forensic submissions.
- Government decision to cut police budgets by 20%.
- Increasing police in-sourcing of forensic science.

The timescales for this change were unclear; ACPO estimated 2014 but others predict this would happen much earlier; perhaps by 2011–12. This was a significant issue for those forensic suppliers which the Government expected to pick up the 60–65% market share which became available as FSS Ltd. closed. Was it ever good business sense for a profit-based, commercial FSP to take on the liabilities for staff and capital equipment in a market that was set to fall in value by 35% in the two to three years? I suggest it was not and the reality is worse than that predicted.

I estimate the current accessible forensic market is worth about £70 million and that few, if any, of the forensic science suppliers has a sustainable business.

LGC state in their annual report and accounts of 2011 that:

“All of the Group’s divisions saw growth in turnover except for Forensics which saw reduced submissions and casework, principally as a result of pressure on public spending”.

Indeed, as a result of the downturn in their forensic business LGC have announced this week that there would be significant and immediate staff redundancies (200+ scientists and support staff) across the Forensic Division. This is as a direct consequence of LGC losing Metropolitan Police work in DNA services and other work in the Northwest.

As the current tenders in the Southwest and Southeast regions are intent on splitting work amongst forensic suppliers LGC faces the prospect of losing more work. In March 2013 the Northeast police forces are tendering for forensic provision for the first time. The work is currently provided by LGC but if the tender is awarded to another supplier the 50 (ex-FSS) staff at the Wakefield laboratory could also lose their jobs.

The condition of the forensic market in England and Wales is uncertain and extremely fragile. LGC is owned by Bridgepoint, a European venture capital group, and the other major forensic supplier Orchid Forensics is owned by LabCorps, a USA-based, Life Sciences Company. What would happen to the provision of forensic science in England and Wales if either of these companies decided to withdraw from the forensic science market?

4. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)

It has been difficult to find out what has happened to the former staff of FSS Ltd but it is clear there has been a very significant loss of expertise from the profession.

About 120 staff in the Lambeth laboratory transferred to the Metropolitan Police and a further 25 staff were transferred to LGC in Wakefield from the Wetherby laboratory. LGC recruited a further 25 staff for Wakefield and perhaps as many as 100 more across other sites. It is difficult to know how many staff were taken on by other suppliers as FSS closed. I estimate that less than 400 staff were taken on by the police or forensic science suppliers.

The recent announcement within LGC of further staff cuts is disastrous news for those staff and a further blow to the profession.

A handful of scientists became academics in a variety of universities and a further 25 or so have set themselves up as independent consultants. I estimate that the majority of the ex-FSS staff have left the forensic science profession, have retired or are not currently working. Only two or three of the former FSS R&D staff remain with mainstream forensic science suppliers. This is a huge loss of intellectual wealth to the UK. Indeed, I have been offered employment in the USA which I have accepted.

International colleagues to whom I have spoken find it difficult to comprehend that the UK Government allowed the closure of one of the world’s most highly regarded forensic science agencies.

I would be happy to provide further information or comment to the Science and Technology Committee if required.

January 2013

Written evidence submitted by J W F Harriman

INTRODUCTION

I have been an independent firearms forensic examiner since about 1985. I am a sole trader with my own practice. During an average year I will give expert advice in some 30–40 cases, mainly for the Defence.

EXPERIENCE AND QUALIFICATIONS

- Director of Firearms since 1991 for the British Association for Shooting & Conservation, the UK's largest shooting organisation with 130,000 members.
- Served in the Territorial Army—Royal Artillery & Royal Armoured Corps—from 1974 to 1991; and then on the Army Reserve until April 2006, retiring with the rank of Captain.
- A former registrant of the Council for the Registration of Forensic Practitioners. (CRFP closed 31 March 2009).
- Member of the Academy of Experts (leading professional group for expert witnesses).
- Professional Member of the Forensic Science Society.
- Independent advisor to the Technical Sub-Group of the Association of Chief Police Officers Firearms and Explosives Licensing Working Group (ACPO FELWG).
- Member Home Office Historic Firearms Reference Panel.
- Fellow of Society of Antiquaries of London.
- Visiting Lecturer in Firearms and Ballistics at Wolverhampton University.
- Forensic advisor to the Practitioners Group. (A panel of representatives from the Home Office, ACPO FELWG and the British Shooting Sports Council).

ANSWERS TO THE COMMITTEE'S QUESTIONS

As a firearms forensic examiner I have confined my answers to that particular specialist field.

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

In my opinion, there is no integrated government strategy for forensic science in the UK. Certainly, there has been no government involvement of which I am aware in the field of firearms examination. Accordingly, there is no R&D programme and no real support for the criminal justice system.

2. *Did the FSS transition and closure run smoothly and within budget?*

I am unable to comment on this.

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

In my experience the closure of the FSS has caused a dramatic increase in the use of police support staff as expert witnesses in firearms cases. They tend to be force armourers or firearms licensing enquiry officers. They are used because of the cost implications associated with instructing a commercial forensic provider coupled with lead times for submission of reports.

Their training is minimal and most are required to prepare evidence-ready reports after attending a two-day basic course from a commercial training provider. In my experience their ability varies considerably from those who are not competent to undertake firearms examinations to those who can be relied upon to deal with basic classification issues. I am aware of several cases where police support personnel have been allowed to give evidence when they were clearly *non peritus*. This is especially the case when the issue before the court is whether a firearm is an antique for the purposes of the exemption at Section 58(2) of the Firearms Act 1968.

The courts appear to be uncritical of *non-peritus* police support staff who appear as experts. If any doubt as to any expert's credibility exists, then the judge should direct that a *voir dire* hearing is held to test that expert's credibility.

The use of police personnel invariably raises questions of their impartiality. In my experience, most police employees feel that they need to sustain their employers' objectives. Equally most are unlikely to be robust if subjected to pressure by senior officers. The virtue of the FSS was its separation from the police service.

As a general principle, I suggest that it is not in the interests of justice for the police service to have its own forensic arm. There should always be clear blue water between forensic scientists and law enforcement officers.

Since the closure of the Council for the Registration of Forensic Practitioners (March 2009) there has been no accreditation for forensic firearms examiners. This is a disturbing situation as several offences within the Firearms Acts carry mandatory custodial sentences on conviction, unless the judge finds there are exceptional

circumstances. When a Defendant's liberty is a stake and then subject to a mandatory gaol sentence, it follows that the Crown's expert adviser must be a properly accredited person.

There is a need for some form of accreditation system for the following aspects of firearms examination.

- Classification.
- Functionality and potential for lethality.
- Gunshot residue.
- Comparative Microscopy.

4. *What should be role of the Forensic Science Regulator?*

The role of the Regulator is adequately defined as it is now. The Regulator's website has some useful material for experts as downloads.

5. *What is the size of the forensics market and how stable is it?*

I can only advise on the area of firearms examination. As gun crime is rare in the UK, the size of the market is small. However, it is stable because criminals always seem able to obtain firearms even though many classes of guns have been prohibited from private ownership.

There are a small number of larger commercial forensic providers eg LGC Forensics, Key Forensic or Manlove. They tend to deal with most police and Prosecution work.

There are about six active independent providers—sole traders and one consultancy group who by default deal with Defence work.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

Basic firearms forensic work is often given to police support staff eg armourers or licensing g personnel. This is unsatisfactory as few are properly qualified.

More serious work tends to be given to the larger commercial. If contracts are awarded on a value for money basis after a "beauty parade" of potential providers then it is hard to see how this might be improved.

Police forces could obtain good quality initial forensic advice by going to a local independent provider at rates less than the commercial firms and with quicker lead and turnaround times.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

In my opinion, the scientists in the FSS Northern Firearms Unit and the London laboratory were a world class pool of expertise in firearms forensic matters. The dispersal of this pool is a disgrace. The UK has lost a valuable and irreplaceable asset as a result.

Some former FSS personnel have retired and other have found new roles within NaBIS and Met Police Firearms Unit. A small number have limited work from the larger commercial providers and one has set up as an independent examiner. Presumably the rest have either left forensic science or moved to another discipline within it.

The FSS firearms examination community was competent, professional and composed of agreeable people with whom it was a pleasure to work. I counted many friends amongst it and mourn its passing.

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

I have little experience of this aspect of the FSS's closure. However, on the one occasion when I needed to review an FSS file, it was made available to me by the Met Police Firearms Unit in a speedy and efficient manner.

OTHER MATTERS

As a Defence examiner, I often experience considerable difficulty in obtaining access to firearms held as evidence. Often a court order has to be obtained to permit me to have access. My examination is often conducted in a police property store or interview room under less than ideal conditions and always under time pressures. It is almost impossible to have evidence left with me although I have the means to secure it and the necessary authority to possess it legally.

There is no equality of arms between Prosecution and Defence in terms of costs. The CPS will accept any commercial charges from its preferred provider. The Defence is always at the disadvantage in that where legal

aid, is concerned prior authority must be sought. If granted there is a schedule of maximum charges which are always lower than those of the commercial providers used by the Crown.

January 2013

Written evidence submitted by the Criminal Cases Review Commission

1. The Criminal Cases Review Commission (the Commission) is the body responsible for investigating possible miscarriages of justice in England, Wales and Northern Ireland. It was established in 1997 by the Criminal Appeal Act 1995. The Act sets out that the Commission can refer a criminal conviction, verdict, finding or sentence to the relevant appeal court when it considers there is a real possibility that it will not be upheld.

2. The Commission was represented, during the closure of the Forensic Science Service, on the Forensic Transition Board Advisory Group as well as the Forensic Archive working group. The Commission is currently represented on the Forensic Policy Group (Home Office) and the Forensic Archive user group.

3. The Commission is grateful for this opportunity to contribute to the work of the Committee and has provided comments to the questions raised as appropriate.

1. Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

4. The Commission contributes to the development of the Government's strategy for forensic science through its membership of the Forensic Policy Group.

5. The Commission is not in a position to make further submissions in this area.

3. What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)

6. The significant majority of the casework currently under review by the Commission concerns prosecutions brought before the closure of the FSS. It follows that the Commission is not now in a position to offer evidence as to current quality standards in forensic science.

4. What should be the role of the Forensic Science Regulator?

7. The Regulator has a crucial role in setting and maintaining standards in forensic science and reporting the effect of lapses in quality standards to relevant organisations within the CJS.

8. The Commission enjoys a positive and valuable working relationship with the Regulator, enhanced both by common interests and by the location of both bodies in central Birmingham.

9. The Commission would support any proposal to enhance the role of the Regulator, but has no specific submission to make as to the development of that role.

5. What is the size of the forensics market and how stable is it?

10. This issue is not within the scope of the Commission's work.

6. How are forensic science services procured by police forces and could procurement processes be improved?

11. This issue is not within the scope of the Commission's work.

7. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)

12. The Commission can offer no relevant evidence on this issue.

8. Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

13. The Commission is represented on the user group for the Forensic Archive and was represented on the working group formed by the Forensic Transition Board to make recommendations in respect of the creation of the archive.

14. The Commission was concerned, during the FSS closure process, that its ability to access files and materials held in FSS files would have been substantially inhibited had the archive been placed in the private sector. Specifically, the Commission's statutory power to order the preservation and production of material (s17, Criminal Appeal Act 1995) is limited to files and materials held by public organisations.

15. In the event, because the Forensic Archive was created as a public body, the Commission has experienced no difficulty in exercising its statutory powers in respect of the preservation and production of files and materials from the archive. The Commission continues to rely on a contractual clause where materials are held by a forensic service provider rather than the archive. The Commission would strongly support the continued delivery of the archive through a public body.

16. The Commission observes that the service provided by the archive might be enhanced were provision to be made for in-house scientific advice. Specifically, a forensic scientist employed by the archive might usefully provide expert advice to users as to the extent, nature and condition of materials retained in the archive and, in appropriate cases, as to the susceptibility of retained materials to modern methods of scientific testing.

17. Such advice was previously available to the Commission, and other users, from the FSS through the office of the Chief Scientist. Since the closure of FSS, a forensic service provider must be engaged where such advice is required and the materials held by the archive recovered by that provider for assessment. Since all users of the archive are public organisations, this process is potentially costly to the public purse, as well as time consuming.

18. Although the provision of expert advice by the archive would increase the operating costs of that organisation, any such increase would be considerably less than the cumulative costs incurred by the various public sector users of the archive in engaging external forensic service providers in relevant cases.

19. In the absence of the provision of expert advice and assistance by the archive, the archive would be substantially more effective were the materials held to be catalogued comprehensively and that catalogue made available to users.

January 2013

Written evidence from Cellmark Forensic Services

DECLARATION OF INTEREST

1. Cellmark Forensic Services (Orchid Cellmark Ltd) is the second largest private Forensic Service Provider (FSP) in England and Wales. Cellmark employs approximately 500 staff primarily involved in forensic analysis at its laboratories in Abingdon, Oxfordshire and Chorley, Lancashire. Cellmark has provided forensic DNA services for 25 years and delivers a full forensic casework service to the police. This includes crime scene attendance, laboratory evidence recovery, a comprehensive range of analytical services and the presentation of results and expert interpretation in court. Cellmark's laboratory services are accredited to ISO17025, with scene attendance accredited to ISO 17020. The Company is currently contracted to support over 75% of the police forces in England and Wales.

Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

2. We believe that the Government's strategy to allow a private forensic marketplace to develop and to encourage competition between regulated Forensic Service Providers (FSPs) has delivered cost effective, high quality and timely forensic services in support of the Criminal Justice System.

3. However, the outsourced forensic market is shrinking due to a number of factors: reduced expenditure on forensic science (as in all areas of public spending); lower reported crime rates; and the strategy of investing in the development of in-house forensic capabilities within individual police forces. The planned implementation of Streamlined Forensic Reporting may also impact on police spend on forensic science. Increased competition can of course stimulate development activity and encourage innovation to reduce cost, but the shrinking market will also have the effect of reducing the attractiveness of the market for private investment.

4. The Government's current forensic procurement strategy has also added significant complexity and therefore cost to the delivery of forensic science, with the potential for an increased administrative burden diverting resources away from service delivery. This impacts particularly in complex casework where the coding structure is also less well suited for capturing the broader forensic review and assessment activities.

5. The relatively modest size of the forensic market influences its attractiveness for R&D investment and current predictions are that with the current strategy the market will continue to shrink. In addition there is a relatively long lead time in forensic science from innovation to presentation in the courtroom and this affects the potential return on investment. Previous government expenditure on forensic R&D, channeled through the Forensic Science Service's research activity, is no longer available and while efforts are being made by the Government to encourage greater interdisciplinary networking and involvement of the university sector, we are not aware of any specific Government funding identified for forensic R&D.

Did the FSS transition and closure run smoothly and within budget?

6. Despite the challenges, from the perspective of a FSP the management of the transitional arrangements was well organised and delivered to the agreed timescale. The forensic community and police forces worked well together demonstrating great flexibility and coordination and, although service delivery timescales were affected, forensic work was prioritised to meet the requirements of the Criminal Justice System.

7. This was a very significant change in the UK forensic marketplace. When the closure of the Forensic Science Service (FSS) was announced in December 2010 it was estimated that the FSS was carrying out approximately 60% of the police's outsourced forensic work in the England and Wales. With the exception of the Wetherby laboratory the FSS stopped accepting new work in October 2011, just 10 months after the announcement, and closed in March 2012. The transition of such a large volume of work within such a short timeframe presented significant logistical difficulties particularly given the very labour intensive nature of much of the work.

8. Within just 10 months several procurement exercises were completed and staff and accredited laboratory capacity was developed within other FSPs as well as within the Metropolitan Police (despite being hindered by the fact that many FSS staff could not be released until after the work was moved to other suppliers in October 2011). Working procedures were agreed and developed with each police force and the work was successfully transitioned in a phased manner. Throughout this period forensic services were maintained to support the Criminal Justice System.

What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples).

9. (i) We are not able to comment on the impact of the FSS's closure on the Criminal Justice System.

10. (ii) *Forensic Science R&D*

The closure of the FSS clearly curtailed the R&D activity at the FSS and was discussed in detail in the previous HO Select Committee review and the subsequent Forensic Science R&D review by Professor Silverman (published in June 2011). These studies confirmed that research and particularly development activity is carried out within other FSPs either individually or through collaborative exercises, and research with forensic applications is carried out within academia and the wider research community as well as by equipment manufacturers and technology providers.

11. The Silverman review made several key recommendations which have been implemented. These included for example, reinforcing the contractual requirements for R&D in the Procurement Framework for forensic science provision, and the facilitation of increased communication within the forensic R&D landscape by establishing a regular cross-disciplinary conference and a Knowledge Transfer Network. However, we are not aware of any specific Government funding identified for forensic R&D.

12. *Forensic Training*

Although the forensic training capacity provided directly by the FSS has been lost, the industry retains a significant training resource, both for internal staff advancement and for external provision to support the police in this country and overseas. Indeed additional capacity was and continues to be developed within FSPs and police run laboratories by delivering significant levels of training, in addition to the recruitment of new staff. Cellmark has a well developed approach to staff development and training which has expanded in recent years in line with increased workload and the broader range of forensic disciplines provided by the Company. This means that Cellmark, along with other forensic science organisations, provides comprehensive training for the development of new and existing forensic scientists to ensure the ongoing quality and expertise of forensic work delivered to the police and the Criminal Justice System. In addition, a number of specialist forensic consultancies have emerged which provide additional resource to supplement training capacity.

13. *Quality Standards and Accreditation*

When the closure of the FSS was announced there was already a well developed forensic market with suppliers working to agreed quality standards. Cellmark for example has been accredited to submit profiles to the NDNAD since 1998 which has required it to operate to exactly the same quality standards as the FSS.

14. Quality and Accreditation standards for FSPs have continued to be well defined and maintained. Indeed FSPs have never been more regulated—the combination of the NFFNG requirements, the Forensic Regulator and the UK Accreditation Service ensures that forensic delivery by FSPs meets ISO17025 accreditation standards and the Forensic Regulator's Codes of Practice. In 2012, for the first time, quality accreditation was extended to forensic delivery at the crime scene with the introduction of ISO17020.

What should be the role of the Forensic Science Regulator?

15. We support the current role and responsibilities of the Forensic Science Regulator. The Regulator should define the Quality and Accreditation standards for the delivery of forensic science to the UK Criminal Justice

System and provide independent oversight of the quality of service delivery from the recovery of evidence at the crime scene to the delivery of expert witness testimony in the court room.

What is the size of the forensics market and how stable is it?

16. The size of the forensic market outsourced by police in England and Wales through the National Forensic Framework (including the outsourced work of the police forces in the NE of England and the Metropolitan Police Service) has declined due to price reduction, lower reported crime rates, pressure on public expenditure and increased in-sourcing. This market expenditure is now believed to be approximately £80 million to £100 million per year.

17. The stability of the forensic market is as yet unknown. The value of the market has reduced annually for a number of years and we believe that it is set to reduce further in 2013. The stability of the existing market suppliers will be influenced by the relatively short contracts awarded through the procurement process and the potential for large swings in market share at each tendering exercise.

How are forensic science services procured by police forces and could procurement processes be improved?

18. In 2012 the second National Forensic Framework (National Forensic Framework Next Generation) was issued and potential suppliers were invited to qualify. The qualifying process permitted a maximum of six suppliers to become eligible to bid in future tenders for each of the 13 forensic Lots. The forensic Lots comprise 10 single forensic disciplines (such as DNA testing or drugs analysis), one multidisciplinary trace evidence Lot, a case review Lot and a general forensic casework Lot which comprises all the forensic disciplines.

19. Each Lot contains a number of analytical product specification documents that detail what is expected of the forensic service provider for each forensic “test” or “service” in terms of evidence processing, accreditation requirements, how the results should be delivered and how the work should be charged.

20. Using the Framework documents Police forces, generally acting as a regional group, undertake procurement exercises with the suppliers on the framework, awarding their forensic work for a period of two to four years.

21. Forensic procurement has delivered a number of positive benefits:

- An increased number of larger forensic providers.
- A quicker and more streamlined tendering process—the first regional procurement started in 2006 took approximately two years to complete—current exercises are generally completed in six months.
- Standardised product specifications have generally resulted in defined requirements.
- Clear accreditation standards.
- Reduced pricing and improved service TRTs.

22. However we believe that the procurement process could be improved. Some product specifications have become too complex in an attempt, we believe, to provide flexibility and attribute specific costs against each activity at a very detailed level. This has introduced additional administrative burden and cost into the delivery of forensic science, both for the submitting police forces and forensic suppliers. Two examples:

- A. In the Casework Lot, the examination of a forensic exhibit to recover blood and other body fluids, and, where appropriate to interpret blood distribution patterning is captured with product specifications which in 2008 contained four pricing points. Now there are 29 pricing points.
- B. In the DNA Lot, the recovery of DNA from an exhibit and the subsequent DNA profiling for submission to the National DNA Database is detailed in product specifications which had four pricing points in 2008. There are now 26 pricing points.

23. Although the procurement framework could eventually result in standardised forensic delivery, because there are currently overlapping frameworks and contracts, and because changes have been made by forces at each tendering exercise, in April 2013 suppliers may have to operate with four different sets of product specifications being delivered to different police force regions. This adds complexity, administrative burden and cost, and detracts from the scientists’ focus on delivering forensic science. The further standardisation of police requirements would assist with efficiency.

24. Forensic work is tendered in large quantities (the latest tender involved three of the nine police regions— a third of the country’s forensic work in a single tender). Sometimes tenders are for single suppliers. The movement of large quantities of forensic work, particularly casework which is very labour intensive, can present significant logistical difficulties and can be very de-stabilising for the forensic companies involved. It can also discourage the emergence of smaller suppliers.

25. The continued focus on reducing timescales for forensic delivery, even though England has the most rapid forensic services in the world, is sometimes out of step with the speed of other aspects of the Criminal Justice System and runs the risk of putting too much pressure on the forensic scientists involved.

26. The commoditisation of forensic procurement has worked well for single discipline services but is less well suited for purchasing forensic provision in complex casework investigations. Some of the review activities required by the Forensic Regulator's Code of Practice are not adequately catered for within the coding structure and this could potentially lead to a loss of independent and/or broader forensic oversight.

27. We believe that the forensic procurement and delivery process could be improved by FSPs having a greater level of involvement and consultation with the Crown Prosecution Service (CPS).

Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)

28. We believe that the closure of the FSS has resulted in a loss of intellectual volume, but not a loss in intellectual expertise. Although we are aware that for a few scientific disciplines the numbers of scientists do not yet match the demand, in general the number of forensic roles has reduced in line with current police expenditure on forensic science.

29. Within most forensic suppliers there remains a healthy spectrum of length of experience. Forensic scientists undergo considerable scientific and forensic training before they are involved in the examination of forensic exhibits or the reporting of forensic results, and the work of forensic examiners and reporting scientists is always subject to checking and peer review, with mentoring by those with greater experience.

30. Not only is there a considerable wealth of talent in UK forensic science among the younger forensic scientists but across a range of disciplines there are many forensic practitioners with more than 20 and even 30 years experience of investigating crime. At Cellmark 18% of our Forensic Reporting Scientists have more than 20 years forensic experience and 67% have more than 10 years forensic experience.

31. It is however important that the police continue to use a range of forensic disciplines rather than, because of budgetary constraint, restricting their forensic analysis to a few selected techniques such as DNA analysis. UK forensic science and the Criminal Justice System has historically benefitted from a comprehensive analytical approach but as the market shrinks certain expertise may be difficult to maintain if we go through a period of under-use, such as we are currently seeing with forensic fibre analysis.

Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

32. We are not experiencing any difficulties with the current FSS archive arrangements.

January 2013

Written evidence submitted by King's College London, Forensic Science Unit

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

The launch of the Technology Strategy Board—Forensic Science Special Interest Group (SIG) last November may prove to be an effective support for forensic science R&D.

Fundamental science research is supported by the research councils but development of potentially useful techniques for forensic science is not. Forensic tests need to be field deployable and must perform robustly under a range of ambient environmental conditions. This adds a significant extra research effort to bring a laboratory-based prototype to market for forensic applications. For example techniques widely used in cell biology such as the labelling of specific cell surface markers, cannot easily be transferred to the forensic environment where the target molecules may be on any kind of surface, may already be contaminated, where non-specific binding cannot be simply washed away, and where the labels need to be human specific. This also applies to forensic genetic research where techniques that have been introduced in medicine cannot simply be translated into a forensic tool where the material required to be analysed may be many thousand fold less and no more is available. All this requires a long lead in time from "proof of concept" to a validated and marketable technique; at present there are no avenues of funding for this. Private forensic companies engage in this in small ways, but generally only with the view to get themselves ahead of the market.

2. *Did the FSS transition and closure run smoothly and within budget?*

x

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

(i) A significant slowing down of the process due to difficulties in accessing the case information. This situation should be temporary as the cases get dealt with. Often the casework is done by several different providers, increasing the costs when the case comes to court. The private sector appears not to have embraced

the ethos of forensic casework. A philosophy of high throughput and maximum profit does not sit well in a system that requires a flexibility of approach depending on circumstances (eg recent contamination issues at LGC).

Toxicology laboratories: expertise and support in the UK has diminished to an extent where research and development in important emerging areas is suffering greatly. The UK was once a world leader in toxicology and it contributes significantly in several other industries such as healthcare, environmental protection and drug discovery.

(ii) The research carried out by the FSS prior to its closure was directed at the FSS as a business and not shared with the community as a whole. This meant that the government was, in reality, funding research for a private company, albeit a large one. In our experience the FSS was unwilling to enter into research partnerships or share information with academia, and those that do, do it in a partisan way. The closure of the FSS and the opening up of funding opportunities to the university sector has the potential to greatly improve forensic science research and innovation, if that happens. Quality has not necessarily been maintained. It will take time for all provision to be accredited and the role of the Forensic Regulator in driving forward accreditation for all is vital here, but this will take time.

4. *What should be role of the Forensic Science Regulator?*

The Forensic Science Regulator should be responsible for ensuring that organisations and individuals are fit for purpose through the accreditation process, and providing a role in maintaining the quality and standards of forensic provision. Once the accreditation process for all forensic providers and individual practitioners has been formalised the regulator should continue to maintain a presence as a regulatory body (*OF-FOR?*).

5. *What is the size of the forensics market and how stable is it?*

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6. *How are forensic science services procured by police forces and could procurement processes be improved?*

The procurement process could be improved by making it more flexible and more widely broadcast. In the future there could be a number of small companies and University Forensic Departments providing single test capability or specialised services, all at an accredited level. There is currently little shared knowledge about the different capabilities within organisations across the UK, mainly because of the private and competitive nature of much of the provision.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

Many of the scientists have remained in the UK setting up their own forensic-related businesses or joining other forensic providers. Some have taken academic positions and have stimulated interest in the university sector. Some very valuable people have already been lost and others will go if they cannot maintain a case-load. The profit based emphasis has led to many organisations employing poorly paid, and poorly motivated staff. Where these organisations are also losing, or not employing, experienced scientists with a wide knowledge of forensic science, there is a loss to the whole criminal justice system.

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

The current arrangements are satisfactory but could be improved by having easier lines of communication in order that the time taken to retrieve materials does not delay the court case and gives time for the material to be properly reviewed by those expected to present it.

January 2013

Written evidence submitted by Ray Palmer B.Sc. (Hons), M.Sc., FFSSoc

I am a former employee of the Forensic Science Service (1985–2010), where latterly my position was that of Principal Forensic Scientist.

I am presently employed by Northumbria University as a Senior Lecturer and Programme Leader in Forensic Science. I am also a member of the Northumbria University Centre for Forensic Science (NUCFS) who I understand will be submitting a collective response.

The following response is based upon my own observations, thoughts and experience of the FSS closure and may or may not reflect the views of my colleagues.

At the time of writing I have been made aware that a major downsizing exercise has been carried out with the private sector forensic science providers. This has not yet been officially announced.

Comments in response:

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

The present government's strategy for forensic science has been ill conceived and has completely failed to understand the future impact on the criminal justice system by closing its state run provision.

Many claims were made by various private organisations regarding stable provision/gains in efficiency, value for money and ability to adequately meet the caseload demands imposed on them by the closure of the FSS. It is entirely questionable (especially given recent events) whether these claims have been fully delivered.

The concept of a "market" for forensic science has been fundamentally flawed by the Government allowing police authorities to set up their own provision in the face of commercial provision. How can any commercial market survive when its customer base is also its competitor?

