


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 <b>2045</b>  Accredited to <b>ISO/IEC 17025:2017</b>	<b>Orchid Cellmark Ltd (trading as Cellmark)</b>  <b>Issue No: 110    Issue date: 25 February 2025</b>	
	<b>Unit 16 Blacklands Way</b> <b>Abingdon Business Park</b> <b>Abingdon</b> <b>Oxfordshire</b> <b>OX14 1DY</b>	<b>Contact: Mr Peter Harper</b> <b>Tel: +44 (0)1235 528609</b> <b>Fax: +44 (0)1235 554428</b> <b>E-Mail: pharper@cellmark.co.uk</b> <b>Website: www.cellmarkforensics.co.uk / www.cellmark.co.uk</b>
<b>Testing performed by the Organisation at the locations specified below</b>		

### Locations covered by the organisation and their relevant activities

#### Laboratory locations:

Location details	Activity	Location code
<b>Address</b> Unit 16 Blacklands Way Abingdon Business Park Abingdon Oxfordshire OX14 1DY  <b>Local contact</b> Mr Peter Harper  Tel: +44 (0)1235 528609 Fax: +44 (0)1235 554428 E-Mail: pharper@cellmark.co.uk  Websites: www.cellmarkforensics.co.uk www.cellmark.co.uk	Forensic Testing; Paternity and Relationship testing; Forensic and Veterinary and Forensic Analysis	A
<b>Address</b> Unit 1 Buckshaw Link Ordnance Road Buckshaw Village Chorley Lancashire PR7 7EL  <b>Local contact</b> Mr Peter Harper  Tel: +44(0)1235 528609 Fax: +44(0)1235 554428 E-Mail: pharper@cellmark.co.uk  Websites: www.cellmarkforensics.co.uk www.cellmark.co.uk	Forensic Analysis	B
<b>Address</b> The Arrow Centre Annesley Road Hucknall Nottinghamshire NG15 8AY  <b>Local contact</b> Mr Peter Harper  Tel: +44(0)1235 528609 Fax: +44(0)1235 554428 E-Mail: pharper@cellmark.co.uk  Websites: www.cellmarkforensics.co.uk www.cellmark.co.uk	Forensic Analysis	C



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	<u>Forensic Testing</u>	The organisation has demonstrated compliance to the Forensic Science Regulator Code of Practice in relation to the Forensic Activities listed below.	A, B, C
BODY FLUIDS and TISSUES	<u>Forensic Analysis</u>		
Blood	DNA Profiling:	Documented In-House Methods using manual/automated extraction	A
- Whole	Short Tandem Repeat (STR) DNA profiling for forensic analysis of:	- Thermofisher Automate Express (FSP0124)	
- Stains	- Low Template DNA (SGM Plus and NGM SElect))	- Qiagen (EZ1) (FSP0050)	
- FTA cards	- Crime Scene Samples meeting the requirements of the Custodian for the Purpose of Supply to the National DNA Database	- Modified organic (FSP0038)	
Semen	- Subject Samples (PACE and Volunteer) meeting the requirements of the Custodian for the Purpose of Supply to the National DNA Database	- Qiagen (EZ2) (FSP0151)	
- Whole	- Elimination Database samples (VED/SED and PED)	- Alkali Lysis extraction (FSP0033)	
- Azoospermic	- Environmental Monitoring Samples (NGM SElect only)	- Fast differential semen DNA extraction (FSP0087)	
Faeces		- Direct semen extraction (FSP0102)	
Saliva		- QIAamp Fast Stool DNA Minikit (FSP0073)	
- Whole		- DNA IQ (STR0119)	
- Stains			
- FTA Cards			
- Swabs (buccal cells)			
Hair			
Cellular Material		Documented In-House Methods using manual and automated quantification	
		- Pico Green	
		- Oli Green (QC0005/STR0161)	
		Real Time Quantification using Quantiplex ProDual RT-PCR (FOR0017)	



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BODY FLUIDS and TISSUES (cont'd)	<u>Forensic Analysis (cont'd)</u>		
Blood	DNA Profiling:	Documented In-House Methods using manual/automated extraction	C
- Stains	Short Tandem Repeat (STR) DNA profiling for forensic analysis of:	- Qiagen (EZ1) (FSP0050)	
Saliva	- Crime Scene Samples meeting the requirements of the Custodian for the Purpose of Supply to the National DNA Database	Documented In-House Methods using manual quantification	
- Stains	- Environmental Monitoring Samples	- Real Time Quantification using Thermo Fisher 7500	
- Swabs		Documented In-House Methods (FSP0156) using manual amplification (PCR) and the following chemistry:	
Hair		- NGM Select Express	
Cellular Material		Documented In-House Methods (FSP0170) using Electrophoresis	
		- Applied Biosystems 3500xl Genetic Analyser©	
	<u>Related Opinions and Interpretation</u>	Documented In-House methods (FRP0166,FRP0114, FRP0117 FRP0139 FRP0151 FRP0162,FRP0124/ TG0025/FSP0021/ FRP0152, FOR0123,FOR0126)	
	Interpretation of DNA profiles generated internally from crime stains (single source/major-minor mixtures/complex mixtures) and reference samples	- Genetic Characterisation	A
	Statistical analysis and comparison of DNA profiles generated from crime stains with compatible reference DNA profiles (internally generated or from other accredited laboratories)	o GMID 3.2.1	A,B,C
		o GeneMapper IDX v1.5	A, B
		o Expert systems:	
		▪ DNA Resolve	A, B
		▪ ReliCalc	A, B
		▪ STRMix (v2.5 &v2.10.0)	A, B