The recent decisions relating to major downsizing, redundancies and site closure by the private sector (not yet officially announced at the time of writing) provides evidence that forensic science as a commercial enterprise is unviable. This will result in an even greater irreplaceable loss of expertise. Many experienced scientist having gone through the upheaval of physical relocation from the FSS to a new provider are yet again facing redundancy. It is inevitable that the relentless state of flux in the provision of forensic science will result in many experienced practitioners leaving the profession and as well as making it unattractive to new graduates.

It remains to be seen how long it will be before all of the private Forensic Science providers downsize/pull out—given the state of the so called "market".

The cost of the re-emergence of police forensic science laboratories (many still unaccredited) has not been fully addressed in terms of value for money to the taxpayer and/or what savings (from the quoted £24 million/year to fund the FSS) have been made by allowing this proliferation. (It is noteworthy that some witnesses to the previous SAT hearing were somewhat "cagey" concerning the true costs of financing their facilities.)

In my opinion, given the fragility of "the market", loss of capacity, loss of professional expertise and the absence of a structured program of research addressing issues relating to forensic science in the 21st century, our ability to respond to major crime investigation (especially crimes of national concern such as terrorism) in this country has been severely compromised by the governments decision/management regarding its forensic science provision (see my comments below and also 6.)

The proposed solutions regarding the funding of research and development (following the closure of the FSS) by the government, have simply not come to pass. Much of the published research in forensic science is focused on developing the understanding of the significance of various evidence types—allowing us to make better more robust and informed interpretations of scientific findings for use by the courts and CJS as a whole. *Such research is unattractive to private providers, as it is time consuming and non-revenue generating.*

In addition, the question of how research deemed "commercial in confidence" is likely to benefit the taxpayer and CJS as a whole has, in my opinion, never been fully explored.

Until the establishment of "market" driven forensic provision, the UK was the major provider of research, innovation and publication in forensic science. Sadly, this situation no longer exists.

My direct experience in attempting to illicit collaborative research with scientists in the private sector over the last year is; that whilst many are keen to engage in this, there is an expectation by their management that the majority of this should be done in their own time. This is clearly unacceptable if forensic science is to flourish rather than stagnate under the short term expediency of revenue generation.

Nevertheless, if forensic science is to develop and provide the best service to the CJS, it is absolutely crucial that this research not only continues, but is actively promoted and funding "ring-fenced" for this purpose.

2. *Did the FSS transition and closure run smoothly and within budget?*

Promises made by management of private forensic science providers concerning capacity, research and profitability do not appeared to have been fulfilled.

The actual cost (including that of the development of police laboratories) has yet to be published as these are likely to still be accruing. To my knowledge, no financial figures have been published illustrating how the closure of the FSS has benefited the taxpayer or the criminal justice system. *Given the proliferation of police forensic science laboratories, it would not be surprising to discover that the true and continuing cost of the FSS closure would far outweigh its continued operation.*

As a duty to the taxpayer, the government and police authorities should provide a transparent and honest financial account relating to forensic science provision post FSS and declare what savings or indeed additional costs have been incurred as a consequence of their decision (ie has a saving or loss to the taxpayer been incurred?)

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

See my previous remarks (1).

4. *What should be role of the Forensic Science Regulator?*

The previous CRFP (Council for the Registration of Forensic Practitioners) was potentially a workable regulatory body, but lacked the funding and managerial will to establish a register supported by statute (eg such as General Medical Council). In my opinion, had this been more effectively managed and funded, it would have been more preferable than the present system.

In my opinion, the present role should be scrapped and body similar to the CRFP, but enforced in statute, should be created.

5. *What is the size of the forensics market and how stable is it?*

None of the private forensic providers report making profits sustainable to long term viability. The present paradigm where the customer also behaves as a competitor (ie increasing police "in-housing") means that whatever "market" now exists, is likely to shrink and it is questionable how any commercial organisation can become profitable and meet shareholder expectations in these circumstances.

At the time of writing, the private sector has now begun considerable downsizing exercises which will result in further destabilisation of the market as well as loss of expertise.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

The present procurement system is essentially tender based. The main deciding factor appears to be cost, rather than quality, innovation or the experience base of the practitioners of a particular forensic provider.

The current procurement system is conducive to fragmentation of different aspects of a particular case amongst different forensic providers. In large complex cases and/or cases of cross border crime, there is a real danger that communication breaks down and that the significance of analysis in its entirety to the prosecution or defence case is missed. *There also a real danger that efficient strategy setting in complex enquiries is subverted, leading to (at best) ineffective outcomes.*

At present, many of the police laboratories provide only a "screening" facility in which only items deemed (by the police) to have any probative value are submitted to a forensic provider for analysis. This is a purely cost based (and arguably, prosecution biased) approach. Forensic providers are being reduced to a "commodity based service" rather than "knowledge/experience based". *This cost based approach is both unscientific and dangerous, as without a holistic approach, only evidence perceived to be of value to the prosecution is considered and forwarded for examination. This leads to inconsistencies in the effective utilisation of forensic science by different police authorities based upon budgets. The potential consequences are obvious; miscarriages of justice.*

My understanding is that the former Home Office Forensic Science Service (precursor to the FSS) was created in response to inconsistencies in service delivery by different police authorities and accusations of prosecution bias. It seems we have come full circle.

The present procurement system in my opinion does not provide value for money to the taxpayer and should be abandoned.

The public funding for in-house police laboratories should be ceased and diverted to re-instating a state-run service.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

See my previous remarks (1–6).

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

It is difficult to fully assess this at this time. Any problems/issues with this need to be logged and catalogued so that any effective remedial actions required are effectively managed.

Written evidence submitted by Professor TJ Wilson, Dr M Stockdale, Dr W Lawler and Dr S Leadbetter

1. This memorandum has been written by two members of the School of Law, Professor TJ Wilson and Dr M Stockdale, and two Home Office Forensic Pathologists, Dr W Lawler, Newcastle forensic pathology practice, and Dr S Leadbetter, Cardiff University School of Medicine.

Introduction

2. The continuing achievements and innovative qualities of forensic science in this country¹⁰ mask the difficult and complex foundations for the use of science (including clinical science) and allied disciplines (eg fingerprint comparison) in the service of justice. The time interval for collecting or recording evidence may be brief. Vital work may be undertaken in uncontrolled conditions. The collection of evidence may be a destructive action, with—in some disciplines—little or no opportunity, as in conventional science, for replication. A broad range of knowledge gained from different forensic science disciplines, medico-legal skills and other expert opinion evidence may need to be shared before individual experts can make reliable and pertinent contributions to criminal investigations and prosecutions. There is potential for institutional bias where provision is in-house. This may also limit the availability to the defence of equivalent experts. Ultimately the courts need to be able to resolve disputes about the admissibility and reliability of evidence tendered by a variety of expert witnesses. A significant proportion of scientific or expert evidence, notably fingerprint comparison, may come from disciplines outside what is traditionally understood by the term forensic science. It may be produced sometimes within institutions or by individuals whose primary role or discipline is unconnected with the CJS.

3. The exchange of information between experts in different disciplines is increasingly precarious and some specialist areas of knowledge are so under resourced or numerically depleted that their continued availability cannot be taken for granted. This is not a criticism of the current pluralistic model for providing expert evidence (the variety of such evidence makes that inevitable), or necessarily a result of the marketization of forensic science, although some elements of the current funding and commissioning arrangements may have had unforeseen consequences, such as the loss sometimes of good contemporaneous evidence and professional deskilling. The key issue, however, is that market reform alone cannot ensure that sound expertise is available to the courts, whether criminal, coronial or civil. Statutory powers (extending to experts instructed by the defence and other jurisdictions) for the Regulator may be needed. Even that change may be insufficient. The time has come to consider institutional reform for commissioning research, ensuring medico-legal and scientific training for legal practitioners and other professionals involved full time or part-time in the CJS, and additional funding for the provision of scientific, clinical and other expert evidence.

How are forensic science services procured by police forces and could procurement processes be improved?

4. Police commissioning may take the view, where a death is not obviously suspicious, that a post mortem examination can be begun by a non-forensic histopathologist with later involvement of a forensic pathologist if concerns are raised by the former. There is a significant risk that the non-forensic histopathologist having no experience of, or insight into, trace evidence issues, and using dissection techniques which will raise difficulties in interpretation through the creation of artefact (if, in fact, there is any dissection of what might have been regarded by a forensic pathologist as a region pertinent to issues which might be raised by that death) may fail to recognise subtle suspicious factors with the loss of opportunity for proper investigation and incorrect categorisation of the cause of death.

5. The procurement of forensic medical examiners (police surgeons) and custody suite services from a single contractor may have an adverse impact on clinical evidence. There appears to have been a decline in the quality of information recorded during police custody as local doctors have been replaced by contractor's staff. In the absence of precise information as close as possible to the time of arrest about the nature, extent and location of non-fatal injuries, it may be impossible to offer an opinion, for example, on whether the injuries could have been sustained as a result of an assault by a third party or might have been self-inflicted. There is a related problem, sometimes, with medical records received about an admission prior to death from A&E departments. This is attributable to the inadequacy of the medico-legal content in undergraduate medical education.

6. The police and CPS emphasis on “appropriate field of expertise”, with its insistence upon the separate involvement of a multiplicity of experts may result in the “deskilling” of professionals—many forensic pathologists no longer examine the brain or spinal cord, heart, bones or eyes in criminal cases—and in “fragmentation” of the forensic approach to the case as a whole. That is to say, an individual expert may misinterpret findings through inadequate contextualisation, thus misleading both the expert who gives an “overview of the case”—assuming that “deskilling” does not result in there being no longer an appropriately qualified expert to give such an “overview”—and, consequently, the CJS. (A similar problem has arisen in care proceedings. It is increasingly difficult to instruct a paediatrician with a sufficient width of knowledge and experience to provide a medical overview.) The expert practitioner must, however, be aware of the limitations of his or her professional knowledge. Where issues might become pivotal to a prosecution or defence case, a

¹⁰ T J Wilson and A M C Gallop, “Criminal Justice, Science and the marketplace: The Closure of the Forensic Science Service in Perspective” (2013) *The Journal of Criminal Law* 57 [forthcoming].

forensic pathologist may be required professionally to consult specialists to check provisional findings or commission further work.¹¹

7. We suggest that it would be wrong to assume that all such issues (if many) could be addressed by procurement reform alone. We differ among ourselves as to the significance of the various manifestations of structural weaknesses within the medico-legal arrangements. We all believe, however, that institutional reform may be needed to resolve the following problems:

- (i) Numerical depletion: this is possibly now critical among forensic neuropathologists, paediatric pathologists and osteo-articular pathologists.¹²
- (ii) Budget restricted commissioning: a forensic pathologist may need to seek permission for the investigation of detail from a police officer or coroner who has had no medico-legal training, and for whom the need for further tests etc may be less pressing than budget management constraints.
- (iii) Lack of standardisation: the Home Office has funded specialist medical training and provided a framework for entry into forensic pathology, mentoring, critical conclusion checks and the enforcement of professional standards. Nothing similar exists for the medico-legal practice of other clinical specialists.
- (iv) NHS funding constraints: many clinical specialists engaged in medico-legal practice (eg neuropathologists, toxicologists and psychiatrists) work for NHS trusts whose role and budget do not include offering services to the CJS. Increasing NHS budgetary constraints are resulting in many of those experts having to withdraw from criminal work.
- (v) Absence of reform in the management of expert evidence in court: existing or potential medico-legal experts are frequently deterred from remaining in or entering practice because of the unsystematic and unstructured manner in which such admissibility and reliability may be determined, often turning on the impact of personality (advocate as well as expert) on fact-finders, in trials.
- (vi) Narrow scope of forensic regulation: the Regulator's remit does not extend to experts called by the defence who are not also instructed by the prosecution and come within the limited scope of existing criminal justice standardisation and accreditation.

What should be the role of the Forensic Science Regulator?

8. The first office holder and his team have delivered a well judged programme of work undertaken in a timely manner. This has been developed through an inclusive and transparent partnership with a wide range of criminal justice institutions, forensic providers and (including through participation at several meetings convened by the Centre for Evidence and Criminal Justice Studies) individual criminal justice practitioners and academics.

9. The key issue for the future may not be so much the nature of the Regulator's role, but whether this model of regulation or current progress is sustainable. The Regulator's codes are largely concerned with the standardisation of laboratory activities with the intention to cover crime scenes at a later date. This sequence reflected an understandable desire to ensure "a level playing field" for the providers of traditional forensic science. Such activity has the advantage, however, of centralised locations, laboratory conditions and a scientific culture that aspires to standardisation. It goes with the grain of current police and government pro-market policies, and can be enforced by contractual compliance. It does, however, postpone greater challenges posed by scene recovery standardisation and fingerprint evidence. Both involve considerably more difficult working conditions, a greater number of organisations and may require changes within police culture. Without statutory powers the Regulator will have to rely on the cooperation of chief officers to ensure that reforms are introduced in a timely, effective, and comprehensive manner.

10. The Regulator's epistemological work and major inquiries into scientific failures have concentrated on DNA analysis—"the gold standard"—for forensic science.¹³ The most recent inquiry was concerned with the identification of principles on which a unified interpretation and reporting policy might be developed for complex DNA profiles. This is an internationally ambitious, innovative and much needed piece of work, but is also an example of knocking at an open door and in areas where there are no apparent institutional conflicts between standardisation and the combined interests of the police and the Government. Beyond this lies much greater uncertainty. If it is accepted that the Regulator should accredit a wider range of work and his remit allows this, at the minimum, he may require more resources and a broader range of expertise within his team in order to deal with a broader range of issues. This would be particularly the case with medico-legal investigations, be they for criminal, coronial or civil proceedings.

¹¹ This is specifically enforced by the code of standards and conduct among forensic pathologists accredited by the Home Office and forensic science providers accredited by the Regulator, but not among other expert witnesses, save for rare exceptions among medical practitioners.

¹² Within England and Wales the availability of the latter forensic experts has recently been reduced by half leaving a single practitioner with no scope for peer review or an opportunity for defence lawyers to commission a second opinion from an expert of equal standing.

¹³ National Academy of Sciences, *Strengthening Forensic Science in the United States: A Path Forward* (National Academies Press: Washington DC, 2009) 130.

Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

11. The Government's strategy may not reflect the range and complexity of problems arising in respect of forensic sciences. For example, at the time of writing the Government had not responded¹⁴ to the Law Commission's proposal (2011) "that there should be a statutory admissibility test which would provide that an expert's opinion evidence is admissible in criminal proceedings only if it is sufficiently reliable to be admitted". The Committee's 2005 Report, *Forensic Science on Trial* was the catalyst for this work.¹⁵ It had concluded that "[T]he absence of an agreed protocol for the validation of scientific techniques prior to their being admitted in court [was] entirely unsatisfactory"¹⁶ It hoped to see "an objective, clearly defined test to establish whether a theory or technique is sufficiently robust and evidence-based to merit admission in court".¹⁷ In its report, presented to Parliament in 2011,¹⁸ the Law Commission "shared the Committee's concern that expert opinion evidence was being admitted in criminal proceedings too readily, with insufficient scrutiny"¹⁹ and believed that the "reliability requirement in the common law admissibility test was insufficiently robust", reflecting "a generally laissez-faire approach to the admissibility of expert evidence in England and Wales".²⁰ The concerns voiced by the Committee and the Law Commission are also shared both by the courts themselves, the Court of Appeal having referred to the "unsatisfactory state of the law"²¹ in this area.

12. Even critics of the Law Commission's proposals have broadly favoured them, regarding them as being "generally in the right direction"²² and considering that they "may prove to be a significant improvement on the unsatisfactory current practice".²³ It has been suggested that, "in order for the reforms to achieve the desired ends, there needs to be a change in culture and levels of technical sophistication among practising lawyers and judges"²⁴ and that the Law Commission did not engage sufficiently with the experience in North America of applying reliability standards in practice which suggests "that sanguine views about judicial abilities and positive effects from... a reliability-based admissibility standard, even if supplemented with training-are probably misconceived".²⁵ Thus, more will be needed to support procedural reforms by more comprehensive training, extensive standardisation and research.

13. The complexity of this task can be appreciated by considering the nature of expert evidence in criminal trials. Traditional forensic science may differ from the norms of conventional science because of the uncontrolled conditions in which vital work may need to be undertaken and possibly a limited scope for replication (the latter may even apply to complex DNA analysis). Important disciplines such as fingerprint comparison, footwear comparison, forensic facial comparison and handwriting comparison are best regarded as primarily experience based opinion rather than scientific but it is important that such areas of expert evidence fall within the Regulator's areas of operation. In its Report the Law Commission accepted that "forensic scientific evidence...usually involves a scientific underpinning and an experience-based interpretive element". Classifying such areas as scientific may give the jury a misleading view of their reliability.²⁶

14. There will be circumstances when the courts might need assistance in their assessment of claims to expertise that are clearly not scientific or based on the work of an established profession (eg lip-reading). Bearing in mind the Regulator's important contributions both to the Law Commission consultation in preparation for its report on expert evidence and to the Scottish Fingerprint Inquiry, where else would the courts turn?

15. The Regulator has already recognised this requirement.²⁷ It could materialise as a result of rapid technological development, especially claims made for new identification technologies.²⁸ If so, there is a danger of policies and major public expenditure commitments agreed between government, its police and

¹⁴ Statement on the Law Commission's website at <<http://lawcommission.justice.gov.uk/areas/expert-evidence-in-criminal-trials.htm>> accessed, 9 January 2012.

¹⁵ *Forensic Science on Trial* Report of the House of Commons Science and Technology Committee (2004–05) HC 96-I, 173.

¹⁶ Above n.1, 9.1.

¹⁷ The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales. A New Approach to the Determination of Evidentiary Reliability. A Consultation Paper. Consultation Paper No 190.

¹⁸ *Expert Evidence in criminal Proceedings*, Law Com No 325, 1.2.

¹⁹ *Ibid.*

²⁰ *Ibid.*, 2.16.

²¹ *R v Henderson* [2010] 2 Cr App R 24, 206.

²² Edmond, above n.2 at 62.

²³ Edmond and Roberts, above n.11 at 846.

²⁴ Edmond, above n.2 at 40. See, also, Edmond G, "Advice for the courts? Sufficiently reliable assistance with forensic science and medicine (Part 2)" (2012) 16 E & P 263–297, 289.

²⁵ *Ibid.*

²⁶ Edmond, above n.10 at 42.

²⁷ For example, in *R v T*, the Court of Appeal indicated that "It is essential, if the expert examiner of footwear expresses a view which goes beyond saying that the footwear could or could not have made the mark that the report makes clear that this is a view which is subjective and based on his experience. For that reason we do not consider that the word "scientific" should be used, as, if that phrase is put before the jury, it is likely to give an impression to the jury of a degree of precision and objectivity that is not present given the current state of this area of expertise".

²⁸ "Standards are not intended to stifle innovation..... [T]he courts will always be free to consider evidence derived from methods that, for instance, have been developed for the particular case in question and there simply hasn't been time to include the technique in their scope of accreditation." (Forensic Science Regulator, Codes of Practice and Conduct (The Forensic Science Regulator: Birmingham, 2011) 2.).

²⁸ R Hastings, "From Grainy CCTV to a Positive ID", *The Independent* (London, 2 January 2013) 20–21.

security agencies, and the security or surveillance industries, outstripping both the creation of transparent and accountable governance for this technology, and judicial decisions about admissibility and reliability of evidence obtained from it. There might be a repeat of the problems encountered with the introduction of DNA evidence.²⁹

16. This further illustrates the limitations of any strategy based on standardisation and accreditation alone. The potential normative, societal and legal consequences of any major technological developments affecting criminal investigations, surveillance and trials need to be fully considered. The Nuffield Council on Bioethics played a signal role in the reform of the law governing the use and retention of DNA and fingerprints.³⁰ The Council's foray into forensic bioinformation may not be repeated. This consideration and the scale of what is required suggest that there may be merit in the creation of a similar independent body for criminal justice. If, like the Nuffield Council, it were to be part-financed by RCUK, it could achieve much more. As a research commissioning role body, such a council might finally address the problem of inadequate research in forensic science, medico-legal practice and surveillance technology,³¹ to assist forensic experts, the courts, legislators and policy makers.

Declaration of interest: None with the exception of Professor Wilson, for which see Ev w151 of the Committee's Seventh Report of Session 2010–12.

January 2013

Written evidence submitted by Lisa Webb-Salter

Please find attached my personal submission to the Science and Technology committee inquiry into the aftermath of the closure of the Forensic Science Service.

INTRODUCTION

I am currently an employee of Abu Dhabi Police (ADP), working as a Strategic Advisor in the UAE National DNA Database Centre in Al-Ain, Abu Dhabi, United Arab Emirates. Prior to my current employment, I worked for the FSS, previously the Metropolitan Police Forensic Science Laboratory (MPFSL), for nearly 20 years. As a result of the winding down of the FSS, I was made redundant on the 31 May 2011.

Over the course of my forensic career I have examined hundreds of body fluids cases, carried out several generations of DNA profiling techniques (SLP, SGM and SGM Plus), reported simple DNA cases in the UK, and carried out complex paternity analysis of DNA cases to help identify Kuwaiti Nationals exiled during the first Gulf War.

I managed a team of DNA analysts in the FSS London DNA Unit for a number of years, and was then seconded to a special projects team where I was responsible for implementing the UK National Firearms Forensic Intelligence Database (NFFID) which was the precursor of the current National Ballistics Intelligence Service (NABIS).

During the second half of my forensic career I have provided consultancy and assistance to overseas governments as a member of the FSS International Division. During this time I delivered forensic laboratory improvement projects in Kuwait, Trinidad and Abu Dhabi. The three year project in Abu Dhabi culminated in UKAS granting ISO 17025 accreditation to the Abu Dhabi Police Forensic Evidence Department in 2009.

1. DECLARATION OF INTERESTS

1.1 I am currently an employee of Abu Dhabi Police (ADP), working as a Strategic Advisor in the UAE National DNA Database Centre in Al-Ain, Abu Dhabi.

1.2 Prior to my current employment, I worked for the FSS, previously the Metropolitan Police Forensic Science Laboratory (MPFSL), for nearly 20 years. As a result of the winding down of the FSS, I was made redundant on the 31 May 2011.

1.3 My husband, Martin Webb-Salter, also worked as a forensic scientist for the MPFSL and the FSS for 35 years. He was made redundant on the 31 March 2010 as part of the FSS Transformation Programme, and now works for Surrey Police as an Intelligence Researcher.

This is my personal submission to the Science and Technology Committee inquiry into the aftermath of the closure of the Forensic Science Service (FSS). The views contained in this submission are my own, and do *not* represent the views of Abu Dhabi Police.

²⁹ M Lynch *et al*, *Truth Machine: The Contentious History of DNA Fingerprinting* (University of Chicago Press: Chicago, 2008).

³⁰ See the Protection of Freedoms Act 2012.

³¹ Chiefly practitioner directed research, undertaken either by practitioners or concerned with issues related to but out with the primary activity of their practice. In the latter case practitioners need to decide priorities, commission studies, ensure focus and monitor progress. There is also a need for socio-legal and economic research into the use and governance of forensic science, medico-legal practice and surveillance technology.

2. Q1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

2.1 The current Government strategy for forensic science in the UK is focused on the reduction of costs through commercial competition. This strategy is not effective, as it has reduced the quality, consistency and efficiency of the provision of forensic science to the criminal justice system, and has led to a decrease in the amount of forensic R&D being carried out.

2.2 The reasoning behind the merger of the MPFSL with the rest of the FSS in 1996 was to create a single service provider that would offer impartial, consistent, best-practice delivery of forensic science to all the police forces in England and Wales. This strategy concentrated the UK's extensive forensic expertise into one world-renowned organisation, and therefore facilitated the sharing of knowledge and best practice between scientists across the country.

2.3 The development of a forensic market with several private forensic science providers effectively reversed this strategy and fragmented the provision of forensic science to the UK criminal justice system.

2.4 The closure of the FSS in March 2012 has increased this fragmentation, as the 60% market share previously held by the FSS has been distributed across expanding in-house police laboratories and an increased number of private forensic science providers. As a consequence, different methods of forensic analysis are being used across the UK to variable quality standards, and the duplication of equipment, facilities and personnel involved will have increased the overall cost of the provision of forensic analysis.

2.5 Commercial forensic providers and police forces do not have the resources to carry out forensic research on the scale previously carried out by the FSS. The small amount of forensic research that is being done is focused only on areas where providers believe it may give them a commercial advantage.

2.6 Forensic development should be properly funded and coordinated, and driven by the clearly defined needs of the UK Criminal Justice System (CJS).

3. Q2. *Did the FSS transition and closure run smoothly and within budget?*

3.1 As I left the FSS in May 2011, I am not in a position to comment on whether the transition and closure ran smoothly.

3.2 In 2011 the cost of closing the FSS was estimated to be around £100 million, however, I don't believe that the full cost of the closure will ever be fully calculated. Costs such as staff redundancy payments may be clearly documented, but there will be numerous hidden costs not recorded such as the time spent by the members of the Transition Board administering the closure, by police personnel replacing FSS contracts, and by the members of two Select Committees and those who made submissions to the two inquiries commissioned to date.

3.3 In addition to this there will be ongoing costs associated with the closure, such as the Government's guarantee to maintain the FSS Pension Fund even though no further staff contributions are being made, and costs associated with tracing ex-FSS staff to give evidence in court.

4. Q3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

4.1 Before the FSS closed, it was normal practice for an entire case to be examined within the same organisation. This made it easy for the different experts carrying out different types of analysis on a case to work together, share information, and ensure examinations were carried out in an order and manner that did not compromise other evidence types. It also minimised the number of Expert Witness statements submitted to the courts.

4.2 Now, the holistic examination of a case within one organisation is rare. Most of the private forensic providers and the police forces who currently carry out forensic analysis offer a much more limited range of services than the FSS, and police forces procure different types of forensic examination from different providers.

4.3 In a typical body fluids case today, the initial examination of items is carried out in a police screening laboratory. If body fluids are found, the isolated stains are transferred to a private forensic service provider to carry out DNA analysis. In some police forces, the staff carrying out the initial screening stage are ex-FSS scientists with many years experience in reporting DNA results, but the DNA analysis results are reported by the private forensic provider, so their valuable skills are not being utilised. In other police forces, relatively inexperienced staff are carrying out the screening stage in laboratories that are not accredited, significantly increasing the risk that evidence is missed or contaminated.

4.4 In both scenarios, none of the scientists involved have an overview of the entire case. The forensic evidence is reported to the courts in multiple Expert Witness statements, which makes it harder for the court to understand the significance of the results in the context of the case and increases the potential for confusion and misinterpretation of the evidence.

4.5 Closing the FSS has also led to the loss of some unique forensic services that were pioneered by the FSS. One example of this is DNA Boost—a powerful way of searching DNA mixed profiles against the National DNA Database—which is no longer available to forensic scientists working in the UK CJS.

4.6 Whilst several of the private forensic service providers have ISO 17025 accreditation for some or all of the services they offer, there are still differences in the methods of forensic analysis being used across the UK. For example, different providers have different guidelines relating to the interpretation of DNA profiles. In some cases where a mixed DNA profile is obtained this means that no intelligence information is provided from that profile, even though it would have been using FSS guidelines. In other cases, analysis is repeated on some samples at extra expense to the CJS because DNA profiles generated by different providers using different guidelines cannot be directly compared.

4.7 One of the biggest concerns regarding the impact of the FSS closure on the UK CJS is that an increased number of police forces are carrying out screening of exhibits and other forensic analyses even though they are not accredited to carry out these procedures. This poses a serious risk that a miscarriage of justice will occur through the use of poorly maintained equipment, a lack of adherence to anti-contamination procedures, the use of un-validated scientific methods or inadequate staff training.

4.8 A review of the United Kingdom Accreditation Service (UKAS) website¹ on 5 January 2013 showed that only a handful of police forces are currently accredited—Table 1. This number is only a small proportion of the forces who are actually carrying out forensic examinations. Obtaining ISO 17025 accreditation is complex, time consuming and costly. There is a huge duplication of effort involved in individual police forces going through this process, and the small number of forces that have actually achieved it indicates that quality standards and accreditation in the forensic examination process have not been maintained.

Table 1

ACCREDITED UK POLICE FORCES—DATA TAKEN FROM UKAS WEBSITE¹ ON 5 JANUARY 2013

<i>Police Force</i>	<i>Scope of Accreditation</i>
Bedfordshire/Hertfordshire/Cambridgeshire Derbyshire	— Fingerprint chemical treatment — Search and recover DNA — Hairs — FDR
Greater Manchester Lancashire	— Firearms — Footwear coding and comparison — ID and quantify drugs — Search and recover body fluids — Fibres — Glass — Paint
Metropolitan Police	— Search and recover body fluids — Fibres and hairs — DNA profiling — Blood Pattern Analysis — Physical fits — Fingerprint chemical treatment and enhancement
South Wales Thames Valley Police West Midlands	— Screening for blood — Fingerprint chemical treatment and enhancement — Firearms

4.9 The extensive research programme to develop new forensic analysis techniques that was previously funded and carried out by the FSS has not been replaced. As a consequence, forensic development in the UK has significantly reduced since the FSS closed.

4.10 When I started my forensic career, I joined a team of experienced forensic scientists with hundreds of years of experience between them. I was trained in the whole forensic examination process by someone with over ten years experience, and coached and mentored by several scientists with over 20 years of experience. In this environment I was able to learn a great deal, as knowledge was transferred from one generation to the next. A large number of these experienced scientists have left the forensic field as a result of the closure of the FSS, or now work in small consultancy firms where they have little or no contact with junior staff. University graduates joining the profession now most often join young inexperienced teams, and are trained to do one or two aspects of the forensic examination process, giving them little opportunity to learn this complex subject in depth.

5. Q4. *What should be role of the Forensic Science Regulator?*

5.1 The role of the Forensic Science Regulator should be to regulate the provision of forensic science in the UK. At its simplest level, this means setting standards in all areas of forensic science, checking compliance

with those standards and having statutory powers to enforce these standards and/or stop organisations that don't meet the minimum requirements.

5.2 The remit of the Forensic Science Regulator should cover all organisations that supply forensic services to the UK CJS, irrespective of whether they are Government owned, private sector or police forces.

5.3 The Forensic Science Regulator should investigate quality failures, and work closely with UKAS to ensure that all forensic suppliers are appropriately accredited to ISO 17025.

6. Q5. *What is the size of the forensics market and how stable is it?*

6.1 I am not in a position to comment on the current size of the forensics market, but would be very interested to hear if there is someone out there who can answer this question and accurately predict the future size of the market. I am however aware of the serious impact the continued instability of the market is having on forensic providers and individual forensic scientists across the country.

6.2 Contracts to provide forensic services are being won and lost all the time. As a consequence, forensic science providers have had to become very agile, expanding and contracting with the fluctuating demand for their services. When a new contract is won, staff are recruited on short-term contracts and rapidly trained to meet the immediate need. Conversely, when a contract is lost, short-term contracts are terminated and staff are put on notice of redundancy. Within a matter of months, a new contract may be won, and this inefficient cycle of recruitment and training will be repeated.

6.3 One recent example of this occurred in one of the largest private forensic service providers in the UK. They recruited extra reporting officers to increase their reporting capacity at one of their sites. Staff were relocated for six months to allow changes to be made to accommodate them at this site, and then contracts were lost to the extent that the decision was taken to cease reporting from that site all together. As a consequence, both the original and the new staff were then put on notice of redundancy.

6.4 In my view, this continuously changing environment has made it impossible for forensic service providers to make robust long-term plans and investments, and has led to individual forensic scientists being utilised and then discarded at the whim of the market.

7. Q6. *How are forensic science services procured by police forces and could procurement processes be improved?*

7.1 I have no direct experience of the forensic science procurement process, but am concerned about the consequences of its use.

7.2 The focus on products rather than forensic science services in the National Forensic Framework Agreement (NFFA) is driving the wrong behaviours. Police forces often ask scientists to carry out one type of examination on one item in isolation, without understanding the need for the scientist to interpret the evidence in the context of the whole case.

7.3 It is also not uncommon for scientists to be prevented from carrying out an analysis they believe to be necessary, on the grounds that this type of analysis is not covered by the contract between the submitting police force and the forensic service provider. I know of numerous examples where forensic examinations have been done in the best interests of the UK CJS, but the police customer has failed to understand the importance of this work and has consequently refused to pay for it.

7.4 I would highly recommend that the police procure forensic services rather than products, and that these services are carefully defined in partnership with experienced forensic scientists.

8. Q7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

8.1 As I stated in my submission to the previous inquiry, the most valuable asset of the FSS was its staff—their skills and knowledge, their experience, their commitment and dedication, and their passion for justice. A small number of these staff have found employment with private forensic service providers and police forces, but the majority of them have now left the field and are lost to the UK CJS.

8.2 I am one of several forensic scientists who have had to leave the UK to find employment in my specialist area. For example, I am aware that three other ex-FSS scientists are currently working for Abu Dhabi Police. We all have two year contracts that end in 2013, after which our professional futures are uncertain.

8.3 My husband, Martin Webb-Salter, is another example of a wealth of forensic expertise having been lost to the UK CJS. Martin is a textile fibres specialist. Over the course of his 35 year forensic career, he achieved ISO 17025 accreditation for the analysis of fibres at the MPFSL, and maintained this accreditation after the laboratory merged with the FSS. He developed a comprehensive fibres training program and trained and mentored more than 40 scientists in the examination and analysis of fibres. He evaluated and implemented new methods and equipment in this field, established and implemented best working practice for fibres recovery and analysis across the six FSS labs, and conducted quality audits to ensure compliance. He also contributed

to the Fibres Working Group of the European Network of Forensic Science Institutes (ENFSI) in setting European best practice, and undertook and published fibres research.

8.4 After being made redundant from the FSS, Martin hoped to stay in the field of forensic science, but found that there were no opportunities for him to do so. It seems that the pressure on private service providers to reduce costs means that they prefer to employ relatively inexperienced staff on lower salaries. Martin currently works as an Intelligence Researcher in Surrey Police, however this role does not utilise his extensive and unique forensic knowledge.

8.5 Further evidence of the loss of forensic expertise can be found in my professional network on LinkedIn. I currently have connections with 90 Ex-FSS scientists, and only 16 of these are currently employed by one of the larger private forensic service providers in the UK. A further 17 ex-FSS colleagues have set up or are associated with small specialist forensic consultancy firms, but are not routinely carrying out casework. The rest, 63%, have left the field of forensic science altogether or work overseas.

9. Q8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

9.1 There is currently huge fragmentation of the UK's forensic archive. The FSS legacy archive is being maintained, but all private forensic science providers return case materials to the police. As a result, each police force now maintains its own archive of forensic materials, which is an additional overhead for police budgets, and poses a significant risk to the integrity of these items.

9.2 Archiving of forensic materials is a specialist function, and in my view, the UK should have a single National Archive, located at two or three strategic sites, all run and managed by one organisation. This would reduce the current duplication of effort and facilities, reducing costs, and would ensure that all forensic materials are maintained in correct storage conditions and can be retrieved when necessary.

10. CONCLUSION

10.1 Whilst I welcome this new Select Committee inquiry, it is my belief that it could take several years for the full impact of the closure of the FSS to become visible.

11. REFERENCES

1. United Kingdom Accreditation Service (UKAS) website: www.ukas.com
January 2013

Written evidence submitted by Forensic Access Ltd

DECLARATION OF INTEREST

FORENSIC ACCESS

Forensic Access is a private company which has been supplying forensic science services to the Criminal Justice System since 1986. With laboratories at Oxford and York it provides full casework services to investigators and legal teams for both prosecution and defence.

PRINCIPAL AUTHORS

Professor Angela Gallop—former FSS scientist, 1986 established Forensic Access to promote a better balance between prosecution and defence, 1997 co-founded Forensic Alliance as the first full scale alternative to FSS, 2005 helped create LGC Forensics (incorporating Forensic Alliance) to draw in science from the wider scientific community, 2010 co-founded Axiom International to spread UK forensic expertise internationally, currently CE of Axiom International and Forensic Access. Also established and personally led the scientific teams who helped to solve many high profile cases including Damilola Taylor, Rachel Nickell, Coastal Path murders and Stephen Lawrence.

Roger Robson—former FSS, Forensic Alliance and LGC Forensics scientist and latterly Operations Manager, MD of Forensic Access and one of the most experienced forensic textile fibre experts in the UK—eg, leading the textile fibre work in Coastal Path and related murders.

Dr Philip Avenell—former FSS, Forensic Alliance and LGC Forensics scientist including Head of Science Quality and R&D, now principal scientist with Axiom International and Forensic Access and a distinguished DNA scientist—eg, leading the DNA work in Coastal Path and related murders.

Wendy Nathan—FD of Forensic Alliance, then LGC Forensics and now Forensic Access, with long experience of the development of the forensic market.

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

1. No, or if it does, it is not working. One aim was to open up the forensic market, stimulating competition and innovation. It is more difficult than ever to gain a foothold in the market, and one provider is now larger than the FSS was.

2. The UK is unusual in having developed a market for forensic science services. This resulted from a 1991 decision to devolve central funding to individual police forces to help cut forensic backlogs which were affecting the smooth delivery of criminal justice.

3. The market has been very successful with competition driving innovation in both the nature and delivery of services. Backlogs disappeared, prices dropped substantially, turnaround times for the work reduced significantly and a number of particularly intractable criminal cases were solved.

4. Despite substantial investment, the FSS failed to transform itself into a competent competitor and this ultimately led to the closure decision. What seems abundantly clear is that Government attention has been focused too heavily on the FSS and too little on what has been happening to the rest of the forensic market.

5. There are three main issues posing serious threats to the reliability of forensic science and therefore the integrity of our criminal justice system. The first concerns the way forensic services are procured, the second, insourcing by police forces, and the third, the fact that forensic scientists have two customers with different requirements—the police and the courts, yet only one of them—the police, holds the purse strings.

Procurement

6. This is dealt with under Question 6. Suffice it to say here that while the current system is sufficient for routine cases, it is far too prescriptive for anything more complex. It is de-skilling scientists and turning their laboratories into nothing more than routine testing houses to the extent that critical skills will be lost to the UK.

Insourcing by police

7. Insourcing is becoming increasingly popular in the belief that it is more cost effective and allows better control over work done by external providers. This defies trends in all other industries which, if replicated here, might suggest outsourcing scenes of crime and fingerprints, not insourcing forensic science.

8. Some forces use providers merely for complex analytical tests, conducting all the rest of the work themselves. Risks inherent in arrangements which fragment effort in individual cases and on individual items and where the customer dictates precisely what the specialist should do include to:

- Reliability of evidence through increased risk of contamination and compromised continuity (chain of custody of items).
- Quality of evidence because police laboratories do not have to be accredited to the same Quality standards as external providers.
- Strength and safety of evidence because no one scientist understands all aspects of the evidence which they are reporting; they may miss important clues or misinterpret others.
- Breadth and depth of expertise, and creativity available from forensic providers if this is no longer used.
- Quality of science as the best scientists seek more satisfying jobs elsewhere.

9. There is also the critical matter of whether it is appropriate for organisations charged with investigating crimes, also to provide impartial scientific evidence in respect of them. This is more complex than it sounds. For instance, simple decisions about which items to examine and for what can markedly influence evidential outcomes. There is little chance that any shortcomings will be picked up by scientists advising the defence as this work is even more poorly funded.

10. Of relevance here is the 2009 National Academy of Sciences (NAS) report on forensic science in the US which called explicitly for the organisational separation of forensic science provision from the law enforcement agencies themselves.

Customers, police -v- courts

11. Police are concerned primarily with investigation and prosecution, the courts with maintaining a balance between prosecution and defence. With police in almost sole charge of the funding, there is too little emphasis on the requirements of CPS and defence teams.

12. Forensic advice for defence teams provides a critical safety net against miscarriages of justice, but this is full of holes through long term and worsening lack of funding.

13. Closure of the FSS resulted in more operational forensic scientists employed in universities, providing a more relevant focus for university based forensic research. However, the funding traditionally provided by the Home Office for research and development has disappeared with the FSS who benefitted from it, and no

equivalent arrangements have been put in place. Suppliers cannot provide all the funds necessary because profit margins have been driven so low by the “productising” of forensics.

14. While some useful international funding is available for work through collaborative networks, this tends to be for large, long term projects producing results that then need substantial development before being acceptable for use at court.

2. Did the FSS transition and closure run smoothly and within budget?

15. The transition period was too short bearing in mind the extent and complexities of the activities to be transferred to other providers and the sheer volume of work involved.

16. The transfer process was so opaque that it was not clear what opportunities might be available so meaningful proposals could be submitted. In the end, one supplier benefitted disproportionately to the extent that it now has a larger share of the market than the FSS. Some of the benefits it enjoys may well persist through the next tender round which could lead to suggestions of unfairness in public procurement. An important opportunity to make the market professionally richer and more resilient was lost.

17. Exacerbating the transition process was providers’ nervousness about dangerously low margins and increasing insourcing by police. This would have made them cautious about how many FSS scientists they took on and favour less experienced, cheaper ones.

3. What impacts have the FSS’s closure had on (i) the criminal justice system? and (ii) forensic R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained?

18. Appropriate quality standards and accreditation have been maintained by external providers because they are a necessary pre-condition to obtaining work from the police. Bizarrely, the increasing work transferred from them to police laboratories does not have to meet the same standards. This is both dangerous and unfair.

19. But quality is about much more than accreditation to specific quality standards. Other factors critically affecting quality and largely unconnected with closure of the FSS include:

- Quality of crime scene examination.
- Decisions about what to examine/analyse for what and in which order.
- Extent to which analytical results can be interpreted within procurement products.
- Fragmentation of effort between police/providers.
- Communication of results to the layman.

20. The impact of FSS closure has been more to do with the nature and speed of closure than the fact of it. In particular, this:

- Put pressure on other suppliers to take on more work more quickly, increasing risk of mistakes.
- Created turbulence in the (fragile) market when mistakes were made and other contracts lost as a result.
- Exposed cases transferred half completed to poor quality decision making through ignorance of all the facts and potential differences of approach.
- Reduced at a stroke the number of experienced operational forensic scientists and therefore perhaps overall quality.
- Persuaded some forces to insource more of the work themselves to protect supply.
- De-skilling at least some scientists by restricting them to a narrower range of activity.

21. There has been a myth that only FSS scientists were capable of solving the most difficult cases, but history tells a different story. For many years now other forensic suppliers have been distinguishing themselves both in service delivery and quality.

22. For example, Forensic Alliance, now LGC Forensics was instrumental in solving a number of the most complex cases in recent criminal history including Damilola Taylor, Rachel Nickell (finally exonerating Colin Stagg), Lynette White (finally exonerating The Cardiff Three) and The Coastal Path and Stephen Lawrence murders.

23. Some of these cases highlighted flaws in the original FSS work. For example, in one case inappropriate assumptions in low template DNA analysis (LCN) resulted in critical evidence being missed. This led to the large scale re-analysis of samples in a substantial number of other historic cases, resulting in some more being belatedly solved.

24. The Home Office funded a considerable amount of the FSS’s research and development. No recognisable alternative arrangements have been put in place now the FSS has gone. To this extent, arguably the most important source of research funding has been withdrawn from forensic science “overnight”.

25. Other providers continue to be as imaginative as possible about how to get the most from money devoted to R&D, eg, through innovative collaborations with universities and industry. They have shown they are just

as capable of producing ground breaking innovations—currently including rapid on-site DNA testing. But, like the FSS, they cannot be expected to do so without additional funding especially as their partner organisations are also under the financial cosh.

26. There is a procurement contract requirement for providers to share financial R&D benefits with police. Ostinately a good way of driving additional public sector savings, this is manifestly unfair to providers who fund all the research and then have to share “IP” before recovering their inputs. It actively discourages innovation.

27. FSS closure is unlikely to have any real impact on training because virtually all external suppliers insist on training their own staff and are well equipped to do so. Because of the less stringent requirements of police laboratories, the same may not be true in all of these.

4. *What should be the role of the Forensic Science Regulator?*

28. The Regulator’s role should be to ensure that scientific information provided to investigators and as evidence at court is soundly based, reliable, balanced and impartial. Where concerns arise, the Regulator should ensure these are dealt with swiftly and effectively and ramifications for other cases, recognised and addressed.

29. To achieve this, the Regulator needs to be satisfied that all organisations playing any part in the forensic “crime scene to court” process are competent to do so in all respects. The current situation is courting disaster with no mandatory requirement for police laboratories to be accredited, and fingerprints still outside the quality envelope applied to the rest of forensic science.

30. But accreditation alone is not sufficient. For instance, where work is fragmented between different providers—including the police themselves, the Regulator needs to be satisfied there are no adverse consequences for quality and safety of evidence, and no corners have been cut because of budgetary restrictions and/or quality of commissioning, or overly competitive behaviour between providers.

31. It seems clear that to achieve all this, the Regulator requires stronger and perhaps wider powers than currently at his disposal.

5. *What is the size of the forensics market and how stable is it?*

32. We estimate the current size of the forensic market to be in the region of £320 million with £120 million outsourced and the rest serviced by the police themselves. The outsourced market has shrunk from approximately £200 million five years ago and will dip below £100 million very soon.

33. Reducing market size, low profit margins, risks from large swings in workload combined with the high profile criticism any errors attract, and difficulties for new market entrants to win work, all conspire to make it increasingly unattractive for investment. This is reflected in the apparent lack of interest from firms in tendering for the FSS business, and the withdrawal of large organisations such as Eurofins and Central Science Laboratory, who failed to make any headway despite having invested substantial sums of money in UK forensics.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

34. External providers of forensic services to police forces have to be approved suppliers to a National framework. For economies of scale and buying power, forces are increasingly collaborating regionally to tender their forensic work. At the heart of the tendering process are a series of “products”, each one describing a complex set of activities and possible outcomes, with a number of entry and exit points and prices associated with each of these. Required quality (standards) and turnaround times are specified so emphasis is on price. Forensic Access recently tendered services covering 536 products (of 735 in total) involving 7,416 individual prices (some duplicated). This gives an idea of the complexity of the process.

35. Despite best efforts of the National Police Improvement Agency (NPIA), different forces, even within the same regional grouping, tend to require services delivered in slightly different ways which increases levels of complexity further.

36. On average, the successful tenderer will be given about three months to gear up for what are often huge amounts of work. Firms losing the work have to downsize very rapidly to minimise unnecessary overheads once the work has gone. These large swings in workload between suppliers can be very destabilising and will encourage mistakes.

37. Such commoditised procurement may enable individual forces to keep tight control of costs, although the complexity encourages constant debate about charging. But the system is very inflexible, it actively prevents scientists from talking directly with investigators, it discourages innovation because it is so proscriptive, and assumes submissions officers always know precisely what they require from scientists. While this might be true in routine cases, it is most unlikely with more complex investigations, risking missed or misinterpreted evidence and/or a more expensive process than necessary.

38. What is needed, at least for more complex cases, is a much simpler system which still allows police to tender on a large scale and at case level to keep full control of costs, but ensures that scientists have proper input into what might most usefully be done.

39. There are probably several ways in which this could be achieved. One would be through use of a matrix in which police record case type, and aspects indicating the seriousness of the offence and level of complexity likely to be encountered, and therefore the likely extent of forensic input needed. This matrix could be linked to secondary information from providers about average input required historically to help solve different categories of case which could, in turn, be used to calculate prices simply per case type.

40. Such a system would have the added benefit of allowing investigators and scientists to return to discussing their cases directly with one another. The procurement system has driven a wedge between them with which neither are comfortable and which does not serve the interests of effective investigation or justice.

7. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK?

41. Closure of the FSS has inevitably led to the loss of intellectual wealth because not all scientists have been re-employed by other providers or established their own practices.

42. But even without closure, the FSS would probably have been forced to downsize to become properly competitive, so the net effect might have been much the same. The real drivers here, as we have seen, are the combined effects of a procurement system which is only interested in the lowest common denominator, and in-sourcing not all of which has involved taking on experienced scientists.

43. Loss of intellectual wealth is not just connected with the FSS closure. Voluntary redundancy in the mid 2000s removed many highly skilled staff and others have left more recently because they no longer find the work sufficiently satisfying.

8. Are current arrangements for the FSS's archives satisfactory? How could arrangements for retention of case files and forensic materials in the UK be improved?

44. Current arrangements for accessing FSS data and evidential materials appear to be satisfactory although very slow. But it is not clear who is responsible for the archive.

45. Just as critical is the fate of evidential materials in current cases that are now routinely returned to the police for safe keeping. It is far from clear whether appropriate arrangements are being made for these and therefore the extent to which they would be suitable for re-examination if required.

46. The FSS had also collected a wealth of data and reference samples of materials examined over the years which could be extremely useful in improving interpretation of forensic findings. It is not clear where this is or how providers might be able to access it but this should be explored in the interests of improving justice.

Footnote

Although the demise of the FSS, and particularly the speed of it, contributed to current difficulties within the market, it was not the primary cause of them. Treating it as such will distract from the true causes and delay proper and urgently needed remedy.

January 2013

Written evidence submitted by Catherine Turner OBE BSc (Hons)

AUTHOR AND DECLARATION OF INTERESTS

I graduated with a BSc (Hons) degree in Biomedical Sciences, and have been a forensic scientist for over 24 years. Over the last 10 years I have specialised in the area of historic case reviews (cold cases), and was the National Lead in case reviews for the Forensic Science Service prior to its closure. In this field, I am co-author of the Home Office "Good Practice Guide: Cold Case Reviews of Rape and Serious Sexual Assault", published in 2005. In May 2012 I joined LGC Forensics as a specialist in forensic case reviews.

I was awarded an OBE for my work within forensic science in the Queen's New Years Honours list 2013, and have received 12 Commendations from within the Criminal Justice System—eight Crown Court Commendations and four Police Commendations. I was also part of the Police/forensic/CPS team nominated for the South Yorkshire Justice Awards 2009.

SUBMISSION QUESTION

1. This submission specifically relates to point 8: "Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?"

EXECUTIVE SUMMARY

2. The Forensic Archive is potentially a fantastic resource which is not currently being fully utilised, despite being staffed by enthusiastic and dedicated archivists. An expansion of its remit and collaboration with forensic specialists would assist forces further in their investigations, particularly in relation to historic offences.

SUBMISSION DETAILS

Current Picture

3. Prior to the closure of the FSS in 2012 senior FSS staff went to great lengths to ensure that the Forensic Archive became a true legacy of the FSS; retaining hard-copy and electronic historical information which might be of use in the future. Thus, in addition to obvious materials such as forensic case files and evidential materials recovered during examinations, a wealth of other information was recommended to be archived. Examples included historic methodologies, operating procedures, scientific histories of all systems ever used, legacy computer systems containing important case information, large-scale police projects, electronic data and spreadsheets.

4. From working in conjunction with Police Forces and the Archive it is clear that the Archive now only has limited functionality in terms of serving the Criminal Justice System, and that some of the information contained within it is no longer able to be accessed by archive staff. For example:

- It no longer has access to ANY FSS electronic information eg spreadsheets generated for police enquiries, intelligence led screens etc.
- It does NOT have a scientific function, and does NOT provide any scientific advice on any of the remaining legacy information, nor on specific cases; and archivists, whilst very helpful, are not themselves scientists and are not in a position to suggest from whom to obtain scientific advice.
- Legacy FSS case management computer systems are no longer available, and although data from them has been uploaded to the Archive's own system it is currently not possible to generate certain reports. For example, a force wishing to ascertain which sexual offence cases were submitted to the FSS within a certain time frame (in order to undertake large-scale cold case projects) cannot currently obtain this data. It is vital that Forces have some means to obtain this information as the vast majority of Forces simply do not hold this type of specific data, and historically relied on the FSS to assist.

5. The Forensic Archive is effective at providing case files and materials when requested, however, there are a number of steps required in order for this to be achieved accurately; the process requires exact information, and in some cases detailed scientific knowledge in order to obtain the *correct* materials:

- Case files and materials (except DNA extracts) are archived according to the FSS case reference number, not by the victim's name or any police reference numbers. Thus, the requestor needs to provide this in order for the archivist to find the correct materials. This is complicated by the fact that some cases have more than one FSS reference number, and the requestor needs to know all of the numbers in order to obtain all of the information for a particular case.
- Occasionally the only information the police have is the victim's name (or police reference number) and it is nevertheless possible for the Archive to undertake a search of their own computer system for an FSS reference number(s).
- Files and materials have to be requested by Forces themselves, rather than from forensic providers.
- It is no longer acceptable for a force to request "all" materials retained for a particular case—the archive requires that they are individually listed. This can and does cause problems for many forces as they are wholly unfamiliar with the types of materials that might be expected to be retained, and of course the forensic file is required in order to generate a list of materials.
- Many thus turn to their Scientific Support Units or Forensic Service Providers for assistance; however, not all have sufficient knowledge of this area and there is a real concern that paperwork and materials might be missed and therefore opportunities to find new scientific opportunities in old cases overlooked.
- DNA extracts are retained in a number of different systems depending on the era, and they are held according to their own unique identifying numbers. The case file and an experienced scientist are required to identify the correct identifying number for any particular extract.
- Thus, if incorrect or inappropriate materials are requested then the "wrong" materials could be tested leading to miscarriages of justice. Similarly, if insufficient materials are requested, then opportunities to progress a case could be missed.

Suggestions

6. The above retrievals procedure could be improved by understanding exactly what files and materials the archive holds and exactly where in the archive they are; at present, there is no full inventory at all. Bar-coding

each piece of material would be an enormous task, however, it would greatly assist in understanding what is available and ultimately speed up the retrievals process.

7. With specific reference to cold cases, Forces should be advised to consult with experienced forensic scientists with the appropriate specialist knowledge to assist them with the retrieval of the correct files and materials, rather than forces attempting to do it themselves. In this way, opportunities for further work are maximised, and the correct materials identified.

8. The functionality of the Forensic Archive must be improved if it is to meet the current and future needs of the Criminal Justice System. If there is specific relevant information of use to forces within the archive, then there must be some mechanism developed to retrieve it. The generation of force-specific case lists, and access to some of the electronic information are examples. In addition, consideration should be given to the Forensic Archive becoming more pro-active; working more closely with Forces and Forensic Providers—the setting up of a working party with representatives who have relevant experience and knowledge would be ideal. The staff within the Forensic Archive are helpful and enthusiastic and this offers a foundation on which to build such functionality further.

9. In terms of lack of scientific advice and direction it is suggested that a network of forensic scientists who know and understand historic FSS methodologies be made available. Thus, archivists can either call upon these individuals on a consultancy basis or pass their details to forces.

10. The current Forensic Archive only maintains FSS files and materials. It does not provide any facilities at all in terms of materials in current cases; retained materials such as fibre tapings and microscope slides are returned to forces along with all exhibits. It is vital that certain materials in current cases are stored pending future advances in technology; forensic science continues to evolve and today's unsolved cases may be eminently suitable for forensic reviews in the future. Currently, it is the responsibility of each force to address this, however, consideration should be given to the Forensic Archive extending its capabilities further to store such material.

January 2013

Written evidence submitted by Forensic Context Ltd

DECLARATION OF INTERESTS

1. Forensic Context Ltd was launched in March 2012 and provides independent consultancy, expert witness and training for CJS and other related professionals. It comprises two very experienced ex-FSS scientists who are specialists in body fluids, DNA, fibre and hair evidence types.

SUMMARY

2. The Government does not appear to have an effective strategy for forensic science that is sufficient to support forensic R&D and the CJS. Our greatest concern is the increasing fragmentation resulting from police insourcing which creates a high risk that the courts are not presented with a coherent and full picture of the value of the forensic evidence.

3. In our view the Forensic Regulator should be given statutory powers and the resources to properly fund his work. The timescales for compliance with his codes of practice and accreditation of laboratories should be reduced.

4. The current procurement system via tenders is unsatisfactory and is leading to instability for forensic providers and their staff—experienced scientists are being made redundant, TUPE'd to other providers or leaving the profession due the instability of jobs. The FSS closure has resulted in a loss of forensic intellectual wealth as illustrated by the information regarding ex-FSS London staff that we have provided.

5. There should be an ongoing central archive for case files and retained materials, properly funded and staffed by appropriately trained staff.

Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

6. We are not aware of any government strategy for the operational delivery of forensic science; if it has one, it has not been widely published.

7. Forensic research has been actively promoted by the Forensic Regulator who held a conference in November 2012, "Forensic Horizons: promoting awareness of research and development internationally", which was well attended by Forensic Science Providers (FSPs), academics, police representatives and others with an interest in the future of forensic science research. At this conference, the Technology Strategy Board's Special Interest Group (SIG) was introduced which aims to facilitate networking for research. Good forensic R&D needs a close partnership between forensic practitioners, other criminal justice users (eg police, courts) and researchers. This must be effective at all stages—firstly in nominating and prioritising topics for research, secondly during the research and thirdly for evaluating and implementing research. There is a wealth of

difference between carrying out academic research and then taking the results forward to provide practical solutions; validation and implementation are as important and academics will not be equipped to deal with this. We have yet to see whether the SIG will facilitate forensic research, however there is also a requirement for significant investment from FSPs which seems unlikely in the current climate. Researchers often focus on topics which provide interesting research but are not a priority for forensic practitioners. For example we have seen much research over the last 25 years on DNA such that we now have fantastically sensitive and discriminating DNA profiling systems but there has been little research on body fluid identification so we are using methods which are decades old, and often lack good sensitivity and specificity. For the identification of seminal fluid a test first published in 1896 is still the most specific test we have!