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BODY FLUIDS and TISSUES (cont'd)  Blood - FTA cards Saliva - FTA Cards	<u>Forensic Analysis</u> (cont'd)  <u>Forensic Testing</u>  DNA Profiling: Short Tandem Repeat (STR) DNA profiling for forensic analysis of:  Subject Samples for input into population databases.	Documented In-House Methods (STR0202) & manufacturer specifications using FTA purification (STR0187) and amplification (PCR) using the following chemistry: - PowerPlex® Fusion 6C  Documented In-House Methods (STR0218) using Electrophoresis: - Applied Biosystems 3500xl Genetic Analyser©  Genetic characterisation using documented in-house methods (STR0219): - GeneMapper IDX v1.4	A



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BODY FLUIDS and TISSUES (cont'd)	<u>Forensic Analysis</u> (cont'd)		A
Blood <ul style="list-style-type: none"> <li>- Whole</li> <li>- Stains</li> <li>- FTA cards</li> </ul> Semen <ul style="list-style-type: none"> <li>- Whole</li> <li>- Azoospermic</li> </ul> Saliva <ul style="list-style-type: none"> <li>- Whole</li> <li>- Stains</li> <li>- FTA Cards</li> <li>- Swabs (buccal cells)</li> </ul> Hair Cellular Material Body Tissue <ul style="list-style-type: none"> <li>- Nail</li> <li>- Muscle</li> <li>- Bone</li> <li>- Teeth</li> <li>- Products of conception</li> </ul>	Massive Parallel Sequencing based Autosomal Short Tandem Repeat (STR)/Y-STR/X-STR/Identity SNP/Phenotypic SNP/Biogeographical ancestry SNP DNA profiling for forensic analysis of: <ul style="list-style-type: none"> <li>- Crime Scene/ Missing persons Samples</li> <li>- Subject Samples (PACE and Volunteer)</li> </ul>	Documented In-house Methods for Massive Parallel Sequencing Sample Amplification, Enrichment, Library Preparation, Purification and Normalisation using -Verogen ForenSeq™ DNA -Signature Prep Kit VER0001	
	<u>Related Opinions and Interpretation</u> Interpretation of DNA profiles generated internally from crime stains (single source/major-minor mixtures/complex mixtures) and reference samples  Statistical analysis and comparison of DNA profiles generated from crime stains with compatible reference DNA profiles (internally generated or from other accredited laboratories)	Documented In-house Methods for Massive Parallel Sequencing of pooled libraries using <ul style="list-style-type: none"> <li>- Illumina MiSeq FGx &amp; MiSeq FGx Control Software (MCS)VER0002</li> </ul> Documented In-House Methods <ul style="list-style-type: none"> <li>- Genetic Characterisation Verogen Forenseq™ Universal Analysis Software (Windows) VER0003/VER0004/VER0005/FOR0024/FOR0100/FOR0101</li> </ul>	



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<p><b>BODY FLUIDS and TISSUES (cont'd)</b></p> <p><b>Blood</b></p> <ul style="list-style-type: none"> <li>- Whole</li> <li>- Stains</li> <li>- FTA cards</li> </ul> <p><b>Semen</b></p> <ul style="list-style-type: none"> <li>- Whole</li> <li>- Azoospermic</li> </ul> <p><b>Saliva</b></p> <ul style="list-style-type: none"> <li>- Whole</li> <li>- Stains</li> <li>- FTA Cards</li> <li>- Swabs (buccal cells)</li> </ul> <p><b>Faeces</b></p> <p><b>Urine</b></p> <p><b>Stomach Contents</b></p> <p><b>Hair</b></p> <p><b>Cellular Material</b></p> <p><b>Body Tissue</b></p> <ul style="list-style-type: none"> <li>- Nail</li> <li>- Muscle</li> <li>- Bone</li> <li>- Teeth</li> <li>- Amniotic Fluid</li> <li>- Products of conception</li> </ul>	<p><u>Forensic Analysis (cont'd)</u></p> <p>DNA Profiling: Short Tandem Repeat (STR)/Mitochondrial/Y Chromosome DNA profiling for forensic analysis of:</p> <ul style="list-style-type: none"> <li>- Low Template DNA (elevated cycle number and post PCR enhancement)</li> <li>- Crime Scene Samples</li> </ul>	<p>Documented In-House Methods using manual/automated extraction</p> <ul style="list-style-type: none"> <li>- Automate Express (FSP0124)</li> <li>- Modified organic(FSP0038)</li> <li>- Qiagen EZ1 (FSP0050)</li> </ul> <p>Documented In-House Methods using Manual quantification</p> <ul style="list-style-type: none"> <li>- Real Time Quantification using Quantiplex ProRT-PCR (FOR0017) Mini-gel</li> </ul> <p>Documented In-House Methods using Manual amplification (PCR) and the following chemistry:</p> <ul style="list-style-type: none"> <li>- NGM Select(FSP0156 )</li> <li>- Identifiler(FSP0156)</li> <li>- mtDNA (MIT0004)</li> <li>- Minifiler (FSP0156)</li> <li>- Powerplex Y23 (FSP0149)</li> </ul> <p>Documented In-House Methods (FSP0028/FSP0170,FSP017,FSP0053,FOR0109/FOR0110) using Electrophoresis</p> <ul style="list-style-type: none"> <li>- Applied Biosystems 3130xl Genetic Analyser©</li> <li>- Applied Biosystems 3500xl Genetic Analyser© for crime scene samples following NGM SElect and PPY23 amplification</li> </ul>	A