8. We struggle to see how the current arrangements will promote forensic science research in economically difficult times, particularly with instability in the forensic market (see para 22) and the already challenging cost pressures for FSPs. There is a wealth of research required to generate background data to assist the scientist and the courts in assessing the evidential value of the findings obtained from scientific testing. For example, research regarding the transfer and persistence of DNA, collection of data to inform on fibre/hair background populations on clothing and other surfaces. Such research does not produce a commercially attractive result, but would be hugely beneficial to the CJS. In our view, there is little prospect of such research being carried out.

9. The National DNA Database is currently reliant on DNA analysis methods which are now outdated and have been superseded by more discriminating methods in Europe and in the USA. We are not aware that there is any strategy to move forward on this. The UK has already slipped from being the world-leader in this area, and we are rapidly being left behind.

Did the FSS transition and closure run smoothly and within budget?

10. We are not aware of any significant issues with the quality or delivery of cases during the closure phase but this was largely due to the professionalism and dedication of FSS scientists and other staff.

11. We have been told that the FSS closure was under the predicted budget but question whether this included ongoing FSS pension costs which the Government has now underwritten.

What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)

12. *CJS*—We have seen that the FSS closure has hastened the increasing fragmentation of forensic science and that this is resulting in the loss of evidence for the CJS. Different stages of an examination within a case are increasingly being split across different organisations (police labs and FSP or multiple FSPs) with the aim of reducing costs. In many cases and usually the most serious types of crime, this fragmentation results in loss of evidence for the courts. We are unconvinced if there is a true cost benefit from this approach.

13. This fragmentation is symptomatic of inappropriate case strategies with, for example, a focus on the retrieval and identification of DNA when the real case issue may turn out to be what the DNA originated from and how it was deposited. The former (analytical/investigative stage) will be less adversely affected by fragmented services than the latter (evaluative stage).

14. The following is a hypothetical example we have created to illustrate this point but we are aware of actual cases where such matters are an issue—Police retrieve a knife from a crime scene and during the police laboratory examination for fingerprints, swabs of the blade and handle (potentially containing blood and/or DNA) are taken and submitted to the Force's FSP for DNA profiling. They obtain a full DNA profile which matches a named individual. If that person pleads guilty on the basis of this DNA evidence, there are no issues and the examination appears to have been done expeditiously and in a cost effective manner. However what if the individual doesn't plead?—The defendant may challenge the DNA match or, more likely, how the DNA came to be on the knife. This type of challenge will need to consider whether the DNA can be "attributed" to blood and whether the DNA was deposited as a result of direct contact or via an indirect transfer (ie "secondary" contact via an intermediary). Who can answer this question for the court? The police lab's examiner/scientist won't have the necessary DNA interpretation skills and the FSP's DNA scientist hasn't seen the knife and so cannot make a judgment based on the strength or pattern of any staining. Even if any staining on the knife had been tested and photographed in the police lab, which in many cases doesn't happen, it may still not be possible for the FSP scientist to give an opinion about the DNA attribution or transfer issues because they have not seen the item themselves. The preferred approach is for the knife to be examined for DNA and body fluids by the person who will report the DNA profiling results.

15. We accept that the police have to carry out a risk analysis and decide whether to use what they see as the cost effective option of an in-house examination, or send the whole item (rather than a swabbing) to their FSP for the entire examination, however it appears that there are issues with how well this risk analysis is applied and also a lack of appropriate standards for examination and note-taking in some police laboratories.

16. In-house examinations by police forces prior to submission of an item/case to a FSP also has implications for duplication of work and loss of evidence.

17. *Training*—The loss of experienced forensic scientists as a result of the FSS closure has impacted on the training and mentoring of less experienced scientists, and the current heavy workloads of those still in the market place has reduced their availability for the delivery of training.

18. *Maintenance of quality standards and accreditation*—we have seen several high profile quality failures in the press in recent months which illustrate that accreditation to ISO standards although facilitating good practice, does not in itself preclude errors even in large organisations. The current situation is leading to a greater number of smaller laboratories which are less likely than the larger established organisations to have the experience and the range of skills required to develop and maintain high quality standards, and maybe also the finances.

What should be role of the Forensic Science Regulator?

19. In our view, the Regulator should have statutory powers and should implement shorter timescales for the compliance of forensic laboratories with ISO standards. Whilst the Regulator's codes of practice and their associated appendices for specific areas of forensic science are in production and will aid the implementation of good quality standards, the time scale for compliance with them is too long. The FSS stopped taking new cases almost a year ago so potentially there is already a year's worth of casework produced by unaccredited and unregulated laboratories reaching the courts. In the meantime, the only external test of their work is during reviews of specific cases by forensic experts employed by the defence.

20. We would like to see greater communication by the Regulator with the forensic science community, especially the very small providers who are not well represented by working groups. He should make greater use of the wealth of forensic knowledge in the marketplace and employ consultants for advice where appropriate. We have also often found that newsletters on his website are out of date when they first appear.

21. For the small forensic businesses, participation in the Regulator's working groups *pro bono* is not feasible. He is getting valuable advice from such participation and should be offering appropriate financial recompense.

What is the size of the forensics market and how stable is it?

22. The market is fragile and the results of recent police tenders have seen work moved between FSPs. This constant shifting of work gives us concern (see para 33) and in what appears to be a shrinking market, the possibility of another major provider pulling out is a real risk.

How are forensic science services procured by police forces and could procurement processes be improved?

23. The rounds of tenders every few years for police work results in regular transfer of forensic work between FSPs and hence staff redundancies or transfers via TUPE. There are also usually staff losses as individuals cannot always relocate to where the work has gone; even if they can move, constantly changing employers provides no continuity for the individuals concerned and hence no structured training and development. FSPs are essentially working with fairly short-term contracts and will hire and fire staff as required. This will eventually result in even more loss of experience to forensic science than we already have as people will leave the profession due to the instability of jobs (see paras 26–27).

24. In many cases, Police Forces tend to buy tests rather than a case strategy, examination and interpretation. This will result in loss of evidence for courts, predominantly in the more serious crime types. (See comments in paras 12–16).

25. In a commercial market the current procurement system may be effective for analytical “test” based work, but is ineffective when an evaluative opinion is required on work which has been carried out in a fragmented manner. It is difficult to see a solution to the issues arising from a reluctance to properly fund evaluative work other than a centrally funded organisation.

Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)

26. Yes there has been a loss of intellectual knowledge—many people have left the profession and although others may still be classed as forensic scientists they are not fully utilising their skills.

27. Example from FSS London:

30 reporting officers (ROs) from the FSS London homicide team were TUPE'd to the MPS evidence recovery laboratory at Lambeth, together with approximately 70 examiners from the FSS homicide and sexual offences teams. On face of it, this may be counted as them still being in forensic science profession, however the 30 ROs have effectively been deskilled by the operating model employed by the MPS—their new role is focused on the recovery of evidence rather than its evaluation. These 30 ROs are currently being trained to search items for blood and other body fluids and evidence types. In the FSS these ROs, many of whom have 10–20 years of experience, carried out case evaluations and complex DNA interpretation as well as file review (peer review of another scientist's statement). In the MPS model they are not able to use their evaluation and DNA skills, resulting in

a great loss of skill to the CJS and those who hold these skills at other FSPs being given increasing workloads. The TUPE'd staff are currently undergoing a long training program which is progressing slowly, such that many are not yet signed off as competent to examine items themselves a year after transfer. The same applies to file review—we understand that none of the 30 ROs are yet signed off to do MPS file review, something which many of them were highly skilled with in the FSS.

For the FSS London ROs from the sexual offences team—at the present time the majority are still in forensic science. This comprises 2 who became freelance consultants, one became a lecturer in forensic science and 12 went to other forensic providers (but largely on short term contracts)—however 4 of those 12 have recently been made redundant by LGC. In addition, 3 people left the profession; others are considering doing so as they are now without jobs or very unhappy in their current roles.

Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

28. Although it is said that all FSS materials are stored at a central location we understand that some case files are being kept by police Forces and others are not returned to the archive after use. It is unclear how effective the archive will be as a long-term storage solution given the difficulties in tracking the return of files.

29. We have already encountered difficulties with the FSS archive staff being unable to locate information requested by enquirers and ex-FSS staff being asked to assist. It is unclear whether this is due to issues with the IT system used to record what is in the archive, lack of training of the archive staff or their lack of scientific knowledge, or a combination of these.

30. We are concerned as to what happens to new cases going forward and would like to see one central repository used by all FSPs—both for files and retained materials. Given cases from one police Force (and even work within a single case) may be split across more than one provider, it will become increasingly difficult to locate the relevant files or materials without a central repository. Although the development of digital case notes in the future may alleviate some issues with access to case files, there will always be a need to access retained case materials. For any scientist engaged by the defence, it will be prohibitively expensive for them to view case files and materials which are spread out across the country.

January 2013

Written evidence submitted by Key Forensic Services Ltd

1. Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

1.1 We are not aware of any cohesive central government strategy for the development of the UK forensic market. The combination of austerity reductions prompting police forces to be far more selective on what evidence and case types they submit to FSPs alongside police plans to increase the amount of forensic work insourced is dramatically reducing the market size for outsourced forensic services provided by the private sector. We estimate the market available to private providers has reduced from circa £180 million of a few years ago to circa £80 million today, with further downward pressure as forensic budgets are cut further.

1.2 Despite the proven value of using forensic services in the detection of crime and the inherent cost efficiencies of using forensic analysis vs alternative policing measures, police and other law enforcement agencies continue to apply their own budget reductions to out-sourced services, including forensic services. Private forensic suppliers will have their ability to conduct R&D severely curtailed as a direct result of reduced profitability and also a reduced opportunity to recover initial R&D investment in a rapidly shrinking market, removing incentive to make initial R&D investment.

1.3 Many sources of government funding to support R&D have been terminated, leaving no or very little grant aid for the support of R&D, especially in the forensics sector due to its rapidly shrinking size.

1.4 As a consequence of the rapidly falling market size FSP services are increasingly price sensitive, building pressure for further price reductions. The combined impact of falling market volumes and falling prices will inevitably have an adverse impact on resource available for on-going R&D or other improvements to services developed by the private FSPs, whereas very little or no R&D or similar improvements have been developed by police in-house activity so far.

1.5 As a consequence of the points raised above it is our conclusion that there is no national strategy for forensic science and, therefore, it cannot possibly be sufficient to support either forensic science R&D or the criminal justice system.

2. Did the FSS transition and closure run smoothly and within budget?

2.1 The implementation of the contracts to award previous FSS casework to KFS ran smoothly from our perspective. We have no knowledge of the budget to close the FSS and so have no opinion on this aspect.

2.2 It is our opinion, however, that whatever the costs of closing the FSS these will be recouped many times over by the more cost efficient delivery of the same services from private FSPs who are providing the same high quality service at considerably lower prices than the FSS were using.

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

3.1 The vast majority of outsourced police forensic services are procured via the Next Generation Forensic Framework Agreement. For private FSPs to secure approval to supply services via this procurement vehicle they must have secured the necessary accreditations for each forensic discipline they wish to provide. The accreditations are awarded and subsequently monitored by an independent accreditation service, UKAS, the same service that awarded and maintained similar accreditations to the FSS. Therefore, the private FSPs provide services to the same or higher standards as previously provided by the FSS, which are constantly reviewed and enhanced by UKAS, The Forensic Science Regulator and other stakeholders such as the National DNA Database Delivery Unit and NDNAD Strategy Board.

3.2 The same is not true of some small FSPs, individual forensic experts who continue to operate outside of ISO 17025 and some in-house police forensic services, where individual police forces are able to provide their own forensic services without accreditation, or at best with nominal accreditation but without the breadth of accreditation required for each forensic discipline, which is a mandatory requirement for private FSPs before they are eligible to tender for police forensic contracts.

3.3 To comply with accreditation requirements all operational staff must be thoroughly trained and assessed as competent in each aspect of their area of expertise. This is a requirement of the Forensic Science Regulator Codes of Practice and Conduct a cornerstone to achieving ISO 17025 accreditation.

3.4 KFS did not use the FSS for any of its training requirements. As a consequence, it is KFS' opinion that none of its own staff have suffered any detriment to their own training needs.

3.5 KFS offers training courses across the breadth of forensic disciplines to police and other interested parties, on a similar basis to that previously provided by the FSS. It is thus KFS's opinion that the CJS has not materially suffered from any loss of training service offered by the FSS, as the same service is available from KFS and we welcome the additional source of income any such service would generate.

4. *What should be the role of the Forensic Science Regulator?*

4.1 The Forensic Science Regulator should set the standard for any particular service and then promulgate the minimum standard service providers must achieve prior to providing services. The Regulator should thus promote forensic best practise and effectively set the standard for minimum service levels in the UK, thereby promoting the excellence of UK based forensic services to the world.

4.2 Having established best practise the Regulator should monitor and ensure that the appropriate minimum standard for the provision of any forensic service is maintained. This requirement should be universally applied to all providers of forensic services.

4.3 The Forensic Regulator should act as the ultimate arbiter of disputes arising between FSPs and other CJS partners.

4.4 The Regulator should promote the UK FSPs to international criminal investigation services and their CJS.

5. *What is the size of the forensics market and how stable is it?*

5.1 During the last few years austerity measures have generated pressure on police budgets causing forces to be more selective on what they will submit for forensic analysis. Police forces have also increased pre-submission screening of evidence prior to submission for forensic analysis. Macro economic factors have thus had a substantial impact on market volumes. Over the same period pricing has become increasingly competitive as suppliers seek to grow or maintain their total sales income against the backdrop of a very rapidly declining market. The total market has thus reduced due to an overall reduction in volumes and also because of price reductions.

5.2 As part of the FSS closure a significant proportion of police forensic activity previously outsourced was instead brought in-house, further substantially reducing the market size available to FSPs. The in-sourcing of previously outsourced service is the most destabilising factor for private FSPs, as the gradual decline in revenue from reducing volumes or falling prices is more manageable over time, whereas in-sourcing represents an immediate market reduction from which there is no recovery. Continued police in-sourcing activity also undermines investor interest in the sector, increasing the perceived "risk" that the market will reduce further or disappear in-house entirely. At the very least, police in-sourcing increases price competition to the point that margins are potentially squeezed beyond an FSPs ability to generate sufficiently attractive investor returns.

5.3 KFS estimates the current police outsourced forensic market at circa £80 million and very likely to fall further as a result of additional budget reductions for police, being disproportionately focused on forensic expenditure.

5.4 The market cannot be considered stable until the persistent reductions in police forensic spend and in-sourced activity have stabilised.

6. How are forensic science services procured by police forces and could procurement processes be improved?

6.1 The vast majority of forensic services for the police are procured using the Next Generation Forensic Framework Agreement. The national procurement process is managed by the Forensic Marketplace Management Team attached to the Home Office (formally Police Science and Forensics Unit, NPIA). The FMM Team assist regional police forces in the implementation of their own tenders under the umbrella framework agreement.

6.2 The closure of the FSS delayed the previous schedule for regional mini tenders using the framework agreement, resulting in the current round of tenders being truncated to ensure that they are all renewed within legal time frames. It would be better for future tenders to be phased so that there was a reasonable period for scaling up and/or scaling down during implementation of contract awards.

6.3 Some police tenders remain outside the framework and are either made using a purchase order for low value purchases or a separate stand alone procurement process. We could not suggest how this process may be improved.

7. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)

7.1 On leaving the FSS undoubtedly some of its scientists left the forensic science profession, by either retiring, taking up alternative careers or even leaving the country.

7.2 However, the market for outsourced forensics has more than halved since the decision to close the FSS was made. In such circumstances there would have inevitably been a loss of intellectual wealth even if the FSS had remained open. Many of the scientists previously working at the FSS have since taken up roles within the private FSPs or police forensic facilities. There remains in the remaining FSPs and police forensic laboratories sufficient intellectual property to ensure the efficient and effective delivery of forensic science, especially as the volume of activity has halved since the FSS's closure.

8. Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

8.1 We are not privy to the detail of how the FSS's archives are arranged. We are not best placed to suggest how such arrangements might be improved.

Declaration of Interest by Key Forensic Services Ltd. Key Forensic Services Ltd is private UK owned company, offering a broad range of forensic services primarily to UK law enforcement agencies, and established as a direct competitor to the FSS. As such, Key Forensic Services is anticipating a more rapid uptake of FSS clients, which the company would otherwise have anticipated over a more protracted period via the scheduled Police procurement program.

January 2013

Written evidence submitted by Institute of Traffic Accident Investigators

1. PURPOSE

1.1 The purpose of this briefing document is to submit evidence to the House of Commons Science and Technology Committee regarding the closure of the Forensic Science Service, taking into account the terms of reference set by that committee. This document only addresses the questions posed by the Committee upon which the authors are able to express an informed view.

2. THE INSTITUTE OF TRAFFIC ACCIDENT INVESTIGATORS

2.1 The aim of the Institute of Traffic Accident Investigators (ITAI) is to promote road safety for the benefit of the public by improving the technical and general knowledge and skills of persons involved in the field of investigating road traffic collisions. It promotes the free and open exchange of knowledge and provides a forum for communication, education and representation, through all of which it aims to enhance expertise.

2.2 It also seeks, through the collective knowledge of its members to improve the standards of safety of vehicles and roads of all kinds.

2.3 The Institute is committed to promoting a professional approach to traffic accident investigation by encouraging honesty and integrity among investigators.

2.4 It is with the above aims in mind that this document has been prepared.

2.5 Author Peter Sippitt was a regular user of FSS services to support Metropolitan Police investigations into fatal road traffic collisions throughout the life of the FSS. Dr Richard Lambourn was employed as a Principal Scientific Officer with the FSS, and before that in the Metropolitan Police Forensic Science Laboratory, before moving to a forensic group at the Transport Research Laboratory.

2.6 Bearing in mind this evidence is submitted on behalf of the Institute of Traffic Accident Investigators, the content of this document will deal with the investigation of road traffic collisions.

3. RANGE OF SERVICES

3.1 One major advantage of the FSS was the range of services provided by a single organisation. The London laboratory was split into a number of departments, delivering the majority of specialist examination services required by the police, the investigation branch of the Revenue & Customs and other enforcement agencies.

3.2 A simple example would be the investigation of a failing to stop fatal road traffic collision, colloquially known as a “hit and run”. Such investigations may require the following types of examination:

- *DNA Analysis*—The purpose is to identify a driver or other suspect who has made off from a vehicle abandoned at the scene of a collision or elsewhere. This service may also be required to link a victim found at a collision scene with a suspect vehicle found elsewhere, using contact trace evidence found on the vehicle in the form of blood and human tissue.
- *Vehicle Parts and Paint Analysis*—In cases where no vehicle has been recovered, analysis of fragment of vehicle parts, such as mirrors, lights and plastic components, as well as paint flakes, found at a collision scene may identify a short list of vehicle makes and models that could have been involved in the collision.
- *Mobile phone analysis*—Where suspects are apprehended or a mobile phone is recovered from the scene or a vehicle, analysis of mobile phone usage may help to identify a suspect or their associates. It may also establish that a mobile phone was being used at the time of a collision and may have contributed to its cause.
- *CCTV Analysis*—This work can be split into two distinct areas: firstly the analysis of CCTV to identify vehicles and suspects in poor quality CCTV images where a number plate cannot be read or a face is unclear. Secondly, detailed calibration of CCTV frame rates to establish the speed of a vehicle that passes through the camera’s view or the movement of a pedestrian, cyclist or other road user.
- *Collision Investigation*—The FSS was a provider of validation services for the evidential reports prepared by Police Collision Investigators, often adding additional evidence using methods and computer programmes not available to the police.
- *Component Failure*—There is often a requirement for the services of experts in metallurgy, tyres, vehicle lights and other components, to establish whether parts have failed and contributed to a collision; or whether a defect or failure has simply been caused by the damage sustained in a collision.
- *Vehicle Borne Data*—Modern motor vehicles contain sources of digital and analogue data that can yield evidence relevant to an investigation or the condition of a vehicle. Examples include the tachographs fitted to large goods and passenger vehicles, a range of journey and incident data recorders fitted by the emergency services and fleet operators, as well as the electronic control units (ECUs) monitoring numerous vehicle components. Such devices require specialist analysis and interpretation.

3.3 This far from exhaustive list of examples of required services that were provided by the FSS demonstrates not only the advantage of using the various departments of one reputable organisation to support an investigation, but also the considerable benefit which may accrue from the multi-disciplinary nature of a large forensic science laboratory.

3.4 Since the demise of the FSS, it is not unusual for the team conducting an investigation into, for example, a “hit and run” fatal collision to instruct four or more different private forensic service providers, where there is a requirement for a range of services such as those listed above. However, these separate providers will generally work in isolation and have little understanding of the procedures adopted by specialists in other disciplines working on the same case or of how their findings might be brought together to aid the investigation into the incident in question.

3.5 An example would be where a materials science laboratory is asked to determine the nature of the damage or failure of a mechanical component. They may well be able to say that it is metal fatigue, or overload, or whatever, but having no knowledge or expertise in collision investigation, they would be unable to offer any insight into why such damage might have been caused in a vehicle collision or what its significance might be.

3.6 The same services, plus additional expertise not listed above, may be required in a murder investigation where a motor vehicle has been used as a weapon or a vehicle contains evidence that is paramount to the investigation.

4. QUALITY ASSURANCE

4.1 Those managing police investigations must be confident that a forensic service provider is capable of delivering quality expert evidence that can stand up to scrutiny in any form of review or court proceedings.

4.2 The FSS had a regime of internal training and accreditation of its expert staff long before the inception of the Forensic Science Regulator and ISO standards such as 17020 and 17025. In some disciplines, staff were not allowed to undertake case work unsupervised for up to two years from the date of their employment.

4.3 The FSS also had a system of peer review and quality assurance of case work that ensured that the customer for these services could be confident of the accuracy of the evidential scientific reports produced.

5. PRIVATE SECTOR FORENSIC SERVICE PROVIDERS

5.1 Following the closure of the FSS, the police service is now forced to engage the services of private companies and, for some niche services, private individuals practising as expert witnesses. Experience has demonstrated that the quality of such companies and individual experts can vary considerably. Some individual experts have no peer review quality assurance process in place.

5.2 As the person making the decision within the Metropolitan Police Road Death Investigation Unit as to the most appropriate forensic service provider to instruct for particular specialist services, as detailed earlier in this document, I (Peter Sippitt) have favoured ex-members of the FSS, whose expertise, depth of knowledge, integrity and experience as an expert witness in court is fully proven.

6. ONGOING CASES

6.1 One issue that has caused considerable logistical problems in several ongoing cases is where a scientist dealt with a forensic submission and provided an evidential report whilst employed by the FSS London laboratory, prior to being made redundant. These cases were subsequently referred to the Crown Prosecution Service (CPS) for a charging decision.

6.2 Due to questions raised by the CPS or by an expert instructed by the defence, it has been necessary to instruct the ex-FSS expert to undertake additional work or review a defence expert's report in such cases. Fortunately, each time this has happened, the expert has been someone who is still practising in this field, but is now employed by a private company.

6.3 One issue is the fact that FSS case files are in archive storage in the Midlands and the ex-FSS scientist is not allowed to apply for the file and collect it. This burden falls to police, who have to apply for, collect and take responsibility for the file. The file is then provided to the expert to allow them to undertake the necessary additional investigation or review and provide a supplementary report.

6.4 This process has suffered from the additional issue of having to establish payment arrangements with the expert's new employer for the additional work undertaken involving chargeable hours.

7. CONCLUSION

7.1 The authors of this document and the Council of Management of the Institute of Traffic Accident Investigators in general would be pleased to assist the House of Commons Science and Technology Committee further with their inquiry into the closure of the Forensic Science Service, if requested.

7.2 In line with the third aim of the Institute, stated at paragraph 2.3, the Council of Management would be pleased to contribute to any debate regarding the future role of the Forensic Science Regulator in the field of road traffic collision investigation, if such input is deemed appropriate.

January 2013

Written evidence submitted by J R Welch, B.Sc.

1. I welcome the opportunity to submit evidence to this inquiry. I was one of those made redundant from the London Laboratory of FSS Ltd in July 2010. I now work as a self-employed consultant in forensic document examination.

Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

2. It is not apparent that the government has any strategy for forensic science. There is perhaps a vague hope that "market forces will provide" but that ignores the fact that market forces always choose the shortest-term option whilst human lifetimes and activities operate in the medium term.

Did the FSS transition and closure run smoothly and within budget?

3. The costs of transition and closure should be available from government figures. The process was certainly not smooth. The initial closure of three laboratories was intended to reduce costs and allow those remaining to continue operating. Just one difficulty was that toxicology expertise had previously been concentrated in the Chorley laboratory. When the decision to close that laboratory was taken senior management seemed surprised that none of the toxicologists were willing to transfer to London (which would have entailed selling their houses in Chorley and entering the London housing market at three times the price). The few remaining toxicologists elsewhere in the FSS were under considerable stress from then on.

3. The relatively small department in which I worked in the London Laboratory was scheduled for closure at the end of July 2010. At short notice the closure was brought forward by three weeks precipitating a scramble to finish work-in-hand and preventing an orderly run-down to closure. Then, one of us was required to remain at work, effectively at “stand-by”, for some further months. This lack of consistency seemed to typify the gross incompetence displayed by some in the management of FSS Ltd..

What impacts have the FSS’s closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained?

4. In the criminal justice system the forensic sciences are being used in investigations much less than they were before the closure of FSS Ltd. Submissions of case items to the major suppliers used by constabularies (LGC Forensics, Key Forensics, and Cellmark) have declined year on year. None of those companies is getting as much work or making as much profit as its owners would like; arguably, none of those companies is making enough money to ensure its continued operation.

5. Two recent cases in which I was engaged by defending solicitors provide concrete examples.

- (a) The first concerned the allegation, made long after the event, of sexual abuse of a very young school-girl. The prosecution introduced a handwritten note supposedly written by the victim close to the time of the alleged events. The prosecution had not sought evidence from forensic document examination to confirm (i) that the note was written by the alleged victim nor (ii) that it was contemporaneous with the alleged events.
- (b) The second case involved alleged drug-dealing by someone who used a residence occupied by several individuals. Documents found at the property were alleged to be the accused person’s “dealing lists”. No forensic science evidence was sought by the prosecution to show that they were written by the accused. Informal conversation with the investigating officer revealed that he had wanted to seek such evidence but had been prevented from doing so by the “forensic budget holder”. Also, the documents were not searched for indented impressions which would have had the potential to widen the investigation.

In each of these cases the police investigation was limited by insufficient use of forensic document examination.

6. The constabularies cannot afford to use external suppliers greatly and will look to use cheaper in-house resources wherever they exist. It is likely that the police use of in-house resources is costed in a way different from that used for external forensic science. Constabularies have always had direct responsibility for scene-of-crime examination and for developing and comparing fingerprints. The temptation for departments to stretch the boundaries of their work beyond their expertise is considerable. Fingerprint staff searching documents for indentations and scenes-of-crime staff investigating suspicious fires are examples of work likely to be undertaken in a manner less than expert.

7. Forensic science research in England is much reduced. The view is that research may lead to knowledge but not profit, at least not in the short term, so why should private industry fund it? The most recent volume of the UK forensic science journal (“Science and Justice”, Vol 52, Issue 4, December 2012) contains eight peer-reviewed papers. Only two originate in England; two are from the United States, one comes from each of Sweden, Belgium and New Zealand, and one is an international collaboration involving one English participant. While this shows that the UK journal is held in high regard internationally it suggests that UK forensic science is now insufficient to support the UK forensic science journal.

8. The quality of forensic science in the UK is generally high because academic science is about discovery of the truth and operates within a moral code. Qualified scientists, in the main, are dedicated people willing to work altruistically. A difficulty now is that forensic scientists are no longer isolated from the commercial pressures which encourage hurried work and cutting corners. Indeed, “product charging”, “performance pay”, and “bonus payments” positively encourage such activities.