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BODY FLUIDS and TISSUES (cont'd)	<u>Forensic Analysis (cont'd)</u>  <u>Related Opinions and Interpretation</u>  Interpretation of DNA profiles generated internally from crime stains (single source/major-minor mixtures) and reference samples  Statistical analysis and comparison of DNA profiles generated from crime stains with compatible reference DNA profiles (internally generated or from other accredited laboratories)	Documented In-House methods (FRP0153,FSP0172, FSP0174 FRP0123, MIT0006, MIT0009, MIT0011, FSP0080//FRP0135) Genetic Characterisation - GMID 3.2.1 - GeneMapper IDX v 1.4 and 1.5 - Expert systems: - Sequencher	A



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BODY FLUIDS and TISSUES (cont'd)	<u>Relationship Analysis</u>		A
Blood <ul style="list-style-type: none"> <li>- Whole</li> <li>- Serum</li> <li>- Stains</li> </ul> Semen <ul style="list-style-type: none"> <li>- Whole</li> <li>- Azoospermic</li> </ul> Saliva <ul style="list-style-type: none"> <li>- Whole</li> <li>- Swabs (buccal cells)</li> </ul> Faeces	Short Tandem Repeat (STR)/Mitochondrial/Y Chromosome DNA profiling for relationship testing for: <ul style="list-style-type: none"> <li>- Paternity</li> <li>- Maternity</li> <li>- Sibling</li> <li>- Familial Searching</li> <li>- Extended relationship (Aunt/Uncle, Niece/Nephew, Grandparent, Grandchild, Cousin)</li> </ul>	Documented In-House Methods using Manual/Automated extraction <ul style="list-style-type: none"> <li>- Automate Express (FSP0124)</li> <li>- FTA Purification (STR0187)</li> </ul> Documented In-House Methods (FSP0054) using Manual quantification <ul style="list-style-type: none"> <li>- Qiagen manual QIAamp (STR0043)</li> </ul> Real Time Quantification using Quantiplex PRORT-PCR (FOR0017) Documented In-House Methods using Manual amplification and the following chemistry: <ul style="list-style-type: none"> <li>- NGM Select (STR0161)</li> <li>- Powerplex Fusion (STR0187)</li> <li>- Powerplex Y23 (FSP0149)</li> </ul> Documented In-House Methods using Electrophoresis (FSP0170/STR 0218) <ul style="list-style-type: none"> <li>- Applied Biosystems 3500 Genetic Analyser©</li> </ul>	
Hair			
Body Tissue <ul style="list-style-type: none"> <li>- Nail</li> <li>- Muscle</li> <li>- Bone</li> <li>- Teeth</li> <li>- Amniotic Fluid</li> <li>- Products of conception</li> </ul>			
	<u>Related Opinions and Interpretation</u>		A
	Comparison, interpretation and statistical analysis of DNA profiles against compatible DNA Profile information from within submitted cases	Documented In-House methods (STR0084/STR0099/STR0219/STR0208/STR0220/FSP0174) <ul style="list-style-type: none"> <li>- Genetic Characterisation <ul style="list-style-type: none"> <li>o GMID 3.2</li> <li>o GeneMapper IDX v1.4 and 1.5</li> </ul> </li> </ul>	





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BODY FLUIDS and TISSUES (cont'd)	<u>Forensic Analysis</u>		A
Blood	Massive Parallel Sequencing based Autosomal Short Tandem Repeat (STR)/Y-STR/X-STR/Identity SNP/Phenotypic SNP/Biogeographical ancestry SNP DNA profiling for relationship testing for:	Documented In-house Methods for Massive Parallel Sequencing Sample Amplification, Enrichment, Library Preparation, Purification and Normalisation using	
- Whole		-Verogen ForenSeq™ DNA	
- Serum		-Signature Prep Kit VER0001	
- Stains			
Semen	-Paternity -Maternity -Sibling -Familial Searching -Extended relationship (Aunt/Uncle, Niece/Nephew, Grandparent, Grandchild, Cousin)	Documented In-house Methods for Massive Parallel Sequencing of pooled libraries using	
- Whole		- Illumina MiSeq FGx & MiSeq FGx Control Software	
- Azoospermic		VER0002	
Saliva			
- Whole	<u>Related Opinions and Interpretation</u>	Documented In-house Methods for Massive Parallel Sequencing of pooled libraries using	
- Swabs (buccal cells)		- Illumina MiSeq FGx & MiSeq FGx Control Software (MCS)VER0002	
Faeces			
Hair		In-House Methods	
Body Tissue	Comparison, interpretation, and statistical analysis of DNA profiles against compatible DNA Profile information from within submitted cases	- Genetic Characterisation	
- Nail		Verogen	
- Muscle		Forenseq™Universal	
- Bone		Analysis Software (Windows	
- Teeth		VER0003/VER0004/VER0005/ STR0234	
- Amniotic Fluid			
Products of conception			