9. Accreditation is largely irrelevant apart from it increasing overhead costs by enormous amounts. For at least half of my career formal accreditation did not exist; in my direct experience standards were just as high then as they were after formal accreditation systems were introduced. Prior to formal accreditation there occurred the occasional calamity—the “Birmingham Bombs Case” and the “Preece Case”. After accreditation there occurred the occasional calamity—the “Damilola Taylor Case” and the case which gave rise to the appeal court judgement in “R v T”. I do not minimise the concerns raised by such cases; I point out that accreditation has not eliminated them.

What should be role of the Forensic Science Regulator?

10. In the forensic sciences and in a number of other industries the appointment of a regulator is proof positive that a truly competitive market does not exist. The forensic science regulator has attached himself to the accreditation bandwagon—a juggernaut which has no need of extra resource. Satisfying the requirements of the forensic regulator, of the “National Forensic Framework”, and of “ISO17025” requires many tens of thousands of pounds and is beyond the financial resources of any but the largest forensic organisations. The regulator seems to have restricted his attentions to the major providers—those who tender for the police forensic science contracts. He seems to have ignored completely the smaller-scale forensic science laboratories; those with perhaps just one or two self-employed practitioners who generally provide expertise to defending solicitors in criminal matters and to those engaged in civil disputes. Some of those self-employed forensic scientists have technical and ethical standards every bit as high as those of the larger operations; some are unqualified charlatans. The regulator should be concerned with identifying which is which.

11. The regulator should be more involved with the commercial and financial aspects of the forensic science industry. How does he view the “Association of Forensic Service Providers”? It sounds like a price cartel, how can he ensure that it doesn’t operate as a price cartel? How would he prevent other anti-competitive actions such as informal “no poaching-of-staff agreements”?

12. The single practitioner and small partnership forensic laboratories are largely dependent on fees paid by the Legal Services Commission but channelled through the instructing solicitors. Solicitors generally regard such payments as a means of augmenting their cash-flow and hold them for as long as possible. Is there any reason why Legal Service Commission payments for forensic consultants cannot be paid directly to the consultants? The regulator should be concerned with such matters. An active group of forensic consultants available to review and challenge work undertaken by larger laboratories is a force for quality assurance at least as effective as, and possibly much more effective than, cumbersome systems of accreditation. However, if the consultants do not receive payment for work undertaken they will not be active for very long. A defending solicitor seeking to use forensic science must obtain quotes for the work from a number of consultants and, in general, use the consultant offering the lowest quote. There is no “quality threshold”; the lowest quote may well be from the least qualified. The regulator should be concerned with such matters. The regulator should ensure that he and the Legal Services Commission can distinguish forensic document examiners from graphologists.

What is the size of the forensics market and how stable is it?

13. Overall the size of the “forensics market” is unknown and unknowable. It depends on so many variables it cannot be regarded as stable. In forensic document examination the decline in the use of clearing-bank cheques reduced the amount of a particular type of work; at roughly the same time the increasing use of various printing systems attached to home computers introduced a whole new area of work. The introduction of DNA profiling increased work in some areas and reduced work in others. The field of “Computer Forensics” has grown from nothing to become a major specialism during the second half of my working life. Changes in the law relating to drinking and driving have eliminated whole laboratory departments; changes in the law relating to drugs and driving may require new ones. Again, 40 years ago forensic science was much used to investigate domestic burglary via the analysis and comparison of paint-flakes, glass fragments and shoe-marks. Now, such investigations have almost disappeared.

14. In practice, the size of the “forensic market” is determined by the amount of money that is devoted to it. The changes referred to in paragraph thirteen reflect changes in police priorities and changes in police budgets as much as changes in society. The more money that is available for forensic science the more forensic science will be used and that is irrespective of the money originating in a direct civil-service budget or as a sub-set of the police budget.

15. It is essential to focus on the fact that forensic science is science applied to the law. It is best undertaken by qualified scientists who are able to apply expertise appropriate to whatever problems arise. The current fashion for production-line processes operated by staff with a specific vocational training is driven by accountants seeking financial efficiency. In some ways that is a laudable aim but it lacks flexibility and cannot serve all the varied needs of criminal and civil justice.

How are forensic science services procured by police forces and could procurement processes be improved?

15. Procurement of forensic science by police is a complicated and expensive tendering process providing employment for procurement teams, sales teams, account managers, customer relations teams and accounts clerks all of whom are unproductive of forensic science. This maintains a fiction of being a competitive process but with three main suppliers and, maybe, five groups of purchasers there can be no real competition. Indeed, one object of real competition is to drive out of business the less efficient competitors so that the resulting lack of competition enables higher prices to be charged by the surviving monopoly supplier. Can Parliament or the police contemplate with equanimity such a truly competitive environment for the forensic sciences?

Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK?

16. Yes. The department in which I worked in London employed six scientists; one now works in Australia and two have left forensic science. Three are employed or self-employed in forensic science in a less than full-time capacity. Professional colleagues in the Huntingdon and Wetherby laboratories were approximately twelve in number and I am aware of only two who are now working in forensic science.

Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

17. I have had only a little contact with this. The arrangements seem adequate.

January 2013

Supplementary written evidence submitted by J R Welch, B.Sc.

Further to my previous submission to this committee I have observed the oral testimony given on 13 February 2013.

ISO17025

Each of the three witnesses and at least some of the committee appear misinformed about ISO17025. At various times mention was made of laboratories and scientists being accredited to the ISO17025 standard. That cannot be; ISO17025 is concerned with accrediting processes not laboratories and not scientists. That misunderstanding is common and connived at. I am aware of one constabulary fingerprint department which has obtained accreditation for just one of its several fingerprint development processes and which “allows it to be thought” that the whole department is accredited. The very large cost of ISO17025 accreditation almost ensures that such limited use of it will become the norm. The restriction of ISO17025 to processes is in marked contrast to the accreditation previously offered by the Council for the Registration of Forensic Practitioners (CRFP). By reviewing the case-notes of casework undertaken by individual practitioners in the previous six months the CRFP assessed (i) the processes employed by the practitioner, (ii) the appropriateness of their application, (iii) the drawing of inferences from the results of those processes, and (iv) the reporting of those results and conclusions. Any court receiving evidence from an expert witness registered with the CRFP would know that the work of that witness was well regarded by the appropriate peer-group. Peer-group assessment is *not* self-assessment as some of the witness panel seemed to think. The CRFP was criticised for being expensive; it has been replaced by a less useful system which is much more expensive still. A system of accreditation like that offered by the CRFP should be introduced, perhaps in association with the Forensic Science Society. Another alternative to ISO17025 is provided by the American Society for Testing and Materials (ASTM). The ASTM publishes agreed standards in forensic science as it does in very many areas of science, engineering and quality control. They are available for a cost of \$70—that is not a mistype—seventy dollars US. The low cost does not indicate low quality. The standards are produced and constantly reviewed by thousands of qualified professionals collectively working hundreds of thousands of hours on a voluntary basis.

STREAM-LINED FORENSIC REPORTING

The panel of witnesses also made reference to “stream-lined forensic reporting”. That system may produce some results more quickly than previously but, by reducing the amount of forensic work undertaken, it almost guarantees that the full circumstances of the incident will not be uncovered. Karen Squibb-Williams stated that “streamlined forensic reporting would not be applied to complex cases”. In so doing she revealed a difficulty that bedevils all discussion of matters forensic—at the beginning of an inquiry and even some way into it no one knows how complex it is going to be. One dramatic example is illustrative. An acquaintance is an analytical chemist with long experience of drugs analysis and began his career when a substance suspected of being a drug of abuse would be analysed to find out what it was. In so doing it would be discovered whether or not it was indeed a drug of abuse. That approach has long been replaced with a stream-lined procedure involving a small number of tests for typical proscribed drugs. In this instance those tests were all negative and a much less experienced analyst would have stopped work. The analyst working on the case thought more deeply about the results obtained, made further tests (risking disciplinary procedures for “overworking” the case), and reported to the head of department that the carrier-bag of off-white powder was not any drug of abuse but a carrier-bag of home-mix explosive.

February 2013

Written evidence submitted by J W F Harriman

INTRODUCTION

I have been an independent firearms forensic examiner since about 1985. I am a sole trader with my own practice. During an average year I will give expert advice in some 30–40 cases, mainly for the Defence.

EXPERIENCE AND QUALIFICATIONS

- Director of Firearms since 1991 for the British Association for Shooting & Conservation, the UK's largest shooting organisation with 130,000 members.
- Served in the Territorial Army—Royal Artillery & Royal Armoured Corps—from 1974 to 1991; and then on the Army Reserve until April 2006, retiring with the rank of Captain.
- A former registrant of the Council for the Registration of Forensic Practitioners. (CRFP closed 31 March 2009).
- Member of the Academy of Experts (leading professional group for expert witnesses).
- Professional Member of the Forensic Science Society.
- Independent advisor to the Technical Sub-Group of the Association of Chief Police Officers Firearms and Explosives Licensing Working Group (ACPO FELWG).
- Member Home Office Historic Firearms Reference Panel.
- Fellow of Society of Antiquaries of London.
- Visiting Lecturer in Firearms and Ballistics at Wolverhampton University.
- Forensic advisor to the Practitioners Group. (A panel of representatives from the Home Office, ACPO FELWG and the British Shooting Sports Council).

As a firearms forensic examiner I have confined my answers to that particular specialist field.

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

In my opinion, there is no integrated government strategy for forensic science in the UK. Certainly, there has been no government involvement of which I am aware in the field of firearms examination. Accordingly, there is no R&D programme and no real support for the criminal justice system.

2. *Did the FSS transition and closure run smoothly and within budget?*

I am unable to comment on this.

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

In my experience the closure of the FSS has caused a dramatic increase in the use of police support staff as expert witnesses in firearms cases. They tend to be force armourers or firearms licensing enquiry officers. They are used because of the cost implications associated with instructing a commercial forensic provider coupled with lead times for submission of reports.

Their training is minimal and most are required to prepare evidence-ready reports after attending a two day basic course from a commercial training provider. In my experience their ability varies considerably from those who are not competent to undertake firearms examinations to those who can be relied upon to deal with basic classification issues. I am aware of several cases where police support personnel have been allowed to give evidence when they were clearly *non peritus*. This is especially the case when the issue before the court is whether a firearm is an antique for the purposes of the exemption at Section 58(2) of the Firearms Act 1968.

The courts appear to be uncritical of *non-peritus* police support staff who appear as experts. If any doubt as to any expert's credibility exists, then the judge should direct that a *voir dire* hearing is held to test that expert's credibility.

The use of police personnel invariably raises questions of their impartiality. In my experience, most police employees feel that they need to sustain their employers' objectives. Equally most are unlikely to be robust if subjected to pressure by senior officers. The virtue of the FSS was its separation from the police service.

As a general principle, I suggest that it is not in the interests of justice for the police service to have its own forensic arm. There should always be clear blue water between forensic scientists and law enforcement officers.

Since the closure of the Council for the Registration of Forensic Practitioners (March 2009) there has been no accreditation for forensic firearms examiners. This is a disturbing situation as several offences within the Firearms Acts carry mandatory custodial sentences on conviction, unless the judge finds there are exceptional circumstances. When a Defendant's liberty is a stake and then subject to a mandatory gaol sentence, it follows that the Crown's expert adviser must be a properly accredited person.

There is a need for some form of accreditation system for the following aspects of firearms examination.

- Classification.
- Functionality and potential for lethality.
- Gunshot residue.
- Comparative Microscopy.

4. *What should be role of the Forensic Science Regulator?*

The role of the Regulator is adequately defined as it is now. The Regulator's website has some useful material for experts as downloads.

5. *What is the size of the forensics market and how stable is it?*

I can only advise on the area of firearms examination. As gun crime is rare in the UK, the size of the market is small. However, it is stable because criminals always seem able to obtain firearms even though many classes of guns have been prohibited from private ownership.

There are a small number of larger commercial forensic providers eg LGC Forensics, Key Forensic or Manlove. They tend to deal with most police and Prosecution work.

There are about six active independent providers—sole traders and one consultancy group who by default deal with Defence work.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

Basic firearms forensic work is often given to police support staff eg armourers or licensing g personnel. This is unsatisfactory as few are properly qualified.

More serious work tends to be given to the larger commercial. If contracts are awarded on a value for money basis after a "beauty parade" of potential providers then it is hard to see how this might be improved.

Police forces could obtain good quality initial forensic advice by going to a local independent provider at rates less than the commercial firms and with quicker lead and turnaround times.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

In my opinion, the scientists in the FSS Northern Firearms Unit and the London laboratory were a world class pool of expertise in firearms forensic matters. The dispersal of this pool is a disgrace. The UK has lost a valuable and irreplaceable asset as a result.

Some former FSS personnel have retired and other have found new roles within NaBIS and Met Police Firearms Unit. A small number have limited work from the larger commercial providers and one has set up as an independent examiner. Presumably the rest have either left forensic science or moved to another discipline within it.

The FSS firearms examination community was competent, professional and composed of agreeable people with whom it was a pleasure to work. I counted many friends amongst it and mourn its passing.

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

I have little experience of this aspect of the FSS's closure. However, on the one occasion when I needed to review an FSS file, it was made available to me by the Met Police Firearms Unit in a speedy and efficient manner.

OTHER MATTERS

As a Defence examiner, I often experience considerable difficulty in obtaining access to firearms held as evidence. Often a court order has to be obtained to permit me to have access. My examination is often conducted in a police property store or interview room under less than ideal conditions and always under time pressures. It is almost impossible to have evidence left with me although I have the means to secure it and the necessary authority to possess it legally.

There is no equality of arms between Prosecution and Defence in terms of costs. The CPS will accept any commercial charges from its preferred provider. The Defence is always at the disadvantage in that where legal

aid, is concerned prior authority must be sought. If granted there is a schedule of maximum charges which are always lower than those of the commercial providers used by the Crown.

January 2013

Written evidence submitted by the Royal Statistical Society

1. The Royal Statistical Society (the Society) welcomes the new inquiry into forensic science in the UK and the opportunity it gives for the Society to respond.

2. The Society is the UK's only professional and learned society devoted to the interests of statistics and statisticians. Founded in 1834, it is one of the world's most influential and prestigious statistical societies. It aims to promote public understanding of statistics and provide professional support to users of statistics and to statisticians.

3. The Society established a working group in Statistics and the Law following the controversies surrounding the cases involving Sudden Unexplained Deaths in Infancy, such as the Sally Clark case. Membership of the group, apart from statisticians, includes representatives of the forensic science profession and the legal profession (including the judiciary, the Criminal Bar Association, the Faculty of Advocates, and academic lawyers). The group is concerned with the correct interpretation and evaluation of all judicial evidence involving an assessment of uncertainty. Expert testimony of statistics evidence as a scientific speciality in its own right is not so much the concern of the group. Many forms of scientific evidence involve uncertainty. For example, the proper evaluation and interpretation of a DNA profile requires a working understanding of various aspects of probabilistic inference and statistical data. In addition, communication of the results of such analyses to courts and juries presents further challenges for lawyers and expert witnesses.

4. The group has received funding from the Nuffield Foundation to support the production of a series of four "practitioner manuals" under the general title of *Communicating and Interpreting Statistical Evidence in the Administration of Criminal Justice*. Two manuals have appeared to date: one on the "Fundamentals of probability and statistical evidence in criminal proceedings" (2010) and a second entitled "Assessing the probative value of DNA evidence" (2012). A third manual outlining the basics of the logic of forensic proof, and a fourth addressing case assessment and interpretation, are scheduled for launch in July 2013. The published manuals are available on the Society's website.³²

These practitioner-orientated publications, intended for wide dissemination, will go some way to satisfying part of one of the key recommendations of the Silverman review "Research and development in forensic science: a review". These manuals endeavour to provide lawyers, courts and expert witnesses with practical guidance and "authoritative reviews" of the interpretation and evaluation of judicial evidence with a statistical or probabilistic component.

5. The Society is pleased that greater attention is being paid to forensic science within RCUK and the work of the Research Excellence Framework (REF). Forensic science is by its nature an applied science, and as such the core of its direct contribution to the REF is likely to be targeted at "impact" rather than individual research "outputs". However, there are many potential indirect contributions to research as indicated in the Silverman review (Table 1, p.6). In the assessment of grant proposals to RCUK, it is important that, where appropriate, reviewers who appreciate the forensic scientific nature of a proposal be appointed. A pool of suitable reviewers is required. It is not yet clear that forensic science has been established as a strategic research priority for the Research Councils, another key recommendation of the Silverman review though there have been contacts between RCUK, academics, industry and end users about this.

6. The Society notes with approval that there is now a Knowledge Transfer Network established by the Technology Strategy Board.

7. However, the Society is concerned that the UK lacks any permanent institution or body with the authority and expertise to formulate an overall strategy addressing the needs of the justice system and supporting future research and development through appropriate funding, collaborative working and sharing of resources, as recommended by the Forensic Science Society in its submission to the Silverman review. There is also an urgent need for strategic direction in professional training and the development of normative frameworks for ethical practice (to underpin and supplement existing ethics codes produced by professional organisations and learned societies, etc).

An independent forensic science institute with a remit to commission and conduct research and development in forensic science would be the most obvious, and perhaps most desirable, way of filling this significant institutional gap in the UK's criminal justice machinery. Notably, Recommendation 1 of the US National Academies' wide-ranging and authoritative review of forensic science in the USA was that:

To promote the development of forensic science into a mature field of multidisciplinary research and practice, founded on the systematic collection and analysis of relevant data, Congress should establish and appropriate funds for an independent federal entity, the National Institute of Forensic

³² <http://www.rss.org.uk/statsandlaw>

Science (NIFS). (National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* (2009), 2–21).

Prior to its closure and the dispersal of its physical and human resources, the Forensic Science Service (FSS) might have provided firm foundations on which a UK institute could be built. With the FSS disbanded, and its expertise dissipated (and potentially draining away), the creation of an independent institute presents greater challenges. Moreover, there is an additional element of urgency, in that some key staff may retire or relocate overseas before their advice or other, more substantial, contributions can be secured.

8. Proper attention has to be paid to the differing needs of “research”, understood as original investigation undertaken in order to gain knowledge and understanding, and “development”, meaning the translation of research outputs into procedures and tools with practical utility. The Silverman review recommends a regular single cross-disciplinary forensic science conference, facilitated by the Forensic Science Regulator. It is important that such conferences cover all aspects of forensic science research and development. The programme has to include reports of blue-sky research. Presentation of such research to bring it to the attention of forensic scientists can only be to the benefit of all parties, the research scientists and the forensic scientists. The conferences must not be concerned solely with policing requirements or with issues of cost and timeliness. Space and time are needed for original thought.

9. The Society is concerned that judicial evidence should be evaluated and interpreted correctly. This is a vital, yet frequently overlooked or downplayed, dimension of forensic science. A recent (July 2012) report by Gill, Guinness and Iveson on the interpretation of DNA evidence for the Forensic Science Regulator provides an example of this importance. It is perverse for the administration of justice to commit resources to promoting scientific work of the highest quality, if the resulting evidence is then evaluated incorrectly or misinterpreted in court, potentially leading to miscarriages of justice.

It is worth noting that some statements that forensic scientists have routinely stated, for example, that a particular technique provides a unique identification, are now of questionable scientific validity and some courts in the US have limited what can be said. The book by Brandon Garrett (2011) *Convicting the Innocent* (Harvard University Press) studied the first 250 people exonerated by the Innocence Project on the basis of DNA evidence (theirs did NOT match the crime scene). In 75% of the cases, there was erroneous eye witness testimony and in 75% of the cases there were errors in the forensic evidence (some cases had both types of incorrect evidence). Also, some state courts now carefully examine eyewitness identifications and evaluate whether “line-ups” were properly conducted. Two examples are *State v. Lawson* Or. No S059234 (2012) and *State v. Henderson* 27. A. 3d 872 (NJ. 2011).

Scientific evidence today plays an ever-expanding role in criminal proceedings in the UK, and statistics and probabilistic reasoning underpin modern science. One unfortunate consequence of the closure of the FSS, however, has been the dispersal of its in-house statistics and interpretation group. This group was a significant national asset, both in terms of its direct input into FSS case-work and as a producer of published research at the cutting edge of international debate. The synergy which arises when a group of talented individuals work together far outweighs the opportunity for the education of others that may be thought a benefit of dispersal. Yet it is difficult to see how a disaggregated constellation of small providers could ever achieve the economies of scale (supposing it had the motivation) to replicate such concentrated expertise in forensic statistics. This would be another area, of prime concern to the Society, for proactive intervention and strategic direction for any mooted forensic science institute for the UK.

10. Comments on some of the specific questions posed by the Committee follow.

11. Question 1: *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

The Society is unaware of a published strategy for forensic science in the UK.

12. Question 3: *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

By its very nature, research is a long-term activity. A period of two years since the announcement of the closure is too short a time for the effect on research to be noticed.

13. Question 7: *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK?*

See paragraph 9 above.

Written evidence submitted by Professor Peter Gill

Declaration of Interests

See previous submission: <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmsstech/855/855vw19.htm>

Current position: I am Professor of Forensic Genetics at the Norwegian Institute of Public health and the University of Oslo, Norway. Previously, I was principle research scientist at the FSS research laboratories for a period of 25 years (1982–2008).

C.V.is available at: <https://sites.google.com/site/peterdhill/>

INTERNATIONAL INTERESTS

- (1) I am member of the EU-FP7 (security) funded *EUROFORGEN* network of excellence <http://euroforgen.com/> and I am responsible for coordinating research activities within workpackage 3.
- (2) I chair the *ISFG DNA commission* <http://www.isfg.org/Working%20Groups/DNA%20Commission> which is responsible for publishing standards and guidelines for practitioners.
- (3) I chair the *ENFSI methods, analysis and Interpretation and subgroup* (part of the DNA working group)—also responsible for providing practitioners with standards and best practice guidelines: <http://www.enfsi.eu/about-enfsi/structure/working-groups/dna>

RESEARCH ITERESTS

- (1) I work primarily on the interpretation and statistics of DNA profiling evidence. I specialise in supporting the development of open-source software to interpret complex mixtures see: <http://forensim.r-forge.r-project.org/> . In addition, current interests include writing a major review, based on recent incidents, on the causes of Miscarriages of Justice. See my website for details of current activities, latest publications and information on training courses: <https://sites.google.com/site/forensicdnastatistics/>

SUMMARY OF MY SCIENTIFIC OUTPUT

Publications and statistics are available at: <http://scholar.google.com/citations?user=Ba1THJYAAAAJ&hl=en>

Summary:

- (a) 188 publications.
- (b) No. of citations (how many times my publications have been cited by other workers)=10,700.
- (c) My h-index = 58.

What impacts have the FSS closure had?

Britain demonstrably lags behind the rest of Europe—international credibility is seriously damaged

(1) The FSS ranked 5th in the world in terms of scientific citations.[1] No other laboratory in the UK features as a world class laboratory devoted to forensic science. In addition, England and Wales are the only countries in Europe without a national forensic science centre.

(2) The rest of Europe has implemented new marker systems based on the *European Standard Set of Markers* recommended by the European Network of Forensic Science Institutes[2,3] (ENFSI) and adopted by the EU commission. UK appears to be isolated in Europe by failing to move this project forward within the time-scales suggested by the EU.

(3) The new systems have much more powerful discriminating power and are able to analyse highly degraded and compromised samples (not possible with current system in use). UK is currently locked into outdated technology that is more than ten years old. This means that cases will not be analysed using best practice methods. Cross -border comparisons with other countries will be compromised since the systems in use will no longer be entirely comparable. Is there a timetable for UK introduction?

Impact of FSS closure on quality

Notable high profile errors have occurred

(4) The New Scientist anonymous survey[4] was strong evidence that there is concern from employees within the UK laboratories. More than three quarters of respondents believed that there was significant risk of miscarriages of justice within the current system. It is highly significant that two high profile errors were identified a matter of weeks *after* the prophetic publication of the New Scientist report (see next section). The New Scientist survey demonstrated the importance of discovering the morale and opinions of employees. In

the interests of restoring public confidence, I would recommend that a new survey is initiated to discover if the position has improved.

(5) The loss of quality predicted by the New Scientist review came to fruition with two high profile cases in: “wrongful arrest of Adam Scott”[5] and the contamination event combined with a transposition error in “Death of Gareth Williams”.[6,7] Both errors were the result of bad practice (clearly not following international guidelines eg[8])—in particular, ignoring negative controls that give DNA profiles (Scott); failure to check results before uploading to the national DNA database (Williams).

A zero error rate is scientifically untenable

(6) The regulator review was critical of the offending laboratory but suggested that no further contamination incidents were present in a batch of 26,000 samples.

(7) Further work is needed, however. To clarify the position: there is no test for contamination (the effect is hidden) and it is not possible to equate the (presumed) regulator’s view of “absence of evidence” with “evidence of absence”. In a (contradictory) piece of work to understand the mechanisms and impact of contamination, Gill and Kirkham,[9] working under FSS auspices, showed that it was possible to estimate contamination rates, but it is *not* possible to identify *which* samples were contaminated. A review carried out under FSS auspices on a typical casework process demonstrated a contamination rate of 1 in 1000 samples analysed. *Not all contamination events lead to errors of interpretation, however.*[9]

(8) A zero error rate for commercial providers is scientifically untenable (note that the statistic quoted in Scott was 1 in 1 billion, and ignored the possibility of error). There needs to be *pro-active* assessment of error rates that should be disclosed and published.

What should be the role of the forensic science regulator?

(9) Clearly the regulator role cannot properly function in isolation but needs to be part of a coherent centralised organisation that is devoted to forensic science. In previous submissions to the committee I recommended that the core functions: research, regulation/accreditation, and standards, were subsumed and coordinated centrally by a national centre of excellence.[10] Forensic science is rapidly changing and improving. This means that there needs to be a mechanism in place to implement research into casework—implementation needs to be simultaneous across UK laboratories. This is difficult to achieve within a highly fragmented environment. The necessary infrastructure required to validate and to implement new technology to the same standards across providers does not currently exist.

The way forward

(10) We must accept that the FSS (as it existed) was no longer fit for purpose, but it seems obvious that the core functions could have been preserved in a national centre of excellence (UK could also have retained its international ranking and associated credibility by this route). This course of action would have resulted in divestment of routine casework activities to commercial organisations, but the new centre would have retained the ability to carry out analysis of complex casework requiring novel technology that is not used by any commercial provider. This is because the profit motive precludes use of any technique that is loss-making. This has resulted in a rapidly growing technology-gap in the UK. For example implementation of latest new body fluid markers (RNA), mitochondrial DNA analysis; Y chromosome analysis; informative SNP ancestry markers are not in routine use

(11) There is a concern that the Home Office exerts undue influence over the regulator and the role should be remote and independent from this government body. Otherwise conflict of interest may arise.

(12) There is a concern that the regulator role is restricted to committee discussions without the necessary resources to implement recommendations.

(13) There should be much more focus on discovery of error rates and limitations of evidence. The information should be in the public domain.

(14) As a prime example: there needs to be much more *pro-active* assessment of laboratories to prevent errors occurring. Note that the laboratory involved with the Scott and Williams cases was fully accredited by the authorities, but this did not prevent catastrophic failure. The regulator response to the Scott case was mainly *re-active*. However, we must recognise that there is an implied weakness within the accreditation/regulatory process itself in that it failed to detect major deviance from acceptable laboratory practice in the first place. In a recent review by Gill *et al.*[11] under UK regulator auspices, it was proposed to develop three over-arching “assessor” roles (if properly resourced, this will begin to address the concerns). The new roles are:

- (a) Setting technical standards.
- (b) To monitor that standards are achieved.
- (c) To set and to evaluate on-going competency (for example) assessment via proficiency testing.

(15) However, significant resources are required to implement the points above (in a purely commercial environment this is quite challenging). Also this is further evidence of the need for a UK centre of excellence to take over the combined roles of research/implementation/standards etc.

LIST OF REFERENCES

- [1] http://www.researchresearch.com/index.php?option=com_news&template=rr_2col&view=article&articleId=1085593.
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- [10] <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmsctech/855/855vw19.htm>.
- [11] <http://www.homeoffice.gov.uk/publications/agencies-public-bodies/fsr/interpretation-of-dna-evidence?view=Binary>.