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BODY FLUIDS and TISSUES (cont'd)	<u>Forensic Analysis</u> (cont'd)		
ANY MATERIAL	<p>Searching for:</p> <ul style="list-style-type: none"> <li>- Blood</li> <li>- Semen</li> <li>- Saliva</li> <li>- Urine</li> <li>- Hairs</li> </ul> <p>Recovery and preparation, including for contingency purposes, for subsequent DNA analysis by an ISO/IEC 17025 accredited laboratory of the following from searched materials and swabs:</p> <ul style="list-style-type: none"> <li>- Blood</li> <li>- Semen</li> <li>- Saliva</li> <li>- Hairs</li> <li>- Cellular Material</li> </ul>	<p>Documented In-House Methods (FSP0027/ FOR0010, FSL0071, FSL0005, FOR0015, FSL0070, FSL0010) using:</p> <ul style="list-style-type: none"> <li>- visual examination</li> <li>- white light</li> <li>- low power microscopy</li> <li>- high power microscopy</li> <li>- chemical testing (see below)</li> </ul> <p>Documented In-House Methods (FOR0034, FOR0010, FOR0037, FSL0014, FOR0003, FSL0040, FSL0083, FOR0001, FSL0010) using:</p> <ul style="list-style-type: none"> <li>- cutting</li> <li>- swabs and swabbing</li> <li>- taping</li> <li>- mini-taping</li> <li>- extraction of stained materials</li> <li>- extraction of swabs</li> </ul>	<p>A, B, C A, B A, B, C A, B A, B, C</p> <p>A, B, C A, B, C A, B, C A, B, C A, B A, B</p>
Blood	<p>Presumptive testing for blood via detection of:</p> <ul style="list-style-type: none"> <li>- Peroxidase</li> <li>- Human Haemoglobin</li> </ul> <p><u>Related Opinions and Interpretations</u></p> <p>Identification, interpretation and recording of blood patterns (BPA) on clothing and other items examined at the laboratory</p>	<p>Documented In-House Methods (FOR0009) using:</p> <ul style="list-style-type: none"> <li>- KM (Kastle Meyer)</li> <li>- Luminol</li> <li>- Hydrogen Peroxide</li> <li>- OBTI</li> </ul> <p>Documented In-House Methods (FSL0044/TG0010) using:</p> <ul style="list-style-type: none"> <li>- visual examination</li> <li>- low power microscopy</li> </ul>	<p>A, B, C A, B A, B A, B</p> <p>A, B</p>



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BODY FLUIDS and TISSUES (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Semen	Presumptive testing for seminal fluid, via detection of: <ul style="list-style-type: none"><li>- Acid Phosphatase</li><li>- Choline</li></ul>	Documented In-House Methods (FSL0005, FSL0007) using: <ul style="list-style-type: none"><li>- Acid phosphatase reagent</li><li>- Choline detection by Florence Iodine test</li></ul>	A, B
	Confirmatory testing for seminal fluid via identification of spermatozoa	Documented In-House Methods (FOR0148) using: <ul style="list-style-type: none"><li>- High power microscopy</li><li>- Christmas Tree staining</li><li>- Haematoxylin and Eosin staining</li></ul>	A, B
Saliva	Presumptive testing for saliva via detection of: <ul style="list-style-type: none"><li>- Amylase</li></ul>	Documented In-House Methods (FOR0015 and FOR0001) using: <ul style="list-style-type: none"><li>- Phadebas paper</li><li>- Phadebas tube test</li></ul>	A, B
Urine	Presumptive testing for urine via detection of: <ul style="list-style-type: none"><li>- Urea</li></ul>	Documented In-House Methods (FSL0060 ) using: <ul style="list-style-type: none"><li>- DMAC</li></ul>	A, B
Hairs	Differentiation of human and animal hairs	Documented In-House Methods (FSL0068) using: <ul style="list-style-type: none"><li>- visual examination</li><li>- low power microscopy</li><li>- high power microscopy</li></ul>	A, B



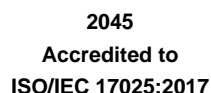
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BODY FLUIDS and TISSUES (cont'd)	<u>Forensic and Veterinary</u>		
FTA Cards	Analysis of Canine Short Tandem Repeat (STR) loci	Documented In-House Methods (DOGID0002/DOGID0003/DOGID0004) defining extraction, amplification, electrophoresis and profile designation of Canine samples Thermo Scientific™ Canine Genotypes Panel 2.1 kit by ABI 3500xL Genetic Analyser and GeneMapper ID-X v1.4	A
Blood Body Tissue DNA FTA Cards	Analysis of Bovine Short Tandem Repeat (STR) loci	Documented In-House Methods (BOVSTR0001 BOVSTR0011/BOVSTR0013/BOVSTR0014 and BOVSTR0014) defining extraction, amplification, electrophoresis and profile designation of Bovine samples using Bovine Genotypes™ Panel 1.2 kit by ABI 3500xL Genetic Analyser and GeneMapper ID-X v1.4	A
Forensic samples and meat products	<u>Related Opinions and Interpretations</u>  Identification of animal species by sequencing of the 12S rRNA mitochondrial gene from DNA extracts	Documented In-House Methods (SID0004) defining extraction, amplification, sequencing and analysis and comparison with reference sequences and analysis (SID0001-05).  In house methods for relationship analysis BOVSTR0006/BOVSTR0007 )	A