January 2013

Written evidence submitted by Professor Niamh Nic Daeid

EXECUTIVE SUMMARY TO RESPONSE

My response is a personal rather than one representing my organisation. I have limited my comments to matters primarily focusing on research and accreditation. There are 3 major issues:

1. Since the closure of the Forensic Science Service and increased requirements for cost savings to be made, more police forces are creating in-house forensic science capabilities. There is no statutory requirement for these laboratories to be accredited to a quality standard such as ISO 17020 or ISO 17025. This requirement is in place for commercial forensic science providers who wish to engage with the police procurement process. Thus, a two tier system potentially exists. The Forensic Science Regulator is best suited to discuss these issues in detail.
2. The forensic science research landscape is uncoordinated and fragmented. It is questionable whether the new Special Interest Group that has been established reflects both the depth and breadth of research currently being delivered. The SIG is in danger of being too end user driven, ignoring the fundamental research requirements of the discipline which have been articulated by reports such as the US National Academy of Science report (2009)
3. There is no identified research funding scheme to develop both basic and applied research in Forensic Science despite a call for this in the Silverman review (2011). Without such funding, forensic science research, is in danger of being only commercially and end user driven, ignoring the fundamental work which is required to underpin good scientific practice in relation to evidence currently being presented within the courts and denying the development of new knowledge that is available to all. Such research is vital to provide a scientific footing for many established forensic science evidence types as well as the identification of new technologies which may have relevance to the field.

BIOGRAPHY

Professor Niamh Nic Daeid is professor of Forensic Science at the Centre for Forensic Science, University of Strathclyde. She has been involved in forensic science case work, education, professional practitioner training (both UK and overseas), forensic science research and professional development for 19 years. She is the past editor in chief of Science and Justice (one of only a handful of forensic science dedicated international peer reviewed journals worldwide) and sat on council, including as an office bearer (executive council) of the Forensic Science Society for nine years. During her time on council she managed and ran all of the Society's professional postgraduate diplomas and administered their research scholarship scheme. Professor Nic Daeid also chairs the European Network of Forensic Institutes (ENFSI) working group for fire and explosion investigation (representing 63 Forensic science institutes and laboratories from across Europe). She sits on the

Interpol organising committee for the forensic science managers symposium involving the directors of all 190 Interpol represented countries and coordinates the final production of the three year forensic science research review for that symposium. Prof. Nic Daeid also acts as a consultant for the United Nations Office on Drugs and Crime (UNODC). She runs a large multidisciplinary research group dedicated to various aspects of forensic science research in close collaboration with practitioners across the criminal justice system. Her research team has the largest peer review publication output in the UK. She has published 115 peer reviewed papers (google scholar), 10 book chapters, five edited books and 125 conference presentations.

CONSULTATION RESPONSE TO SCIENCE AND TECHNOLOGY COMMITTEE FOLLOW-UP INQUIRY INTO FORENSIC SCIENCE

This response reflect personal views and not necessarily the views of my organisation. I have no interests to declare.

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

1.1 *Effective strategy for forensic science:* Forensic Science in England and Wales is delivered by forensic science providers accredited by UKAS and, increasingly, by in-house forensic services within police forces. Some in-house police forensic science laboratories have become accredited, and others are moving towards accreditation, however there remains no statutory requirement for them to do so. Forensic Science Providers, on the other hand, are required under police procurement rules to have ISO17025 accreditation for their services.

1.2 There may be a risk that unaccredited in-house provision of forensic science may not be delivered to the same quality standards as that of the accredited forensic science providers. In-house delivery of forensic services may also contract the commercial forensic science market further as well as reducing access to forensic services at reasonable cost for the defence.

1.3 *Support for forensic science research:* The establishment of a Forensic Science Special Interest Group as a TSB Knowledge Transfer Network is a welcome development occurring as a recommendation of the 2011 Silverman Review. However, while the SIG may facilitate R&D discussion, it may not in itself provide adequate sector wide representation of the current research landscape or provide the strong research leadership needed to develop a National forensic science research strategy and framework that draws the strands (academic, law enforcement and legal) together in a balanced way. Similarly, "Live-time forensics" supported by ACPO establishes areas of research and development desired by the police but does not necessarily address the more fundamental scientific research that is required in order that the courts can have confidence in some of the evidence being presented before them.

1.4 It has been clearly demonstrated by the US National Academy of Science report (2009) that both fundamental and strategic scientific research is required to underpin both existing forensic science applications and drive the future application of novel scientific developments within the criminal justice arena. Indeed the US National Institute of Justice has just issued two funding calls to support both "basic" and "applied" forensic science research with this purpose in mind. There remains no consistent government source of funding for forensic science research in the UK.

1.5 Partnership agreements and strategic funding initiatives between end user organisations (police, forensic science providers, etc) and key academic centres with a proven track record in research delivery within forensic science is essential to the development of a coherent and balanced research strategy that will serve the whole of the criminal justice sector rather than sub sections of that sector. Such partnerships must be based on shared values, trust and an understanding that in general the work conducted is for the generation of knowledge to support the common good of society and not only for commercial advantage.

2. *Did the FSS transition and closure run smoothly and within budget?*

2.1 No Comment.

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

3.1 (i) Market contraction as more police forces bring forensic services in-house may put pressure on the current forensic science providers to maintain commercial viability. All forensic science providers working within the police procurement framework have accreditation, however no such requirement is in place as yet for in-house police laboratories although the forensic science regulator clearly favours this approach. This potentially introduces risk into the quality of forensic science being used, and introduced, into the courts.

3.2 (ii) The FSS investment in R&D, in recent years at least, was used primarily to support product development and innovation in order to provide commercial advantage. As such, its closure has not resulted in a large loss of funding (as a partnership resource) available to the higher education sector where fundamental research is more likely to occur. RCUK funding for academic based research in forensic science has not been provided in any significant way since the EPSRC Think Crime program. Currently there appears to be no real

appetite to alter this until research in forensic science is valued and prioritised to a greater extent by government and given strategic focus by the research councils. Such strategic focus has begun to occur in the United States, Australia and some European countries while in the UK, forensic science R&D is in serious danger of falling behind other countries, eroding its reputation, competitiveness and capability in the field.

4. *What should be role of the Forensic Science Regulator?*

4.1 The Forensic Science Regulator maintains a key role in the promotion and establishment of quality standards in forensic science in England and Wales. As forensic science provision moves increasingly in-house within police forces, the maintenance of clear unambiguous quality standards as well as staff competence is essential in providing confidence in the criminal justice system. The Forensic Science Regulator may also at some point in the future require statutory powers within his role particularly when there is the potential for the UK government to opt out of the EC pre-Lisbon police and criminal justice measures.

5. *What is the size of the forensics market and how stable is it?*

5.1 No Comment.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

6.1 No Comment.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

7.1 The closure of the FSS has meant the loss of many trained and experienced practitioners from the industry. Some have gone overseas or left the profession completely while others have been redeployed within the industry or in some cases into academic posts. The FSS also had a number of dedicated teams (for example in evidence evaluation) which made significant contributions to the development of the thinking within these areas and this expertise has largely been disaggregated.

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

8.1 No Comment.

January 2013

Written evidence submitted by Forensic Science Northern Ireland (FSNI)

FSNI DECLARATION OF INTERESTS

This response represents the views of Forensic Science Northern Ireland (FSNI), an Executive Agency of the Department of Justice (DOJ), Northern Ireland.

This response is from the operational perspective of an organisation providing a broad range of integrated forensic science services to the criminal justice system in Northern Ireland. The mix of cases investigated by FSNI tends more towards serious crime and terrorism than volume crime, which may mean a somewhat different perspective compared to England and Wales.

Given the inherent unpredictability of demand for forensic services (which is heavily dependent on the nature, timing and number of individual cases), FSNI has, on occasion, accessed "spare" capacity in other UK jurisdictions. FSNI has been affected by the closure of the FSS and the state of the commercial market in England and Wales, especially when seeking to broker excess demand to other providers.

FSNI's awareness of the situation in England and Wales is also informed by membership of the Association of Forensic Science Providers (AFSP) as well as involvement with the Regulator's Forensic Science Advisory Council (FSAC) and its various sub-groups.

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

FSNI is not aware of a cohesive strategy for forensic science for England & Wales, or of any consideration of the impact of the closure of the FSS on the rest of the UK, including Northern Ireland. The Forensic 21 initiative "aims to provide an agile and flexible response to the changing demands of the police service through the delivery of effective business change" in relation to forensics. However, it adopts a policing perspective rather than a comprehensive strategy addressing the scientific ethos of forensics or the wider ramifications for the delivery of justice across all parts of the UK.

The substantial reduction in the commercially contestable market (through reduced expenditure on forensic services and police in-housing of services) may destabilise the market in the medium/long term. In generic marketing terms, a shrinking market with falling profit margins is not usually attractive and consideration needs to be given to sustaining market attractiveness for providers.

The forensic market is relatively small, uncertain in terms of continuity, high cost in terms of capital investment and skilled staff and high risk in terms of potential negative exposure. Yet the procurement approach adopted appears to have been geared to creating a commodity market rather than an added-value market. For example, it is understood that the procurement approach has reduced costs for some volume crime forensic work (which is more linear and less integrated in nature and less robustly contested in court), but there are indications that the high-end national capacity and capability, especially for complex cases such as serious crime and terrorism, has been threatened.

A report by the US Academy of Sciences (Strengthening Forensic Science in the US: A Path Forward: 2009) recommended the separation of forensic provision from the investigating authority (police) for reasons of quality management and cognitive/selection bias. The in-housing of forensic services within police forces would seem to run counter to that recommendation.

2. *Did the FSS transition and closure run smoothly and within budget?*

We are not sufficiently aware of the internal processes and budgets of the FSS transition to make a meaningful comment. We are aware, however, about some general concerns expressed within the wider forensic science community that the closure of FSS did not run smoothly. It is not clear, for example, how decisions were made around in-housing some services and building police laboratories.

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

(i) The reduction in national capacity caused by the closure of FSS has affected FSNI's ability to broker excess work at peak demand periods and reduced the Agency's resilience and ability to meet its turnaround times.

The increased reliance on police in-house forensics (unless systematically and structurally mitigated) also potentially increases the risk of cognitive or selection bias in relation to the exhibits selected for forensic examination, the choice of examinations conducted or not conducted on them and the subsequent objective evaluation of the evidence.

In the interests of justice, forensic evaluation reports often need to be caveated in the light of such issues. As outlined above, the 2009 US Academy of Sciences report recommended the operational independence of forensic science laboratories from the investigating authority (police). We are unaware of any strategic consideration of this operational independence issue during the FSS transition and the drive to in-house services within police forces. Quality Accreditation, with its mandatory self-critical approach, including peer reviews, quality audits, case assessments etc, is highly relevant, especially when much in-housing was, as we understand it, carried out in the absence of any quality accreditation.

There are also concerns on the related issue of the ability of a commercial provider to request additional (potentially exculpatory) exhibits or examinations in the interests of justice (and in so doing increase their own revenues) whilst still being accepted as completely objective.

There were also some indications of distortion in cost comparisons between in-housing (without accreditation) versus external provision (with full accreditation). Additional costs are associated with accreditation fees but more significantly with the workings of a good quality management system, such as peer reviews, internal audits, blind trials etc. which are essential in preserving the integrity and objectivity of the science. Such quality on-costs are significant.

(ii) FSS was a recognised world leader in R&D. FSNI was collaborating with FSS on R&D in several areas at the time of the closure announcement. With the closure of FSS, the burden of R&D falls largely on commercial providers. However, with the contestable market having shrunk and with profit margins squeezed by the procurement process, there is little incentive for investment by the commercial companies in R&D, especially given the high capital costs and restructuring costs associated with the relatively short procurement contracts.

We would have some initial concerns regarding the proposed approach to R&D for forensics, as outlined by the UK Technology Strategy Board's FoSci Special Interest Group presentation to AFSP.

- There is a risk of Forensic Science R&D being marginalised if included in the much larger crime detection and prevention portfolio.

- The focus on the creation of Intellectual Property (IP) from which UK PLC could generate economic benefit is not highly applicable to Forensic Science R&D, which is much more about the adaptation, application and validation of existing technologies. The majority of any new IP would probably lie principally with the instruments and technology suppliers rather than the forensic providers themselves.
- Forensic R&D expenditure should ideally be economically linked to the wider potential benefits accruing downstream in the justice system through, for example, early guilty pleas, avoidance of miscarriages of justice, reduction in appeals, remand hearings, etc. as well as upstream to the police in terms of cost efficiency and speed of investigations.

4. *What should be role of the Forensic Science Regulator?*

It could be argued that the regulator's remit should be wider than quality *per se*, as the design and functioning of the market present a risk, in their own right, to the future provision of forensic science within the UK.

5. *What is the size of the forensics market and how stable is it?*

We understand the market to have reduced to ca £170 million p.a. in terms of police expenditure, of which only some is commercially contestable (ie not in-house). The market size is very small in comparative terms and given its dynamics and barriers to entry, it is by no means certain that it will remain attractive to current or potential providers. The high costs of bidding for contracts (in terms of capital investment in labs, staff etc.) act as disincentives, as does the somewhat commoditised nature of the procurement approach.

Forensic science is not primarily a commodity service, except in those few disciplines based on lower value, standardised, straightforward, high volume processes (and even then only in the testing, as distinct from the evaluation aspects, *viz* DNA). It is in essence a technical business-to-business market. Such markets normally function best where value is added to the business processes of the buyer through partnership working and is reflected in healthy margins and long term relationships for the providers, thus incentivising them to further develop their services for mutual benefit. There is limited evidence that such a market dynamic has developed and there is a significant risk of an exit from the market by one or more providers, which would further reduce national capacity and capability.

This issue is compounded by the lack of any economic model that links forensic expenditure to monetary and other benefits in police investigations, criminal justice processes, or societal outcomes related to the improved detection, investigation and deterrence of crime facilitated by improved forensics. In the absence of such a model, commoditisation of the market through the dominance of direct cost to the police becomes the default.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

FSNI do not bid for procurement contracts with police forces in England and Wales. However, short-term contracts are by their nature destabilising in a service requiring reliable local accessible presence by competent suppliers. In addition, the use of commoditised procurement approaches does not incentivise added value.

However, an alternative model could be constructed whereby a number of providers could simultaneously supply a competitive range of services within one region, with the market share of each being determined, over time, by the quality and overall cost-effectiveness of the services they continue to provide. It would generally be sensible to assign work on one case (or set of related cases) to a single provider to avoid fragmentation of the forensics and the individual case management. This approach might help create a more genuine added-value market and one for which providers would be better incentivised to invest in service improvement over the longer term.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

It is not possible for us to comment definitively on this. However, it would be surprising if a significant number of highly skilled and experienced scientists—observing a shrinking market with, as they perceive it, a reduced appreciation of their expertise and added value and with less long-term job security—would not be incentivised to look to other scientific opportunities for their future careers. We are aware of some highly experienced former FSS employees setting up private consultancy services but cannot comment upon the numbers involved or the longer-term viability of the services.

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

We are not close enough to the detail to comment. However, in addition to the archives themselves, there is the issue of the corporate memory of FSS having been lost, including personal “ownership” of case files with staff leaving the organisation. This may present difficulties in revisiting cold or historic cases.

January 2013

Written evidence submitted by Promega UK Ltd

Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

1. Historically, the UK has led the world in the application of DNA technology to forensic science. The first cases were analysed over 25 years ago by pioneers Sir Alec Jeffreys, Peter Gill and Dave Werrett using multilocus probes. Later, single locus probes were used by Cellmark and the Forensic Science Service for paternity and criminal casework analyses respectively. The development of short tandem repeat (STR) technology, first implemented in the UK in 1994 allowed the idea of a simple to use DNA database to be conceptualised, and the development of a second generation multiplex (SGM) system for the simultaneous analysis of six STRs allowed the establishment of the world's first DNA database. A new chemistry (SGM Plus) was introduced to the National DNA Database (NDNAD) in 1999 to include four additional STRs providing improved match statistics, and better performance in terms of sensitivity. The power of the NDNAD is of great value in forensic investigation. Since 1998, more than 300,000 crimes have been detected with the aid of the Database, reassuring the public that offenders are more likely to be brought to justice. Indeed, between 1 April 2012 and 30 September 2012 the NDNAD produced 61 matches to murder, 225 to rapes and 12,537 to other crime scenes.[1]

2. In 2006, the European Network of Forensic Science Institutes (ENFSI) suggested that additional loci and more robust DNA chemistries would be required for forensic science, particularly with the proposed exchange of DNA data in accordance with the Prm treaty.[2,3] This requirement for improved DNA systems was made a European Council Resolution in 2009[4] with a requirement for member countries to implement the new chemistries as soon as practically possible, and no later than 30 November 2012. NPIA were fully aware of these timelines as they have representation at the ENFSI DNA meetings, and access to publicly available publications.

3. The development of new chemistries by leading manufacturers including Promega, Life Technologies and Qiagen has provided an opportunity to not only include additional loci as per the ENFSI requirement, but also to improve the robustness of the chemistries. The new chemistries (let's call them Next Generation Chemistries (NGC)) from each of these commercial suppliers are much more robust to inhibitors, have more “miniSTR” markers and are more sensitive, suggesting that meaningful results are more likely to be obtained from more challenging samples with new chemistries than the only chemistry that is currently approved for use on the database SGM Plus. The NGC chemistries developed by Promega (PowerPlex ESI/ESX) have been fully commercially available since 2009.

4. Competition in the marketplace is likely to drive innovation and improvement of DNA analysis reagents which will be of benefit to the criminal justice system. Indeed, the NGC chemistries developed by Promega in response to the European requirement PowerPlex ESI/ESX have already been superseded on two occasions to date, with the implementation of direct amplification and faster amplification (PowerPlex 18D), and further robustness in amplification (PowerPlex 21; PowerPlex Fusion). Promega's next generation (three generations on from NGC, four from SGM Plus) will be available in April 2013 and will include all existing improvements, as well as the ability to rapidly cycle, reducing the amplification time from 1.5 hours to 45 minutes.

5. Through red tape, and/or a lack of strategic planning or decision making and poor resource management causing delays to planning and implementation, the UK is now one of the very few European countries who have not implemented modern robust chemistries. Whilst the new European NGC systems have been evaluated by a number of UK forensic science providers, and findings published,[5–7] implementation of the improved systems is not yet possible as the results cannot currently be loaded to the NDNAD.

6. In an attempt to put the UK forensic DNA marketplace into perspective: most of Europe are already using the “next generation chemistries”, including:

- Sweden—PowerPlex ESX16;
- Norway—PowerPlex ESI17;
- Estonia—PowerPlex ESI16;
- Finland—ESSplex Plus;
- Denmark—NGM SElect;
- Ireland—NGM SElect;
- Belgium—PowerPlex ESX16/17;

- Germany—PowerPlex ESI/X17;
- Poland—PowerPlex ESX16/NGM;
- Italy—PowerPlex ESI/X16/ESSplex;
- Luxemburg—PowerPlex ESI/X16;
- Switzerland—PowerPlex ESI17;
- Czech Republic—ESI/X17;
- Slovakia—PowerPlex ESI17;
- Poland—PowerPlex ESI/X17;
- Hungary—PowerPlex ESI16;
- Russia—PowerPlex ESX17;
- Greece and Cyprus—ESX17;
- Turkey—PowerPlex ESX16/ESSplex;
- Israel—PowerPlex ESI16;
- Algeria—PowerPlex ESI16.

NOTE: This list is not intended to be definitive and other chemistries may also be in use in these countries.

France is currently using PowerPlex 18D for database samples and PowerPlex 21 for casework. Spain will be implementing PowerPlex Fusion in the near future for casework and database samples. Belgium is already using European NGC STR systems and are considering moving to a global kit (such as PowerPlex Fusion or GlobaFiler) in the near future.

7. It seems that the UK has moved position from “Pioneer” to “nowhere near” through the inability of the NPIA, and specifically the National DNA database to respond to changes in the forensic DNA marketplace and legislative requirements, despite having known that there were changes coming from as early as 2006. The UK is currently using 13 year old STR chemistry and paying over the odds for the privilege, both in terms of pricing owing to a single supplier monopoly, and in success rates of crime sample DNA analysis. This constitutes a potential quality issue. Crime samples of low quality which will give poor or no results with the current chemistry have a high probability of giving more information or full profiles, with NGC or newer chemistries.[6–8] It is conceivable that such additional DNA information might prove the difference between solving a crime or not.

8. In summary, the NPIA have been unable to respond to the requirements of the forensic market place, or to European Union Council Resolution. There is a desire and a moral obligation for a forensic scientist to apply the best tools possible to his/her investigation. In the case of DNA analysis, the forensic community in the UK are currently being prevented from applying modern, robust chemistries which in some cases would provide information where the current system would provide little or no data. The strategy and work flow for upgrading the database to allow the use of new STR chemistries has put the UK at least two years behind the rest of Europe, in terms of DNA analysis, in the forensic field.

DECLARATION OF INTERESTS

The Authors are employed by Promega UK, a supplier of reagents to the forensic community and a competitor to Life Technologies, the current sole supplier of STR Chemistry loadable to the National DNA Database.

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Written evidence submitted by David Sawney, B.Sc., M.Sc., MFSSoc

DECLARATION OF INTEREST

I was employed as a Principal Scientist by Forensic Science Service Ltd. until its closure in March 2012. I had worked as a forensic scientist since 1978, with all of that time in the public sector (including GovCo). I now work as a self-employed forensic science consultant.

I specialise in several fields of forensic science, including cases involving a range of particulate and chemical trace materials, such as glass and paint particles, textile fibres, oils and greases, irritant and noxious chemicals, together with the examination and comparison of footwear marks and tool marks.

I made a submission to the previous enquiry carried out by the Select Committee in 2011 into the closure of the Forensic Science Service. This new submission relates solely to point 7 on the terms of reference for the current enquiry, as I don't believe I can reliably comment with any authority on the others.

7. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK?

7.1 The answer to this is certainly “yes”. The following are offered as examples.

7.2 Of the small team I worked with in London up to the time of the wind-down of the FSS, at least six reporting scientists (with about 100 years' experience between them) no longer work in the forensic science profession. This represents about two-thirds of the reporting scientists in that team. (Another of the reporting scientists retired, having reached pensionable age.) The team members had some very specialised skills and undertook complex casework that was not done elsewhere in the FSS.

7.3 In my own case, at the time the FSS was wound-down I was a Principal Scientist with national responsibility for scientific quality and consistency relating to particulate and chemical trace evidence across the whole of the Forensic Science Service. This included ISO 17025 accreditation and setting scientific standards and competency criteria for operational scientists. I have not found an equivalent job or any other job in the forensic science sector that would use my full range of skills and experience that is within reasonable travelling distance of my home.

7.4 I have been working as an independent forensic science consultant for the last few months. During this time I have only worked on a handful of cases, and all of these have been to review the findings of other experts on behalf of the defence. I've probably carried out less than 30 hours' work over the last six months. This contrasts with my time of FSS employment, when I would have spent up to 30 hours or so per week working on my own casework or carrying out quality checks and reviews on the casework of colleagues.

7.5 I recently visited the Metropolitan Police “Evidence Recovery Unit” to carry out work on behalf of defence solicitors. This now occupies parts of the London laboratory space of the FSS, where I used to work. While I was there, I had the opportunity to talk with a number of former colleagues who had been transferred from the FSS to the Metropolitan Police Service under the terms of TUPE. I was told, informally, that those who had been senior reporting scientists with expertise in DNA interpretation, blood pattern analysis and textile fibre comparison were no longer using any of this expertise—their work seemed to be restricted recovery and preparation of samples at the bench. A number of them were being re-trained to carry out footwear mark comparisons. If this is, indeed, the case, then this represents an enormous waste of talent.

January 2013

Written evidence submitted by Teesside University

1. Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

1.1 It doesn't seem that there is one so the short answer is no.

1.2 There does not appear to be single accepted and coordinated nationwide strategy for forensic science practice. Individual police forces, collaborating police forces and the commercial companies may well have their own strategies which will almost certainly be different from each other. For example some police forces are creating their own forensic laboratories and are doing this with the minimal of support and guidance. A “free” meeting with UKAS may support accreditation but it doesn't act as a substitute for the force or company strategy to fit UK forensic science practice. The situation is more complicated with the commercial providers, many of whom have extensive experience with accreditation but have the additional driver of profit.

1.3 Unfortunately what needs to be acknowledged is that the UK reputation in forensic science, built up over many decades is now under threat and needs considerable investment, innovation and integration within the investigative process to benefit the justice system to provide it with assurance and confidence.

1.4 Glimmers of hope have emerged since the closure of the FSS.

1.4.1 In the area of education there has been a Quality Assurance Agency (QAA) benchmark statement in forensic science. This recognises forensic science as a subject in its own right, has science at its core and incorporates the unique nature of forensic science including the interpretation, evaluation and presentation of evidence. Any University now wishing to teach forensic science must meet this QAA benchmark.

1.4.2 Following the Home Office Review into research and development in forensic science a Special Interest Group (SIG)³³ under the Technology Strategy Board has been formed. Further following recommendation 4 of the review the Forensic Science Society has successfully run a one day taster day in R&D and another three day event being planned for November 2013.

1.4.3 Even with these developments, and it is still early days since the FSS closure and the R&D review, it still doesn't seem that we have sufficient effective support for in-depth, long term research in the broad range of forensic subjects. The government needs to be willing to support research, including, at universities who teach forensic science but don't necessarily have such a history of research. These universities generally have the practitioners who can fully contextualise the research and can be supported by research active staff in other areas. This also needs to be considered in terms of validation of new techniques as private companies may not be willing to publish their research due to the IPR as much as academic institutions who are keen to carry out research and its dissemination. With more research there will be a greater requirement for validation. This validation is not only within the investigative process but additional areas which support the investigative process such as packaging materials and the provision of additional materials for use within the process.

1.5 These developments together with the drive within the UK for accreditation to quality standards in the form of the ISO standards 17020 and 17025 are improvements. However, the most important aspect of consistently providing best evidence for the court is also under threat.

1.6 The view that accreditation is the answer is strikingly untrue, it is true that accreditation is part of the answer but only to a minimum standard and doesn't raise standards to reach the goal of providing consistent best evidence to the courts.

1.7 We need to be assured that the ISO standards are having a positive impact by ensuring that they are providing uniformity not only within forces and companies but that there is a true synergy between the IOS's, the Forensic Science Regulator Codes of Practice and the National Occupational standards.

1.8 With the requirement for R&D to fuel improved forensic practice it is not only blue sky research for technology and analytical procedures that is required but also the R&D into core processes to deliver best evidence for the most effective and efficient procedures for all techniques, from packaging to laboratory procedures and the interpretation and evaluation of the evidence to the justice system.

1.9 The role of the professional body, The Forensic Science Society, including the area of educational standards and R&D is excellent but there is a limit to how far the professional body funds can stretch.

2. *Did the FSS transition and closure run smoothly and within budget?*

2.1 We don't have sufficient information to comment on this question.

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

3.1 Impact on the Criminal Justice System—this is best answered by the judiciary in terms of quality and quantity of cases being presented to the CPS and courts. However we have seen a recent DNA issue within one of the commercial providers which impacted the justice system. Therefore the bigger question which needs to be answered is whether the justice system and public are confident and assured that the development of the industry is supporting public safety while it becomes more fragmented.

3.1.1 Further, as more work moves into police forces can we be confident that complaints and issues relating to the provision of scientific evidence be thoroughly and openly managed and resolved. In the light of the Hillsborough incident and the Mitchell incident can the public be confident that their forensic provision will remain independent with the highest integrity? Under the ISO standard all complaints are expected to be logged and covered for independence, impartiality and integrity.

³³ The secret to success here will be the ability to identify companies whose products can be adapted to the investigative process.

3.2 The R&D—The FSS intimated that they did a lot of research but in the later years before it closed it was questionable if they were still leading the UK in R&D. Although there have been a number of significant changes for the good with the R&D review (mentioned above) there is still no national coordinated lead or strategy for R&D.

3.3 The FSS didn't really govern quality in forensic research, but the perception now is that research has been left to fend for itself with limited governmental input.

3.4 There must be a coordinated approach on R&D in the UK. There is lots being done such as the Forensic Science Society Forum for Universities and Industry, conferences (one day in Nov. 2013 and three days in Nov 2013) but there are still untapped R&D within good quality BSc and MSc level projects. These selected projects could be made available to the community in the same way as PhD's are.

3.5 Part of the solution must be to enable more collaborative partnerships. The days when there could be one physical central research establishment may have passed but the strategic leadership and central coordination is still needed. Universities are keen to collaborate with practitioners in police forces and with companies but this still needs national and regional coordination. It is without doubt a good thing for police forces and companies to work with Universities such as educational awards which Teesside University is involved with but also on various other activities including research projects. It is quite possible to keep things confidential and the research findings can feed into the bigger picture and guide future good practice. Universities can and would be willing to work confidentially with police forces and companies and only publish their data with permission especially when the findings could have much wider relevance and impact.

3.6 Training—the overall training and continual professional development including continual professional competency is a big area and there have been a number of new SME's starting to come to market since the closure of the FSS. We would suggest that consistent accreditation and individual competency coupled with the strive for optimisation of practices and procedures within R&D are the biggest areas to provide the justice system with assurance and confidence.