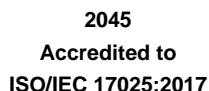
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Assessment Manager: AS1



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Assessment Manager: AS1



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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Hair (cont'd)	Benzodiazepines Group: Diazepam (0.025 ng/mg); (0.025-2.5ng/mg) Temazepam (0.025 ng/mg); (0.025-2.5ng/mg) Oxazepam (0.025 ng/mg); (0.025-2.5ng/mg) Chlordiazepoxide (0.025 ng/mg); (0.025-2.5ng/mg) Desmethyldiazepam (0.025 ng/mg); (0.025-2.5ng/mg)	Documented in house method (TOX0013) using liquid-liquid extraction and LC-MS/MS	A
Hair	Confirmation (above specified cut-off limit) and Quantitative Analysis of the following drugs (cut-off limit); (Concentration Range):		
	Miscellaneous Group: Ketamine (0.1 ng/mg); (0.1-25 ng/mg)	Documented in house method (TOX0014) using liquid-liquid extraction and LC-MS/MS	A
	Ethyl Glucoronide (EtG) (0.02 ng/mg); (0.02- 0.5 ng/mg)	Documented in house method (TOX0015) using solid phase extraction and GC-MS/MS	A
	Cannabis Group : 11-Hydroxy- Delta-9-THC -THC-OH (0.0002 ng/mg); (0.0002-0.005ng/mg) Delta-9-Tetrahydrocannabinol - THC (0.02 ng/mg); (0.02-0.5ng/mg) Trans-11-Nor-9-carboxy- Delta-9-THC - THC-COOH (0.0002 ng/mg); (0.0002-0.005ng/mg)	Documented in house method (TOX0011) using solid-phase extraction and GC-MS/MS	A
Hair	Confirmation (above specified cut-off limit) of the following drugs (cut-off limit)		A
	Cannabis Group : Cannabidiol (0.02 ng/mg) Cannabinol (0.02 ng/mg)	Documented in house method (TOX0011) using solid-phase extraction and GC-MS/MS	A



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Whole Blood (Preserved)	Detection and quantitation of drugs in relation to s5A of the Road Traffic Act 1988 (as amended) and The Drug Driving (Specified Limits) (England and Wales) Regulations 2014 (Amended) (Cut-Off Limit):	-	A
	Delta-9-tetrahydrocannabinol (THC) (2 µg/L)	Documented in house (TOX0024) using: - Solid phase extraction - GC-MS-MS	A
Blood / Urine (Preserved, Unpreserved)	Detection and quantitation of alcohol in relation to Section 5 of the Road Traffic Act 1988 (as amended) and other sample types over the concentration range 10 to 500 mg/100mL for legal limits of 20mg/100 ml (aviation) and 80 mg/100mL (Section 5) in blood 27 mg/100ml(aviation and 107mg/100ml in urine	Documented in house (TOX0029) using : HS-GC-FID	A





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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Whole Blood (Preserved)	<p>The Confirmation and quantitation of drugs in relation to s5A of the Road Traffic Act 1988 (as amended) and The Drug Driving (Specified Limits) (England and Wales) Regulations 2014 (Cut-off); [Concentration Range]:</p> <p>Amphetamine (250 µg/L); [100-1500 µg/L]  Benzoyllecgonine (50 µg/L); [20-300 µg/L]  Clonazepam (50 µg/L); [20-300 µg/L]  Cocaine (10 µg/L); [4-60 µg/L]  Diazepam (550 µg/L); [100-1500 µg/L]  Flunitrazepam (300 µg/L); [100-1500 µg/L]  Ketamine (20 µg/L); [8-120 µg/L]  Lorazepam (100 µg/L); [40-600 µg/L]  Lysergic Acid Diethylamide – LSD (1µg/L); [0.4-6.0 µg/L]  Methadone (500 µg/L); [100-1500 µg/L]  Methylamphetamine (10 µg/L); [4.0-60 µg/L]  Methylenedioxymethamphetamine – MDMA (10 µg/L); [4.0-60 µg/L]  6-Monoacetylmorphine (5 µg/L); [2-30 µg/L]  Morphine (80 µg/L); [30-450 µg/L]  Oxazepam (300 µg/L); [100-1500 µg/L]  Temazepam (1000 µg/L); [100-1500 µg/L]</p>	Documented in house method TOX0051 by Protein precipitation and liquid chromatography with triple quadrupole mass spectrometry (LC-QQQ)	A



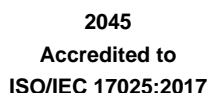
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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) (cont'd)	Confirmation (above specified cut-off limit) of drugs (cut-off limit):	Documented in house (TOX0026) using:	A
	Cathinone Group: 4-methylethcathinone - 4-MEC (0.08 µg/L) Mephedrone - 4-Methylmethcathinone (0.15 µg/L)	- Protein Precipitation - LC-MS/MS	A
	Cocaine Group: Benzoylecgonine (0.09 µg/L) Cocaethylene (0.12 µg/L) Cocaine (0.03 µg/L) Ecgonine methyl ester - EME (0.53 µg/L) Norcocaine (0.21 µg/L)		A
	Opioid Group: 2-ethylidene-1,5-dimethyl-3, 3-diphenylpyrrolidine - EDDP (0.06 µg/L) 6-Acetylcodeine (0.14 µg/L) 6-Monoacetylmorphine - 6-MAM (0.13 µg/L) Buprenorphine (0.09 µg/L) Codeine (0.51 µg/L) Dihydrocodeine (0.66 µg/L) Methadone (0.03 µg/L) Morphine (0.91 µg/L)		A
	Piperazine Group: 3-Trifluoromethylphenylpiperazine - TFMPP (0.19 µg/L) Benzylpiperazine - BZP (0.33 µg/L) meta-Chlorophenylpiperazine - m-CPP (0.27 µg/L)		A
	Miscellaneous Group: Ketamine (0.2 µg/L) Lysergic Acid Diethylamide - LSD (0.01 µg/L)		A



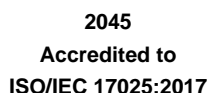
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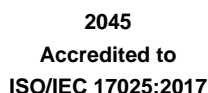
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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) (cont'd)	Quantitative analysis of the following drugs (concentration range):  Miscellaneous Group: Ketamine (10-1000 µg/L) Lysergic Acid Diethylamide - LSD (0.5-50 µg/L)  Piperazine Group: 3-Trifluoromethylphenyl-piperazine - TFMPP (10-1000 µg/L) Benzylpiperazine - BZP (5-500 µg/L) meta-Chlorophenylpiperazine - m-CPP (5-500 µg/L)	Documented in house (TOX0026) using: - Protein Precipitation - LC-MS/MS	A  A  A
Whole Blood (Preserved, Unpreserved) Urine (Preserved, Unpreserved)	Confirmation (above specified cut-off limit) of the following drugs (cut-off limit Blood urine): Cannabis Group : 11-Hydroxy-- Delta-9-THC - THC-OH (0.0278 µg/L; 5 µg/L) Cannabidiol (0.0347 µg/L; 0.5 µg/L) Cannabinol (0.0138 µg/L; 0.5 µg/L) Delta-9-Tetrahydrocannabinol - THC (0.0350 µg/L; 0.5 µg/L) Trans-11-Nor-9-carboxy- Delta-9-THC - THC-COOH (0.0280 µg/L; 5 µg/L)	Documented in house (TOX0024) using: - Solid phase extraction - Gas chromatography tandem mass spectrometry (GC-MS/MS)	A



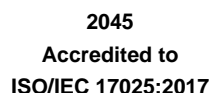
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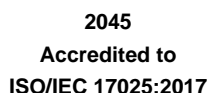
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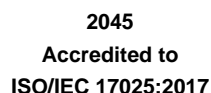
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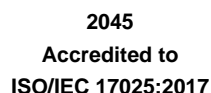
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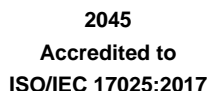
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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) (cont'd)	Quantitative analysis of the following drugs (concentration range):	Documented in house (TOX0040) using: - Protein Precipitation - Solid Phase Extraction - LC-MS/MS	A
	Analgesic and Anti-inflammatory Group: Dextropropoxyphene (5-1000 µg/L) Fentanyl (0.5-100 µg/L) Gabapentin (150-15000 µg/L) Oxycodone (5-1000 µg/L) Pregabalin (75-15000 µg/L) Tramadol (5-1000 µg/L)		A
	Anticonvulsant Group: Carbamazepine (225-15000 µg/L) Lamotrigine (75-15000 µg/L)		A
	Antidepressant group: Amitriptyline (5-1000 µg/L) Citalopram (5-1000 µg/L) Dothiepin/Dosulepin (10-1000 µg/L) Duloxetine (5-1000 µg/L) Fluoxetine (10-1000 µg/L) Mirtazapine (5-1000 µg/L) Nortriptyline (5-1000 µg/L) Paroxetine (10-1000 µg/L) Sertraline (5-1000 µg/L) Trazodone (75-15000 µg/L) Venlafaxine (5-1000 µg/L)		A
	Antihistamine Group: Chlorphenamine (0.5-100 µg/L) Cyclizine (5-1000 µg/L) Diphenhydramine 5-1000 µg/L) Hydroxyzine (5-1000 µg/L) Promethazine (0.5-100 µg/L)		A



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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) (cont'd)	Quantitative analysis of the following drugs (concentration range): (cont'd)	Documented in house (TOX0040) using: - Protein Precipitation - Solid Phase Extraction - LC-MS/MS	A
	Antipsychotic Group: Chlorpromazine (10-1000 µg/L) Clozapine (5-1000 µg/L) Haloperidol (0.5-100 µg/L) Olanzapine (10-1000 µg/L) Quetiapine (5-1000 µg/L) Risperidone (0.5-100 µg/L)		A
	Benzodiazepine Group: 7-Aminoclonazepam (5-1000 µg/L) 7-Aminoflunitrazepam (5-1000 µg/L) 7-Aminonitrazepam (5-1000 µg/L) Alprazolam (5-1000 µg/L) Clonazepam (5-1000 µg/L) Chlordiazepoxide (15-3000 µg/L) Desmethyldiazepam (10-1000 µg/L) Diazepam (15-3000 µg/L) Flunitrazepam (5-1000 µg/L) Lorazepam (10-1000 µg/L) Midazolam (1-100 µg/L) Nitrazepam (10-1000 µg/L) Oxazepam (15-1500 µg/L) Phenazepam (5-1000 µg/L) Temazepam (15-3000 µg/L) Triazolam (1-100 µg/L)		A
	Beta-Blocker Group: Atenolol (75-15000 µg/L) Metoprolol (5-1000 µg/L) Propranolol (5-1000 µg/L)		A