4. *What should be role of the Forensic Science Regulator?*

4.1 The requirement for and role of the Forensic Science Regulator was clear in 2007–08. However, there are a number of key areas needing addressed. Firstly the statutory position of the Regulator and associated powers to oversee forensic science practice. Secondly concerning the area of the practitioner being “fit to practice”, possibly linking with the professional body. Anyone providing evidence to court needs to be fit to practice. Thirdly it needs to be recognised that the Regulator is not the person to throw all the forensic science practice issues at such as funding, CCTV and research.

4.2 There is a need to ring fence the role within the quality arena—set, maintain and monitor and then identify the other areas with overlap but outside the remit of the Regulator. For example does research fit comfortably with the Regulator or can the Regulator be the conduit to coordinating research with practice.

4.3 We should not believe that accreditation to the ISO standards such as 17025 and 17020 will ensure consistency of quality standards or enable continual improvement to provide best evidence to the courts.

4.4 The Police are in a difficult situation with their budgets and the greater provision on in-house forensic practice. They also need to contribute to the improvement in quality standards and carry out research. As a minimum they need to set up partnerships with commercial companies and Universities to enable worthwhile R&D.

5. *What is the size of the forensics market and how stable is it?*

5.1 This is a difficult question because one needs to define the “forensics market”. For example when the Home Office were considering the size of the market during the transition of the FSS to a GovCo the market was estimated at an amount considerably more than that now being suggested—less than £100 million. It is important to be able estimate the size of the total market and not just the commercial company slice.

5.2 Nevertheless the market size seems to be judged by the amount the commercial sector is involved with—currently about £80 million and therefore falling. The overall size including all the police forces, commercial providers, Universities/SME etc, is probably fairly stable. The full question can't be answered until the police forces understand what their forensic provision costs using the same model as the commercial providers and include not only the building and over heads but HR, finance etc.

5.3 Overall our feeling may well be that the market is growing due to its fragmentation. The size of the market should be confused with the quality of the service to the justice system.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

6.1 We have insufficient intimate knowledge of the procurement process. However, anecdotal evidence would suggest that there is a large bureaucratic beast dealing with this (which should be part of the calculation

on the size of the market and drain on police budgets). Small companies seem to spend an enormous amount of time filling out forms to apply within the procurement process.

6.2 One could argue that there is no need for such a process and let the customers purchase, under guidelines, the service they require. The key difficulty here is the phrase “level the playing field” and the transparency of procurement process.

7. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples).

7.1 Yes, from one x FSS employee—“only half of the people I worked with now have jobs within the industry—they are deemed too expensive possibly when graduates can be used for a low cost. Examples of where they have ended up: dentists assistant, moved to Canada, working for environment agency, unemployed (returning to education) etc.”

8. Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

We consider that the question is much bigger than only the FSS archive. It should relate to the case files and associated materials for all police forces, commercial providers and other providers, including the process to deal with the retention and storage of materials if a police force or company no longer undertakes forensic science practice. The time scales are clear for retention but the actual physical retention across the UK is key to support the justice system.

January 2013

Supplementary written evidence submitted by Teesside University

1. Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?

No further comment.

2. Did the FSS transition and closure run smoothly and within budget?

No further comment.

3. What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)

3.7 The Regulator has intimated that any forensic science practice should be accredited to the ISO standards—17020 for the scene examination and 17020 for the laboratory work. Time scales are set or being set for this accreditation. This means that not only the commercial companies need to be accredited but also the public sector ie the police forces.

The accreditation to the ISO standards is carried out by a company called UKAS and they have the monopoly in this area. It is therefore incumbent upon UKAS to build capacity to meet the up and coming demand from the police forces and, in my opinion, they have stepped up to the mark in this respect and are ready for the police to apply for accreditation. I don't believe that UKAS are rate limiting.

3.8 Regarding UKAS accreditation there is often debate over the exact nature of the accreditation in relation to the individual. UKAS accreditation considers the policy, practice and procedure of the organisation and the organisation obviously incorporates the staff. However does the accreditation mean that each individual is also accredited and deemed competent? The ISO accreditation requires training records to be kept along with records of CPD and assessments. However it is debatable if this does automatically mean that the individuals are individually competent. It clearly true that the staff work within an accredited organisation.

4. What should be role of the Forensic Science Regulator?

No further comment.

5. What is the size of the forensics market and how stable is it?

5.4 In relation to the size of the market, the UK is generally considered as being commercialised and the phrase “fully commercialised” is used. However, it should be acknowledged that the commercial market is much reduced and falling such that the majority of the market is now within the public sector ie the police (even allowing for falling crime rates). The question is therefore how can the UK be regarded as fully commercialised when the majority of the market is within the public sector?

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

No further comment.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples).*

No further comment.

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

No further comment.

February 2013

Written evidence submitted by Ian Parkinson

DECLARATION OF INTERESTS

1. I have been a Forensic Scientist since 1979. I was a member of staff of the FSS until May 2011. For some years during this time, I was working in quality matters and validation. I am now working as a consultant. I am a member of the Forensic Science Society, of the Prospect Union and of the Royal Society of Chemistry. This submission contains only my own personal views.

GOVERNMENT STRATEGY

2. The Government strategy is unclear to me and I am not aware of any specific, defined overall forensic strategy. The strategy appears to be localised and very much given to individual police forces. I am aware NPIA had an interest in spreading market share and attracting new providers, but strategy of the successor organisation is not yet known.

3. In my view there is a role for Government, either under the regulator, NPIA successor body or other wise in operating as a strategic lead (see later).

FSS CLOSURE AND TRANSITION

4. Overall, it appeared to me that the transition went as well as could reasonably be expected.

5. I understand that some FSS staff from London Laboratory who TUPE transferred to the MPS have had some issues, and I respectfully suggest that this is worthy of investigation with those with direct knowledge.

6. I have no information and so make no comment as to budget.

IMPACTS OF FSS CLOSURE

7. Practically, it is difficult to separate FSS closure from continuing changes in police approaches to forensic science over recent years.

8. I have concerns about commercial pressures of cheapness and rapid turn-round to obtain contracts will risk diminishing quality and more likely pressure staff into making short cuts and use staff with reduced training levels. I have no direct evidence of such, though I would say this risk would be expected to increase over time.

9. I am not sure what providers participation in QA trials to ensure performance is monitored, but that was something the FSS did extensively.

10. Data for evidential interpretations and trend information (eg drugs intelligence, databases of frequency of footwear patterns and glass) which was collected nationally by the FSS, is not now collected and would be separated between a number of providers.

11. Existing supplier organisations are UKAS accredited, and have to be, though only a few police forces are accredited at present and this is mostly for firearms examinations. It is important this is extended in my opinion.

12. Former mainstream evidence types now used little and so are delivered from specialist units or subcontracted niche providers. Such arrangements being divided though mean that concentration of expertise is diluted.

ROLE OF FORENSIC SCIENCE REGULATOR

13. Broadly speaking in my opinion, the remit is appropriate covering professional standards and quality.

14. Although important, I do have concerns though that there is a risk of an over reliance on ISO accreditation as matters which do not fall under that purview are also critical to the real quality of forensic science, notably evidential interpretation.

15. It would be appropriate, in my view, for an increased role for maintenance of data (needed for interpretations), observing trends, strategic direction, R & D, QA trials, archiving current casework retained material, and in tempering any effects of commercial conflicts in the overall interests of the CJS. This could be another body but needs to be a public sector body.

FORENSIC MARKET

16. Market clearly massively diminished and this is highly likely to continue to decrease, for the foreseeable future.

17. It is concerning that as competition for market share drives prices and turn-round times down, that sustainability of providers to continue trading may be put at risk.

18. As far as I know, new organisations entering the market have been very limited.

FORCE PROCUREMENT

19. Most forces have divided casework types between suppliers, eg 80% of violent crime to one supplier, and the remainder to another. The exception is the Yorkshire/Humber and North East forces who keep to one supplier for each casetype. In many instances footwear impressions and firearms are done in force.

LOSS OF INTELLECTUAL WEALTH

20. Personally, I have over 30 years, have a wide range of casework skills, as well as those relating to quality, accreditation and validation in forensic science and have not been able to find full time employment in the field. I am under-utilised as a consultant and have never had a successful commission (or any interest from forces, universities or providers) which in any way uses my quality and related skills although I have had enquiries and made proposals.

21. I am aware, and greatly saddened, that of my own former FSS colleagues that a great many have left the profession and I am sure that in simple person-year numbers there have been massive losses of valuable, experienced and skilled staff from the profession of forensic science.

22. I know also that some former FSS Staff who have jobs with provider organisations or in forces are finding that only part of the range of skills they had and maintained whilst with the FSS are being utilised with their new employers.

23. There is every likelihood that there will be further losses of skilled staff as demand continues to decrease and when contracts change hands with pressures to squeeze costs, so inevitably staff. Also that the new providers may be geographically away from the existing ones, where staff with restricted mobility may be compelled to leave forensic science.

ARCHIVING

24. Current FSS arrangements have worked reasonably well I understand and in my consultancy casework I have been able to access all case material I needed appropriately.

25. For current casework, as far as I know providers have individual arrangements for retained materials, and in many instances return the recovered materials to the police for whatever local arrangements the forces have for retention. On past performance this material is typically discarded. A single central store run by a public body would best facilitate future cold case and CCRC reviews. In addition would ensure continued existence of material if the provider went out of business.

26. The providers retain the files themselves, and this is the most appropriate. Those casefiles needing long retention (the more serious) could after an extended period (say seven to 10 years) be placed in a single central archive run by a public sector body, but the advantages appear limited. The exception is in the event of a provider going out of business then the existing FSS archiving arrangements would need to take that on.

Written evidence submitted by Professor Brian Caddy

1. There are now a number of police laboratories, both large and small, who are offering forensic science support. Are all such laboratories accredited under ISO 1750 and how well is the Forensic Science Regulator able to monitor their performance?

2. Do all of these laboratories operate within a contamination free environment thereby limiting the possibility of cross contamination of exhibits?

3. What has been the impact on the interpretation of forensic evidence for the courts of such laboratories removing samples from exhibits and submitting them to an accredited commercial laboratory?

4. Because of cutbacks in police budgets what is the percentage of this budget that is spent on externally generated forensic science compared with the situation before such economies?

Moreover, what is the amount spent on police “in house” forensic science compared with the situation before cutbacks in the police budget? How does this compare with the previous financing of the Forensic Science Service?

5. It has been suggested that only the minimum forensic science investigation is undertaken to a level that enables a suspect to offer a guilty plea. If this is true what impact does this approach have for the legal process and does this have an impact on legal aid at a future date in this process.

6. What have been the effects of commercial sensitivities on the ability of the Forensic Science Regulator to rationalise and implement good practice within the commercial forensic field?

7. With the demise of the Forensic Science Service former employees have established a plethora of small commercial forensic science organisations. How is the Forensic Science Regulator able to verify the standing of such organisations and assure the public that they are implementing “best practice”?

8. Forensic Science in the United Kingdom has become dominated by DNA analysis. How will the commercial forensic science organisations make sure some of the other areas are maintained, particularly fibre analysis, and that the skills of these forensic scientists in these areas are maintained?

9. What provision has been made to provide forensic science support for those areas of forensic science which the commercial organisations find uneconomical to support?

10. What is the status of research in the forensic sciences and do commercial sensitivities inhibit such developments? What contribution have the Universities made to the forensic sciences since the demise of the FSS? What is or are the funding routes for forensic science research?

11. How far does the inability of the Forensic Science Regulator to force implementation of good practice inhibit developments in forensic science? Why does he not have the same status as HMI for the Police Service?

12. The regulation of forensic science seems to be focussed upon organisational matters and less on the competences of individual practitioners. This becomes more important with the plethora of small forensic science organisations. How is such personal accreditation to be managed?

January 2013

Written evidence submitted by Tiernan Coyle

My name is Tiernan Coyle, I am Chief Scientist and owner of Contact Traces. Contact Traces is a private forensic company supplying forensic services to the UK Criminal Justice System. We provide specialist forensic fibre services to police forces, prosecution agencies and clients from the criminal law sector. We are a small family business employing 5 scientists at our laboratory in Milton Park, Abingdon. Established in 2006 Contact Traces is accredited to ISO17025 for forensic fibre examination and as such, we are the only laboratory in the UK accredited for Raman Spectroscopic analysis of fibres.

Owing to time constraints I am answering only question 4, however I include a general statement regarding the current state of forensic science provision at the end of the document.

Question 4—*What should be the role of the Forensic Science Regulator?*

1. For forensic science, there exists a role which has been given the title of Forensic Regulator; however, the Regulator has neither statutory powers nor any professional responsibility for practitioners.

2. The role of the Forensic Regulator is defined on the Home Office website:

- (a) identifying the requirement for new and improved quality standards;
- (b) leading on the development of new standards where necessary;
- (c) providing advice and guidance so that service providers will be able to demonstrate compliance with common standards. For example, in procurement and in the courts; and

(d) ensuring that satisfactory arrangements exist to provide assurance and monitoring of the standards.

3. It is remarkable that in the definition of the role of the Forensic Regulator that there is no mention of regulation.

4. The Forensic Regulator has achieved many of the goals that were set for him. He has consulted widely amongst the industry on a range of matters. He has settled on a standard (ISO17025) for all providers and pushed for adoption of the standard. Unfortunately for the Regulator, the public's perception of his role differs greatly from that stated on the website. The title implies in every sense that it is the Forensic Regulator's responsibility for safeguarding the provision of forensic services for the state. When there is an issue, the title demands that it is the job of the regulator to investigate it, it is the job of the regulator to report the findings transparently and without prejudice and it is the job of the regulator act in response to those findings.

5. The Forensic Regulator has had to face several very serious instances of quality failings in forensic science. He has been consulted by the courts to discuss matters arising from such quality failures; all of this occurring without the regulator having any legal standing.

6. In the past, the regulator has managed to walk a tightrope between the reality of his role and the burden of the title; that is until last year. In 2012 he had to deal with DNA contamination at LGC Forensics, undertaking an investigation into the causes and eventually producing a report on the matter. In discussing this event it should be noted that I make no comment on the event nor do I seek to imply any wrongdoing by any party involved; I include it solely as a means of discussing the role of the Forensic Regulator.

7. The event was so serious that it was vital the root cause(s) of the event be understood, so that the lessons could be learned and applied in order to reduce the risk of any such contamination occurring again. In spite of having no resources or statutory powers, an investigation was undertaken.

8. The Forensic Regulator produced a report on the matter and LGC Forensics came under criticism within it. However, to produce the report he was reliant on the co-operation of LGC Forensics and was limited to checking only what LGC had done. He asked UKAS "*... to assess the LGC response to the incidents and to address my wider concern at the human errors the incidents exposed within the organisation...*" Whilst assessing a company's response to such incidents is an integral part of UKAS' role as an accreditation body, companies are under no legal obligation (or obligation under ISO17025) to take the Forensic Regulator's views on anything into account, no matter how strenuously he may assert them.

9. In attempting to perform the role of investigator, a precedent has been set where an official report can be produced in spite of the fact that the views of the Forensic Regulator have no legal standing. This may seem trivial, but the existence of the report was used by parties to add weight to their own internal findings, implying that the Forensic Regulator carries some kind of legal and governmental "forensic seal of approval".

10. The fact that the Forensic Regulator himself checked documents from LGC is encouraging because it demonstrates that there is an appetite for the Forensic Regulator to be "hands on", however in reality the checking of the documents achieved little owing to the lack of legal standing attached to the Forensic Regulator's role. The real impact of the report was to bring into the public domain, information regarding the events at LGC Forensics, which may otherwise have remained out of the public eye; on that basis it has been beneficial.

11. It is disappointing that there appears to have been little or no independent, external scientific input into the investigation. Those bodies that were involved, namely UKAS and the NDNAD were all involved with the validation of the processes prior to the event.

12. I am not a DNA expert, but as a forensic practitioner I am required to keep up to date with forensic developments, even those outside of my area of expertise. Data recently published by the Netherlands Forensic Institute³⁴ (NFI) shows that in 2011, 100,407 DNA analyses were performed by the NFI, of which 130 samples were found to have resulted in contamination attributed to processes within the NFI, resulting in a contamination rate of 0.13%. The data from LGC Forensics shows that 1 out of 26,000 samples was contaminated, producing a contamination rate of 0.004%. The data from the NFI was presented at the European Academy for Forensic Sciences conference approximately one month prior to the date of the Forensic Regulator's report (two months prior to its publication), yet he drew no comparisons between LGC's data and this published data.

13. Perhaps there are valid, scientific, reasons that contamination is 32 times more likely at NFI than at LGC Forensics. Perhaps LGC are better than the NFI at reducing the risk of contamination in their DNA processes, or, perhaps the NFI are better at recording their contamination events. I don't know. But I am surprised that two highly reputable, experienced forensic laboratories performing very similar, standard, high volume analyses would be so far apart in terms of their contamination rates and I am disappointed that the Forensic Regulator did not address this in his report.

14. This is the type of question the taxpayer would expect the Forensic Regulator to ask of the UK forensic science system. What are the DNA contamination rates for all providers in the UK, how do they compare to

³⁴ Kloosterman; Errors in forensic DNA casework: what types, how many, how serious? EAFS 2012

each other and other laboratories and what are we doing to reduce them? We may then be able to place issues such as these in context of the health of the forensic science system in the UK as a whole.

15. I would have expected the Regulator to be able to investigate the quality failings using an external body with statutory powers. I would have expected the Regulator not to be satisfied with checking LGC Forensics but all providers to the CJS to ensure that such failures are not symptomatic of current industry practices in the UK. This question remains unanswered.

16. I would have expected the Regulator to ask LGC Forensics to review their figures in the light of the publication of the data from the NFI and perhaps explain how their processes appear to be so superior.

17. I would have expected the Regulator to consider whether it was necessary or appropriate for all providers to adopt the NFI approach to transparently publishing their error rates.

18. The Regulator should be ultimately responsible for forensic science. It was encouraging to note that the Regulator had begun to demonstrate at least an appetite for duties typically associated with other industry regulators by publicly criticising a forensic science provider; it is just disappointing that criticism is the limit of role's capabilities, for criticism alone is rarely an effective agent for improvement.

19. The role of the Regulator is to regulate. A Forensic Regulator cannot perform the role the title suggests without having the statutory powers or the resources to enforce them.

CURRENT STATE OF FORENSIC PROVISION

20. The previous enquiry heard from many respected witnesses who provided testimony regarding the current state of the forensic market. I do not propose to repeat the arguments that have been heard previously.

21. I do believe that the private sector has a very important role to play in forensic science for the state, however I also believe that the state must possess some officially recognised body that can hold all the stakeholders to account for their provision of forensic science to the Criminal Justice System.

22. Forensic Science, as Tim Berners-Lee might say, is "for everyone". It is not just for the police. We seem to have forgotten that.

23. Forensic science costs money, someone has to pay for it. We have had the police paying for forensic services for over a decade now and we have seen the consequences of that. It is time for fresh, innovative thinking to determine, for the benefit of the criminal justice system as a whole, precisely who should pay for forensic science and how that should be managed.

24. The FSS is closed, there is no going back. But that does not mean we cannot identify the aspects of public sector provision that worked well for the state and incorporate those into the current partnership that the state has with the private sector. There are reasons why we find the market in its current state and not all of it is down to economics.

25. The UK has always been forward looking, in many ways leading the world in the provision of forensic science services. We need to continue on that journey addressing the failings of public and private sector provision, finding a way to pay for forensic services so that forensic science supports both sides of our adversarial criminal justice system in a manner that meets the expectations of the taxpayer.

January 2013

Written evidence submitted by First Forensic Limited

First Forensic Limited has been a private provider of forensic science to police, lawyer's corporate and individual clients for over 10 years. First Forensic Limited is a registered provider on the National Forensic Framework Agreement for footwear and fire investigation services. It is managed and operated by two highly experienced forensic practitioners with backgrounds in police, private and government (FSS) forensic laboratories.

1. *Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R&D and criminal justice?*

There appears to be no effective strategy for the provision of forensic science to the CJS and no coherent or co-ordinated use of practitioners, FSP and universities to provide a focused approach to R & D. Many universities provide forensic science courses within which research is carried out. Very rarely, however, is this research focussed on the requirements of the CJS or forensic providers.

2. *Did the FSS transition and closure run smoothly and within budget?*

Given the timescales involved and the quantity of work involved the transition appeared to run as smoothly as expected. Cannot comment on the budget considerations.

3. *What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R&D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained? (please provide evidence/examples)*

The criminal justice system appeared fairly oblivious to the existence of providers other than the FSS and in our experience there has been no impact, real or perceived, on the system as a whole.

There is no question, in our view, that overall quality of the FSPs is as high if not higher than pre FSS. Despite some well publicised incidents, FSPs maintain rigorous quality standards to ISO 17025 or equivalent. There were many incidents of quality failings within the FSS which simply did not make the news.

There is, however, a real potential threat to the maintenance of quality standards due to the amount of police "in-sourcing" of forensic examinations. Although FSPs are required by their clients (police) to obtain ISO accreditation; they place no such burden on themselves to provide this service. Some forces have voluntarily taken the accreditation route but others have shied away.

In the past few years the FSS carried out very little research other than associated with DNA and its contribution to broader forensic research has been over estimated. However, many FSPs, universities and individuals have contributed to research.

Training has generally, been provided "in-house" and this is still generally the case. There has, however, been an increase in the number of suppliers of forensic training and this could be considered a "success" of the closure of the FSS.

4. *What should be role of the Forensic Science Regulator?*

The forensic regulator should play an important role in ensuring consistency of forensic science delivery and maintenance of quality standards. In our view, the demise of CRFP, for all its faults, is regrettable. The application of ISO 17025/17020 standards are fairly generic and not specific to forensic science. Ultimately, an individual stands up in court to give evidence. ISO standards do not

5. *What is the size of the forensics market and how stable is it?*

The size of the market is impossible to establish as the definition of "forensics" is very loose and encompasses traditional FSPs, defence providers, police, CSI and others.

The market place cannot be considered stable. The purpose of the National Forensic Framework Agreement was to encourage a range of service providers. It has not done so. The process of tendering is complex and discourages SME's. Several companies have withdrawn from the framework. In addition, some of the major providers have adopted a policy of offering unsustainably cheap prices to obtain the work and eliminate alternative providers. This, ultimately, will mean the police will have fewer providers to choose from and ultimately higher uncontested prices.

Increasingly, the use of police "in-sourcing" of forensic science services has further destabilised the market. Although, in our view, there is a place for screening and selection of forensic exhibits at the source (police force) it needs to be done carefully. Many of the "business cases" we have seen for in sourcing have been spurious if not creative.

6. *How are forensic science services procured by police forces and could procurement processes be improved?*

Virtually all police work is via mini competitions through the National Framework Agreement. However, many forces and ACPO regions have deviated from the norm and created "mega-lots" or combinations which have excluded SME's. The process of tendering is also over-complex and favours the larger organisations who are able to commit full time staff to tender management.

There appears to be no mechanism for new companies to obtain positions on the framework or for existing companies to extend their expertise.

During the mini competitions many of the questions are repetitions of previous tenders. It would improve if core functions, such as security, BCDR, accreditations were done once for the period of the framework and the mini tenders were concentrated on price and service delivery.

7. *Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples)*

To a limited extent, yes. Many of the experienced forensic scientists were on the point of retirement and took the opportunity to retire early. Many have also established private consultancies although only time will tell if the market place will support these. None of these consultancies appear to have achieved any form of accreditation and rely on their previous employment as credentials. It is to be hoped this will change.

8. *Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?*

Generally, no. In carrying out defence examinations there is often a problem with locating files and retained materials. In addition, some FSPs have insisted on payment for defence examinations, often at well above market rates. This has resulted in additional costs for Legal Services Commission.

January 2013

Written evidence submitted by Mr Alastair Logan OBE (Solicitor and Member of the Law Society Human Rights Committee)

ACCESS TO LEGAL AID

1. During the Committee's oral evidence session on Wednesday 13 February 2013, Mr Michael Turner QC (Chairman of the Criminal Bar Committee) told the Committee that he dealt with cases that were tried by a High Court judge and in those cases where the penalties are heaviest legal aid is more likely to be granted to the defence to access forensic science work. In the lower courts where criminal charges are tried by circuit judges access to legal aid for forensic science advice is much more difficult to come by.

2. The competitive market set up as a consequence of the closing down of the Forensic Science Service (FSS) will introduce not just competition but the desire to protect intellectual property. Firms that expend time, money and expertise in developing forensic techniques will wish to protect their creation. That situation did not exist with the FSS.

3. Because the main customer for forensics science is the police they will be able to influence the provision of expertise in various areas. However if the Private forensics science providers do not have sufficient demand to provide expertise in a given area they will not provide it. Unlike the FSS, which had the facility to devote time to developing expertise in areas little you used, the competitive market will produce the opposite effect and some skills that have been acquired may be lost.

4. Experience in other jurisdictions has shown how that forensics scientists are in the habit of claiming expertise in fields where they have little or none. This is known in North America as "junk science". Because of the size and breadth of the FSS experience it was always possible to check the credentials of someone claiming expertise. This may be far less likely now that the FSS has been disbanded. It is vital that a register of experts is maintained which not only specifies the training and education and experience that the expert has but lists his or her peer reviewed publications and the cases in which he has testified. The membership of that list should be reviewed regularly by an independent panel. Hand in hand with this goes the need for concerns about the expertise to be voiced to that panel so that it has the benefit of other experience to make judgements about the suitability of the expert to remain on the list in a particular field or at all. That also requires an appropriate assessment of what constitutes expertise in any particular area. The Committee quite rightly wanted to know what a Judge would know about the science which the expert was testifying to. It may be that it is possible to choose High Court judges according to their understanding of a relevant science but that is certainly not possible in the Crown Court where the vast majority of cases are heard.

FORENSIC SCIENCE REGULATOR (FSR)

5. The FSR requires statutory powers in order to bring in-house forensic units under the same regime as per PFSP's. He could therefore mandate the requirement that in-house units meet ISO 17025 and any other requirements. This will add as a check on the quality of in-house forensics science provision which may be more susceptible to a reduction in standards driven by financial pressures. However, as Professor David Osselson, the former head of Toxicology at FSS and now Head of Forensic Sciences at Bournemouth University said: "Unfortunately such accreditation does not adequately ensure the quality of the interpretation of results or the presentation of evidence in court".³⁵ He pointed out that this was the function of the Council for the Registration of Forensic Practitioners before it, too, was disbanded on the grounds of cost.

6. The advent of in-house forensic units resurrects the problem which existed before the FSS which was that they are owned by and accountable to the police force that set the mark. As a result they will not be available to the defence. Difficulties have often arisen in the past when this situation was common where the defence appointed expert encountered incredible difficulty getting access to the material and even more difficulty carrying out tests on it. At this is an area where statutory powers given to the FSR could resolve the issue quite quickly but in the absence of those powers and short of a drudge who is prepared to take a firm stand on it there is little likelihood that the defence will be able to overcome any refusal by the force concerned to allow access to the material and/or tests on that material.

7. There is a further problem with the whole issue of the identification and collection of forensic material. SOCO's have in audit after audit shown that they have little understanding of what forensic science can do. The Home Office is now proposing that private security firms should be able to bid for police contracts to

³⁵ Osselson, David (2012), "Forensic Service closure: justice to suffer?", *The Times* (3 May 2012).

provide security at crime scenes and to collect material in criminal investigations.³⁶ The Chief Constable of Surrey stated that this was “necessary to protect frontline policing services in the long term.” Who will ensure that they carry out their work appropriately? Not the FSR who will have no jurisdiction over them as they are not forensic science providers. Not the Home Office because they would be under contract to the Force that hired them.

THE FSS ARCHIVE

8. This was a single archive and it is still a single archive despite being located in two different locations. Police forces were in the habit of depositing material relating to cases that had been completed with the FSS archive for long term retention. This was particularly important in the case of murder trials, trials where the sentences were life imprisonment and unsolved crimes. It meant that a case review could be undertaken because the material had been housed in a facility appropriately so that it did not deteriorate or get contaminated. The FSS struggled to keep a record of the material that it had. The Committee was informed that no decision had been taken on the long-term future of the archive and indeed that no decision would be taken for another two years. The Committee was also informed that the cataloguing of the FSS archive has begun. That might at first sight appear to be a hopeful step towards the retention of the archive but when closely examined the justification for the cataloguing might well be that it is essential to know which police force the material must be returned to in the event that the archive is closed and thus may be a preparatory step to closure. This coupled with the decision not to allow the deposit of any further material makes it look increasingly like retention is not the long-term objective of the Home Office.