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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) (cont'd)	Quantitative analysis of the following drugs (concentration range): (cont'd)	Documented in house (TOX0040) using: - Protein Precipitation - Solid Phase Extraction - LC-MS/MS	A
	Cathinone Group: Cathinone (5-1000 µg/L) Mephedrone (5-1000 µg/L) Methylethcathinone - 4-MEC (5-1000 µg/L)		A
	Cocaine Group: Benzoylecgonine (15-3000 µg/L) Cocaethylene (5-1000 µg/L) Cocaine (5-1000 µg/L) Ecgonine methyl ester - EME (5-1000 µg/L) Norcocaine (5-1000 µg/L)		A
	Erectile Dysfunction Group: Sildenafil (1-100 µg/L) Vardenafil (1-100 µg/L)		A
	Miscellaneous Group: Ketamine (5-1000 µg/L) Lysergic Acid Diethylamide - LSD (0.5-100 µg/L) Procyclidine (5-1000 µg/L)		A



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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) (cont'd)	Quantitative analysis of the following drugs (concentration range): (cont'd)	Documented in house (TOX0040) using: - Protein Precipitation - Solid Phase Extraction - LC-MS/MS	A
	Opioid Group: 2-ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine - EDDP (5-1000 µg/L) 6-Acetylcodeine (0.5-50 µg/L) 6-Monoacetylmorphine (6-MAM) (1-50 µg/L) Buprenorphine (1-100 µg/L) Codeine (5-1000 µg/L) Dihydrocodeine (5-1000 µg/L) Methadone (15-1500 µg/L) Morphine (5-1000 µg/L) Pethidine (5-1000 µg/L)		A
	Piperazine Group: 3-Trifluoromethylphenylpiperazine - TFMPP (5-1000 µg/L) Benzylpiperazine - BZP (5-1000 µg/L) meta-Chlorophenylpiperazine - m-CPP (5-1000 µg/L)		A
	Z Drugs Group: Zaleplon (1-100 µg/L) Zolpidem (5-1000 µg/L) Zopiclone (5-1000 µg/L)		A



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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) Urine (Preserved, Unpreserved)	Confirmation (above specified cut-off limit) of the following drugs (cut-off limit Blood; Urine):	Documented in house (TOX0041)– using - Liquid/liquid extraction - GC-MS/MS	A
	Analgesic and Anti-inflammatory group : Salicylic acid (1.25 mg/L; 1.25 mg/L) Ibuprofen (1.25 mg/L; 1.25 mg/L) Paracetamol (1.25 mg/L; 1.25 mg/L)		A
	Anti-convulsant Group Valproic Acid (5 mg/L; 5 mg/L) Phenytoin (0.25 mg/L; 0.25 mg/L) Primidone (1 mg/L; 0.5mg/L)		A
	Barbiturates Group: Phenobarbital (1 mg/L; 0.25 mg/L) Amobarbital (0.5 mg/L; 0.25 mg/L) Pentobarbital (0.5 mg/L; 0.25 mg/L) Secobarbital (0.5 mg/L; 0.25 mg/L)		A
	Anti-narcoleptic/Drugs of Abuse : GHB (gamma-hydroxybutyrate) (4.1mg/L;4.1mg/L)		
	Miscellaneous: BHB (Beta-hydroxybutyrate) (5 mg/L; 5 mg/L)		





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BODY FLUIDS and TISSUES - TOXICOLOGY (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Blood (Preserved, Unpreserved) Urine (Preserved, Unpreserved)	Quantitative analysis of the following drugs (concentration range; *urine range if different to blood):	Documented in house (TOX0041)– using - Liquid/liquid extraction - GC-MS/MS	A
	Analgesic and Anti-inflammatory Group: Paracetamol (5-300 mg/L) Salicylic acid (5-300 mg/L)		A
Blood (Preserved, Unpreserved) Urine (Preserved, Unpreserved) (cont'd)	Quantitative analysis of the following drugs (concentration range; *urine range if different to blood):	Documented in house (TOX0041)– using - Liquid/liquid extraction - GC-MS/MS	A
	Anticonvulsant Group Phenytoin (1-60 mg/L) Valproic Acid (10-300 mg/L); (*80-300 mg/L)		
	Barbiturates Group: Amobarbital (1-60 mg/L) Pentobarbital (1-60 mg/L) Phenobarbital (1-60 mg/L) Secobarbital (1-60 mg/L)		A
	Anti-narcoleptic/Drugs of Abuse Group: Gamma-hydroxybutyrate - GHB (8.3-247.8 mg/L)		A
	Miscellaneous Group: Beta-hydroxybutyrate - BHB (10-300 mg/L) (*5-300 mg/L)		A