9. Because the Home Office has refused to allow any addition is to the FSS archive each individual police force has to make alternative arrangements to store forensic material emanating from their cases. This will be either storage by the force itself or storage by one of the PFSP’s who did work on the case. If it is the latter then the force will have to make payment for the costs of retention and it may still be that the evidence will therefore be fragmented in storage. If it is the former then, as I understand it, there are no regulations which dictate the nature of the facilities that must be available to store forensic exhibits. There are a number of obvious problems. One is contamination making a re-examination of the articles difficult if not impossible. Another is the requirement that the material should not deteriorate. A further problem is that absent some policy there will be no clear guidelines as to what should be retained. Individual forces may decide to retain different categories of exhibits from other forces and for different periods of time. Some forces will combine with others to produce storage facilities. An anecdote passed on to me by a journalist who was investigating this area told of the chief superintendent who was instructed by his superiors that because they would now have to store forensic exhibits he should go out and buy a couple of freezers.

10. Computerisation will provide some response to the problem of the recording but it will not solve sought storage standards, different requirements as to what information is recorded, different requirements as to what is retained and it contributes nothing to the issue of gaining access to the material. Forces wishing to investigate the possibility of a serial offender having committed offences in different parts of the country may never know what other forces are holding by way of material. In addition if 43 different forces are making their own arrangements to store exhibits there will be 43 different ways in which this will be done and recorded.

11. If 43 forces were to contribute what they will now have to find in terms of finance to maintain their individual archives of forensics material to the cost of keeping a central archive open it would defray a significant part of that cost.

12. The Committee was concerned about interpretation of scientific evidence. One recommendation that would make a great deal of difference would be that the scientist producing a report should be required to state clearly what his report does not prove in relation to the case.

13. The Committee was concerned about fragmentation. The problem with fragmentation is that it is not guaranteed that the individual forensics scientists receiving part of the material emanating from a particular investigation will be told the same as another scientist receiving another part. Interpretation depends to some degree on context and the audit trail to show precisely what information was given to the forensic scientist before or during his examination is lacking. Moreover if a piece of evidence was examined by more than one scientist there is no obligation on the prosecution to reveal that fact or the opinion of the scientists whose evidence is not used in court.

14. A recent report by Dr Maguire from the Northumbria University Centre for Forensics Science stated that the actual costs of the closure of the FSS will be between £300 and £350 million when you take into account the cost of setting up the Metropolitan police laboratory in Lambeth, the cost of running the forensic archive for 10 years (at the estimate by the Home Office of £2 million a year) and the £21 million spent on the construction of a new laboratory at Wakefield.³⁷ The Home Office estimate appears simply to be limited to

³⁶ Mansey, Kate (2012), “Foreign firms may guard UK crime scenes”, *The Sunday Times* (4 March 2012).

³⁷ Rincon, Paul (2013), “‘Higher cost’ of Forensic Science Service closure”, *BBC News Website* (30 January 2013).

paying the costs of the staff that were made redundant, paying off the contracts to run the buildings and the costs of surrendering leases.

February 2013

Written evidence submitted by LGC Forensics, Wakefield

During yesterday's visit, we overlooked one important aspect during the discussion on the subject of the Forensic Archive. As such, we felt it important to provide some further information, in order to highlight an issue of extreme importance.

In addition to the physical evidence held by the Forensic Archive, access to the electronic information stored there is also vitally important. We understand that the Archive no longer has access to any FSS electronic information eg spreadsheets generated for police enquiries, mass screens (although the information was painstakingly archived by staff prior to the closure). This information vacuum is extremely concerning in such a short period of time since the FSS closed.

By way of illustration, if a new and different profile is generated in a case which has previously been the subject of a mass screen, it is not possible for the Forensic Archive to access the mass screen profiles held electronically. Some of the mass screens involved samples from hundreds of individuals who gave consent for their profile to be compared against profiles generated in a particular case. There is therefore a considerable difficulty in accessing the information should a comparison subsequently be required—will there be a requirement to re-swab everyone involved (if possible, and available)?

Even if the Archive had the capability to interrogate the electronic information, without scientific expertise, it will be extremely difficult for the Unit to offer any form of scientific guidance—it is purely an administrative function currently.

In our opinion, it is extremely important, therefore, that this issue is considered and resolved so as not to impede the investigation of crime in the future.

We are aware that this issue has been raised by others in evidence (eg Cathy Turner), but felt it was prudent to emphasise the point.

March 2013

Written evidence submitted by Satish Sekar

The Fitted-In Project was established to highlight issues relating to miscarriages of justice and social justice. I am its founder and CEO. I have written two books about the Lynette White Inquiry, a case that in microcosm highlights many of the problems with the use of forensic science and contributed in a small way to the breakdown of trust between the public and the FSS. My first book, *Fitted In: The Cardiff 3 and the Lynette White Inquiry*, demonstrated that forensic science was capable of being manipulated by scientists, allowing scientific knowledge to be over-ridden by a desire to “help” their client—in this case the police.

I was able to prove that the science was clearly saying something completely different—conclusively—in my second book *The Cardiff Five: Innocent Beyond Any Doubt*. The “prosecution scenario” which was favoured by the police was arrant nonsense without any scientific basis or foundation, yet it was presented as fact. Shamefully, this occurred while they were aware that the scientific evidence had said that it was a male killer acting on his own, which was later proved to be the case, but sadly not until a notorious miscarriage of justice had been allowed to occur. The government should now release a report that was compiled by a scientist at the Chorley Laboratory for the FSS after the conviction of the real killer. It should confirm whether that report has been archived, where it is and that it will be immediately disclosed to all interested parties in the interests of openness.

The failures in this case occurred due to failings at the FSS, which has to take some responsibility for the conduct of that particular forensic scientist. I mention these facts to highlight the issues that concern us. We are however, grateful to the FSS for their pioneering research and development work—work which later enabled that vexed case and others to be solved correctly. Its abolition, in our opinion, was and remains a grave mistake with foreseeable problems that have come to pass. We are working on another case, which had FSS involvement, but errors were made in understanding the importance of forensic science and the importance of integrating it into an investigative strategy.

That case illustrates the dangers of allowing a self-serving confession to trump the inquisitive approach where forensic science should be used to test the accusation—the confession in that case was in reality an accusation against a co-accused that was never tested sufficiently for veracity. The defendant who did not confess, and was the subject of the accusatory confession, was convicted. In his case vital samples and techniques that were available at the time of the trial were not used by the police to test the confession or by his defence lawyer, who did a poor job, to counter the case against him effectively. The end result is that where

compelling evidence of guilt or innocence could have been provided, it was absent from that trial and subsequent legal process.

This resulted in an attempt to put that right, which will cost significantly more than it would have 15 years ago when it should have been done. Revolutionary techniques in forensic entomology have been employed in this case. The technique that we employed in this case would in previous years have been something that the FSS would have been at the forefront of researching, developing and utilising. We believe that its abolition is a false economy, as all clients are now dependent on laboratories who have a strangle-hold on the provision of forensic science. If clients want or need these tests conducted, they are at the mercy of the laboratory. The alternative is not to conduct the tests, which can affect the delivery of justice—something that should not be measured in financial terms alone. We are therefore deeply concerned at the abolition of the FSS and the post FSS climate and its effect on the dispensation of justice.

Q1. Does the Government have an effective strategy for forensic science in the UK and is it sufficient to support forensic science R & D and criminal justice?

In my opinion the answer has to be no. I have worked as an investigative journalist for over 20 years on miscarriages of justice, taking a keen interest in the use of forensic science in these cases. For the reasons mentioned above I would have to say that any strategy that does not deliver equality of arms in the use of forensic science between defence and prosecution cannot be said to be effective. There is no resource available to defence such as the National Crime Faculty which had provided expert knowledge and advice to police forces previously. The police and prosecution also have control over samples which can be used for testing as new tests are developed. They insist on operational control, which includes an effective monopoly of whether tests can be conducted absent court orders.

In our view this is a consequence of the criminal justice system being adversarial. The competing interests of police/prosecution and defence lead to a failure to utilise the potential of forensic science for tactical advantage. Both cases I mentioned would have benefited from a far more integrated approach between the various forensic science disciplines, equality of access to the highest quality advice and provision of services if that proved necessary. Furthermore, research and development was essential in resolving the first case, which is now recognised as one of Britain's most notorious miscarriages of justice. The second would clearly benefit from further research and development of forensic science.

Q2. Did the FSS transition and closure run smoothly and within budget?

I cannot comment in detail on this, but in my opinion despite giving a year to organise the closure, a number of issues were not properly resolved. It is unclear what has happened to notes, samples, extracts, etc. some of which may prove useful in resolving pertinent issues including the safety of convictions by demonstrating innocence. For example, the case of the late Sean Hodgson demonstrates the fundamental importance of adequate storage of samples and of notes and other paperwork. The failure to locate each of these promptly resulted in further delays, which caused an innocent man to face further delays in proving his innocence and emotional distress caused by that uncertainty. Adequate storage of both data and samples is essential and should have been guaranteed as part of the closure. I cannot comment on whether the closure occurred within budget.

Q3. What impacts have the FSS's closure had on (i) the criminal justice system and (ii) forensic science R & D and training? In particular, have the appropriate quality standards and accreditation been rigorously maintained?

In my opinion the FSS closure has had a great impact on the criminal justice system in a number of ways. I have mentioned some of them above. I am of the opinion that the FSS was an important competitor for some of the other service providers. It helped to keep prices affordable as the experience and ability of some of its scientists kept other service providers mindful of the effect of competition. The FSS had the bulk of the market and it enjoyed that status despite the opportunity of clients, both police and defence, to go elsewhere. You have to ask why that occurred if the FSS provided such a bad service that deserved closure.

There were certainly examples where its staff slipped below the standards required, but that has occurred in other accredited laboratories as well and experienced scientists have made serious errors. Those cannot be laid at the door of the FSS. To give an example, I am aware of a case where an experienced forensic scientist made a very serious error that resulted in her misreporting her findings and missing the significance of a result that if true put a completely different interpretation on that DNA evidence and therefore on the case as a whole. This was unacceptable and required further work to be conducted on that aspect of the case. This was a waste of time and resources and was only discovered because I found it. This is frankly unacceptable—it should never have depended on me locating it. I therefore believe that the closure of the FSS has diluted the quality of forensic science available to clients and made the risk of justice miscarrying higher.

I have dealt with the impact of the closure of the FSS on research and development earlier and how it impacts on the criminal justice system. I cannot comment in detail on training as that will depend on the relative organisations and their training programmes. Depending on the quality of the training, trainers and staff to be trained, the effect may be minimal or huge. The accreditation standards and quality control will play a large part in determining the impact of the closure of the FSS. A universal standard of quality control and

accreditation must be used to assess the quality of scientists, training and those delivering the training. This should, in my opinion, be administered by the Forensic Science Regulator pending the establishing of an independent accreditation and quality assurance body.

Q4. What should be the role of the Forensic Science Regulator?

With the experience that I have had of the effects of poorly conducted forensic science, I would like to see Andrew Rennison given more powers to investigate complaints. For example, the way the forensic science was manipulated and misrepresented in the Lynette White Inquiry needs to be resolved. This has not happened in almost a quarter of a century. There appears to be no effective regulation of controversial cases. The FSS has on occasion initiated its own investigations. Despite the quality of the panel and others involved in the investigative process, such models are unlikely to command public respect and confidence. Absent such a body, the Forensic Science Regulator should be given such a role.

He should also have disciplinary powers, or at least the power to refer scientists to a body capable of disciplining them. However, his role should not be limited to a punitive function. It is equally important, perhaps more so, to learn the lessons of these cases to prevent repetition. How did justice miscarry? Did the forensic science or application of it contribute to that happening? What could be done to prevent that happening again? These questions should be an important part of forensic science and any role that Mr Rennison should have in addition to his current duties. This may require more staff and resources. He must be provided with the necessary tools to do his job to the exacting standards the public has a right to expect and demand. It is depressing that in too many cases justice depends on the zeal of individuals—something I have experience of.

Q5. What is the size of the forensic market and how stable is it?

This is an impossible question to answer. The *potential* market is huge for reasons that I alluded to earlier. Properly constituted forensic science is the best indicator of guilt or innocence. The latest techniques have resolved several miscarriages of justice and resolved previously unsolved cases, but in the current economic climate the size of the market has been squeezed. Police no longer want every test that could resolve pertinent issues and defence lawyers are often unaware of the opportunities available through forensic science. Many fail to obtain legal aid for such investigations.

Another consideration is the competitive interests of defence and prosecution. Both sides only wish to establish what is in the interests of their client. Unfortunately the truth can often fall between these stools. The market will probably not stabilise until the current bleak economic environment improves and clients believe that various techniques that are deemed luxuries now are thought essential to the interests of justice. Nevertheless, the *potential* market at least is huge and offers opportunities that should be exploited, as in my opinion failure to utilise its opportunities will contribute to justice miscarrying and prove a false economy in the long run as further tests are conducted at greater expense than would have been required if they had been conducted at the time.

Q6. How are forensic science services procured by police forces and could procurement processes be improved?

This varies from force to force. I would like to see police forces fully aware of the possibilities offered by forensic science as a result of advice provided by resources such as the College of Policing, which succeeded the National Policing Improvement Agency. Procurement could be improved, but this does not apply to the police alone. Forensic science does not have a side other than the truth. It is clear from talking to police and lawyers and indeed justice campaigners that there is much to do in order to ensure that both sides of the adversarial divide are fully aware of the possibilities afforded by forensic science and therefore empowered to fully utilise the opportunities offered by forensic science.

Q7. Has the closure of the FSS resulted in a loss of intellectual wealth through its scientists leaving the forensic science profession, or the UK? (please provide evidence/examples).

According to those in a position to know, this has happened. It is an unfortunate state of affairs that there is no doubt that this has happened. I have been informed that some FSS staff were demoralised by the closure of the FSS and left the profession. Their knowledge, experience and abilities have been lost to forensic science and therefore those in need of the provision and development of forensic sciences. I am unable to provide specific examples, but have been informed by those in a position to know that this loss of intellectual wealth definitely happened. I have no reason to doubt their veracity.

Q8. Are current arrangements for the FSS's archives satisfactory? How could arrangements for the retention of case files and forensic materials in the UK be improved?

I have to say that this is very unsatisfactory and was so in the countdown to abolition too. I was involved in at least one very high profile case where it was claimed that vital material had been used up. The client and his representatives refused to accept this at face value. A paper trail was requested as new testing had been developed that could have resolved vital issues in this case. I am aware of a precedent case and that other scientific techniques including partial DNA tests on other samples strongly suggested another explanation as

had undoubtedly occurred in the precedent case, which is a vindication case—one where there is no doubt because the real killer admitted his guilt demanded DNA testing and that proved his guilt.

We have an expert—an extremely good forensic scientist—prepared to review the scientific evidence, including the DNA and test it if that can be done, but due to the refusal of the police to provide this information, well over a year has been wasted that will result in a judicial review, which was caused by the unhelpful attitude of the police. We are appalled that the police, in an adversarial system with a clear vested interest, have been allowed a veto. This wastes time, causes resources to be wasted on what should have been an unnecessary judicial review and is plainly contrary to the interests of justice as if the testing provides conclusive results. This is certainly possible given the current testing that is available; it will either prove this man guilty or innocent, either of which must be welcome as it will provide certainty in the midst of doubt and uncertainty.

I am not certain how the files and material are being stored—openness on that would be welcome—but a definite improvement would be an equal right of access. If access to files and material would assist either prosecution or defence it should, in the interests of justice, be equally accessible to both sides. I cannot see any reason why that should not be the case. The police should be allowed no input whatsoever in decisions on access to FSS material and that is in their interest too. After all, if they prevent review and possibly testing using the latest techniques, they will inevitably be accused of having something to hide and this will occur in cases where that would have proved guilt as well as ones that would demonstrate innocence. They, like us, should not want the innocent to suffer at all, especially in these circumstances. It is not and cannot be in their interests for the guilty to be protected by the conviction of the innocent when forensic science could correct it. I therefore conclude that there should be an independent body, possibly the Forensic Science Regulator to decide who should have access to these files and material and when.

GENERAL COMMENTS

I am saddened that the government decided to close the FSS in the first place, but that has happened. I think that the whole process of the closure was flawed for reasons made clear above. The aftermath of closure has revealed several problems, not least of which is access to files and material for further testing. The frustration and disappointment that this causes to those seeking the truth is immense. It should be the fundamental goal of forensic science to seek and where possible establish the truth. That should apply to the government too and indeed the whole criminal justice system as well.

March 2013

Written evidence submitted by the United Kingdom Accreditation Service

The United Kingdom Accreditation Service (UKAS) is the national accreditation body for the UK. UKAS is recognised by government to assess, against internationally agreed standards, organisations that provide certification, testing, inspection and calibration services. UKAS is independent of government but is appointed as the national accreditation body by the Accreditation Regulations 2009 (SI No 3155/2009) and operates under a Memorandum of Understanding (MoU) with the Department of Business, Innovation and Skills, on behalf of government as a whole.

UKAS has been involved in assessing laboratories undertaking forensic analysis since the 1980s and the scope of accreditation now covers a broad range of forensic examination and testing activities.

In 2009, the Regulator published for consultation, a draft standards document—the “Quality Standards for Providers of Forensic Science Providers to the Criminal Justice System” which set out a firm requirement for all providers to be accredited by UKAS to ISO/IEC 17025. With input from key stakeholders including UKAS, the standard has evolved into the “Codes of Practice and Conduct” (CoPC) which contains a “Statement of Accreditation Requirements for Laboratory Activity” essentially maintaining the requirement for all forensic service providers to be accredited.

UKAS has also recently commenced the accreditation of crime scene examination. This accreditation is carried out against ISO/IEC 17020, the international standard for organisations carrying out inspection activities which was deemed more appropriate than ISO/IEC 17025 for crime scene examinations. Accreditation of crime scene examination is not mandatory but is recognised as capable of ensuring that crime scene activities, as the initial stage in the investigation process, are carried out in a competent, impartial and consistent manner thus providing confidence in the process. UKAS granted accreditation to the first organisation for Crime Scene Examination in 2012.

Given our position as the national accreditation body and our role in accrediting forensic science laboratories, we have been following with interest the committee’s follow up inquiry into forensic science. We have noted a number of references to UKAS in the evidence provided and wish to clarify UKAS’ role in accrediting forensic science providers.

One of the conditions of our appointment as national accreditation body is that all our work should be governed by agreed standards. These standards are set down explicitly in the MoU with BIS. The agreed standard for the accreditation of laboratories is ISO/IEC 17025. In future it is expected that accreditation for

forensic science providers will be in accordance with the requirements of ISO/IEC 17025 and the CoPC; UKAS is implementing a project to incorporate the requirements of the CoPC into the accreditation process. Copies of ISO/IEC 17025 are available from the British Standards Institution.³⁸ Copies of the supplementary requirements are available from the website of the Forensic Science Regulator.

UKAS accreditation to ISO/IEC 17025 not only provides authoritative assurance of the technical competence of a laboratory to undertake specified analyses but also reviews particular aspects relevant to the Criminal Justice System, for example, continuity of evidence, management of case files and storage of exhibits. Accreditation determines the competence of staff, the validity and suitability of methods, the appropriateness of equipment and facilities, and the ongoing assurance and confidence in outcomes through internal quality control.

It is therefore incorrect to say (as was stated at the evidence session on 13 February 2013) that UKAS accreditation provides an assurance of good administration only. It is our view that accreditation to ISO/IEC 17025 does provide an assurance of “good science”. Accreditation to ISO/IEC 17025 demonstrates the technical competence and impartiality of the laboratory with respect to its defined scope of accredited activity.

UKAS was also concerned to note the evidence provided by Chief Constable Chris Sims on 6 February 2013 implying that a lack of resource at UKAS has delayed the accreditation programme for forensic science providers; this is not correct.

UKAS has worked very closely with the Forensic Science Regulator, ACPO and NPJA (now Forensics21 and part of CAST Home Office Science) in order to implement the European Council Framework Decision 2009/905/JHA which requires forensic service providers carrying out DNA recovery to be accredited by November 2013. UKAS has shown a clear demonstration of its commitment to having the necessary resources to satisfy the increased demand for its forensic accreditation service. UKAS has recruited an additional three Assessment Managers specifically for forensic laboratories as well as increasing the number of external technical assessors available. It is anticipated that these additional resources will enable UKAS to meet the demands for accreditation arising not just from Decision 2009/905/JHA but also the other emerging strands in the forensic landscape.

An early roll-out plan proposed by UKAS for achieving accreditation for the Framework Decision by the deadlines was not adopted and a separate strategy was developed subsequently which included the project management of force in-service providers by the National Policing Improvement Agency (NPIA). This resulted in an “Accreditation Roadmap” detailing the Forces which would be seeking accreditation for their DNA and fingerprinting activities and the indicative timescales for stages in the accreditation process for each force to achieve accreditation. The “Roadmap” timescales, even though influenced by UKAS, were considered to be optimistic for bodies with no previous experience of accreditation. It was agreed in October 2011 that UKAS would use the Roadmap as a resourcing and assessment planning tool. At that time it was emphasised and agreed that force adherence to the Roadmap was essential to maintain satisfactory and measurable progress in order to achieve the key objective. It was also explained by UKAS that delays at any stage in the assessment process would potentially impinge upon not only the provider concerned but also on other providers. UKAS has reported progress against the Roadmap, to the Regulator and ACPO on a continuing basis.

At the UKAS Forensic Science Technical Advisory Committee in December 2012, UKAS reported progress on applications and expressed concerns that the rate of applications coming into UKAS was slow and that many Forces appeared to be leaving it until the last minute.

However, since agreed, some Forces have entered into collaborations impacting upon the Roadmap and the number of Forces and timescales therein.

The latest position re the Framework Decision re DNA (ie bodies to be accredited by November 2013) is that UKAS:

- Was expecting to receive and have now received a total of 26 applications for this scope.
- Have nine Forces who do not yet have a visit date agreed with UKAS.
- Have granted accreditation to 4 Forces for this activity.

Consequently, despite the extra resources put in place by UKAS in line with the NPIA Roadmap and the amount of information that we have sent out we are still in a position where the roadmap has not been followed with the majority of the work compressing in to mid/late 2013. This could have an impact on UKAS’ ability to respond to all the demands from Police Forces for assessment visits.

The timescales for a new applicant service to gain accreditation depend to a large degree on the level of compliance within the Service however it is usual for the process to take around nine to 12 months. Due to the significant issues being raised at the pre-assessments there is often a gap of six months between pre-assessment and initial assessment. The cost of accreditation for a forensic science laboratory varies greatly depending on the size and complexity of its operations and its readiness for assessment, as all UKAS fees are based on actual effort expended, but typical costs are in the region of £10,000 for initial accreditation and £4–5,000 per year thereafter.

³⁸ www.bsigroup.com

At the present time UKAS is concerned that some Forces may not meet the November 2013 deadline for compliance with Decision 2009/905/JHA re DNA because either they have not applied early enough or cannot demonstrate that they meet the requirements. Although UKAS has not been the cause of delays that have prevented a Force proceeding to date, UKAS resources will be stretched as the deadline approaches if the Forces do not provide sufficient notice to make arrangements for their assessment visits and allow time to clear any necessary actions that arise from those visits.

It was suggested at the December 2012 meeting that the FSR should contact the police Forces in the New Year reiterating his expectations with regards to the November 2013 deadline and, if the point is reached when there is no chance that accreditation is achievable, that the FSR should contact the Chief Constable to inform them that they will have to outsource the work. The FSR and ACPO acted upon this suggestion with a clear message that relevant activity will have to be outsourced if accreditation has not been achieved.

UKAS has communicated regularly with the Forensics21 team and with the Forces directly concerning the progress so far made and with our concerns. Forensics21 team members have attended a number of pre-assessment and initial assessment visits and are aware of our requirements for accreditation.

UKAS is committed to doing everything possible to enable the accreditation of forensic science providers by the November 2013 deadline but is dependent, to a large degree, on the co-operation of the service providers. This is not always forthcoming.

March 2013

Written evidence submitted by Sean Doyle

Having read the uncorrected transcript of the evidence before the committee on Wednesday the 13 February 2103 I am driven to take issue with some of the evidence of Karen Squibb-Williams.

As a lawyer she may not be best placed to give evidence regarding ISO17025; an international standard applicable to testing and calibration laboratories.

In addition, she makes some remarks, properly challenged by Richard Atkinson, regarding the provision of scientific evidence which I thought gave a misleading impression; certainly based on my knowledge and experience of the criminal justice systems in England & Wales, and Northern Ireland.

MY BACKGROUND

I am a consultant forensic scientist and a director of a company based in New Zealand providing a range of services including the review of forensic case work.

I left the Forensic Explosives Laboratory (FEL), an ISO17025 accredited laboratory and part of the UK Ministry of Defence, in February 2010 on good terms to emigrate to NZ. I was FEL's Principal Scientist.

I have been a member of a number of international bodies developing quality standards in forensic science.

I have nearly forty years experience as a forensic scientist and over twenty years experience of developing, establishing and maintaining quality standards such as ISO17025.

I was a director of the Council for the Registration of Forensic Practitioners (CRFP), a CRFP assessor and a CRFP Registered Forensic Practitioner.

I continue to undertake casework as an expert witness in the UK; so far all of it legally aided.

I am Director of Quality of the FIRMS Network an English company which, among other things, regulates forensic practitioners.

ISO17025 AND REGULATION

ISO17025 compliance costs are high and therefore the standard is only available to medium and large organisations (turnover significantly in excess of £250k/yr). It is beyond the financial means of small organisations. Certainly an organisation that relied on legally aided work could not afford to obtain and support ISO17025 accreditation. Therefore, ISO17025 cannot provide an across-the-board solution.

It should be recognised that it is the tests that an organisation provides that are the subject of ISO17025 accreditation. The standard is for testing and calibration laboratories.

Karen Squibb-Williams' dismissal of the CRFP regulation as "self assessment" in answer to Q197 is misleading. Many politicians, judges, lawyers and forensic scientists had high regard for CRFP registration as providing an independent and objective assurance of individual competence. The competence of the individual is an area not properly addressed by ISO17025 as is clear from the standard itself and demonstrated by the judgement *R v T* [2010] EWCA Crim 2439.

The strength of the CRFP regulatory system was that the individual was the subject of the quality standard who was independently & robustly assessed by peers. Because costs were low there was no financial barrier to compliance. CRFP registration assessed the competence of the individual as a forensic practitioner.

Unfortunately, I see close parallels between ACPO's role in closing the CRFP and the Forensic Science Service.

Regarding the benefits of ISO17025; the accreditation of major forensic science providers is essential simply because they are large organisations and their systems, procedures and process require considerable resource to control. ISO17025 has two major divisions; management and technical. Compliance with the management requirements is the equivalent of ISO9001. Most would agree that compliance with ISO9001 is essential for any large organisation. I fully accept that ISO17025 is no absolute guarantee against unreliable evidence, there can be none. However, before ISO17025 forensic science laboratories often placed before the court expert evidence based on invalid methods, unsound science and questionable interpretation (Birmingham 6, Maguires, Judith Ward etc.). ISO17025 accreditation has significantly reduced the risk of this occurring again. ISO17025 compliance is an essential requirement for major forensic science providers.

DEFENCE DELAYS

The suggestion by Karen Squibb-Williams in her answer to Q173 that it is the late response by the defence to the prosecution case that is responsible for delays is misleading. Her suggestion was rightly challenged by Richard Atkinson. My experience as a forensic scientist, instructed by the defence and legally aided, is that finding out precisely how the science supports the prosecution case is always a major challenge. For example, in a recent murder trial it was not until the prosecution expert was giving evidence under cross examination that it finally became clear what the prosecution forensic science evidence actually was. It should be recognised that most forensic science providers are either working directly or indirectly for the police. The forensic science reports issued are primarily aimed at assisting the police investigation and do not comply with the requirements of the Criminal Procedure Rules (CPR) at 33.3. If prosecution forensic science reports did comply with 33.3 then that would represent a major advance in the efficient delivery of justice.

It is unfair for Karen Squibb-Williams to criticise the defence (eg Q172) for non compliance with the CPR while not mentioning the fact that prosecution forensic reports do not comply.

Finally, there can be no benefit in a pre-trial meeting of experts unless and until the prosecution decides on what forensic scientific evidence it is to rely on and how.

There is much else in Karen Squibb-Williams' evidence I could take issue with.

March 2013