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Urine (Preserved, Unpreserved)	Quantitative analysis of the following drugs (concentration range;  Ibuprofen (5-300 mg/L) Primidone (1-60 mg/L)	Documented in house (TOX0041)– using - Liquid/liquid extraction GC-MS/MS	A
NOXIOUS SUBSTANCES	<u>Forensic Analysis</u> (cont'd)		
(Acids, Bases and Bleaches)	Qualitative Identification of - Acid - Bases - Bleaches	Documented in house method (COR0001) using -Volumetric analysis using chemical indicators, spot plates and a pH meter.	A, B
DAMAGE	<u>Forensic Analysis</u>		
Damage (Clothing and Fabric material)	<u>Related Opinions and Interpretations</u>  Examination, assessment and evaluation of a damage item, comparison of damage with suspected instrument to determine the likelihood the suspected instrument caused the damage.	Documented In-House Methods (FSL0003) using: - visual examination - microscopy - dimensional measurement - Physical fit (FSL0075/FSL0039)	A, B
FIBRES	Recovery of fibres for contingency purposes from clothing and objects	Documented in house method (FSL0010/FSL0055) using - visual examination - low power microscopy - taping - forceps	A, B



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FIBRES (cont'd)	<u>Forensic Analysis</u> (cont'd)		
	Search and recovery of fibres from clothing and objects for analysis (including tapings)	Documented in house method (FSL0010/FSL0055) using <ul style="list-style-type: none"> <li>- visual examination,</li> <li>- low power microscopy and screening</li> <li>- fibre recovery (taping)</li> <li>- mounting</li> </ul>	B
	Identification of fibre type	Documented in house method (FRP0085/ FSL0087/FSL0089) using <ul style="list-style-type: none"> <li>- polarised light microscopy</li> <li>- FTIR</li> </ul>	B
	Spectroscopic analysis of fibres in the visible range for the purpose of comparison of fibres	Documented in house method (FSL0112) using <ul style="list-style-type: none"> <li>- visible microspectrophotometry</li> <li>- ultraviolet-visible microspectrophotometry</li> </ul>	
	Comparison of fibres	Documented in house method (FRP0085/ FSL0087/FSL0089) using <ul style="list-style-type: none"> <li>- stereo microscopy</li> <li>- polarised light microscopy</li> <li>- comparison microscopy</li> <li>- FTIR</li> <li>- MSP</li> </ul>	B
	<u>Opinion and Interpretation</u>		B
	The evaluation of the significance of any matching features between the suspect and reference/control fibre to determine the likelihood of the suspect fibre coming from a specific source		



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FLAMMABLE LIQUIDS (FIRE ACCELERANTS)	<u>Forensic Analysis</u>		
Debris and materials recovered from fires and suspected fire scenes	Recovery of potential fire accelerants	Documented in-house method using - Direct sampling - Headspace sampling	A, B
Common fire accelerant liquids	Recovery of potential fire accelerants	Documented in-house method (ACCEL0002) using - Direct sampling - Headspace sampling	A, B
	Examination and analysis of the following flammable liquids - Petrol - Paraffin - Turpentine substitute - White spirit - Diesel - Alcohols (methanol/ethanol)	Documented in house method (ACCEL0003) using - TENAX - ATD-GCMS	B
Material Recovered from and associated with Fire Scenes	Analysis and identification of common fire accelerants : - Petrol - Paraffin - Turpentine substitute - White spirit - Diesel - Alcohols (methanol/ethanol) - Lighter Fuels	Documented in house method (ACCEL0003) using - TENAX - ATD-GCMS	B
	Comparison of common fire accelerants	Documented in house method (ACCEL0004) using - ATD-GCMS	A, B



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GLASS	<u>Forensic Analysis Cont'd</u>		
	Search and recovery of glass fragments from clothing and objects	Documented In-House Methods ( FOR0015 / FOR0134) using visual examination and low power microscopy	A, B
	Preparation of glass fragments for SEM Analysis	Documented In-House Method (FSL0066) involving stub preparation.	A, B
	Characterisation of glass fragments	Documented In-House methods (FSL0035/FSL0036/FSL0037) using - refractive index determination by oil immersion (GRIM 3) - low power and interference microscopy - re-annealing by tube furnace	A, B
			A, B
			A
			A, B
GUN SHOT RESIDUE (GSR / FDR)	<u>Opinion and Interpretation</u>		A, B
	The evaluation of the significance of matching and non-matching features between the suspect and reference/control samples	Documented in house method using: - Database (FCD001)	
	<u>Forensic Analysis</u>		
	Recovery of in-organic gun shot residues (primer)	Documented in house method (FSL0078) using - carbon coated aluminium stubs - Wipes - Swabbing	A, B
Recovered Material	Identification of in-organic gun shot residues (primer)	Documented in house method (GSR0002/GSR0010/GSR0031/GSR0032) using SEM/EDX	A
	<u>Opinions and Interpretations</u> Identification (type) and comparison of recovered GSR particles, including with a suspected source	Documented in house methods as above using: - Personal experience - Reference Collections	A



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LACHRYMATORS	<u>Forensic Analysis</u>		
Submitted devices and material recovered from clothing	Identification of: <ul style="list-style-type: none"><li>- Ortho-chlorobenzalmalonitrile (CS)</li><li>- Alpha-chloroacetophenone (CN)</li><li>- Pelargonic acid vanillylamide (PAVA)</li><li>- Capsaicin (Pepper Spray) &amp; (Dihydrocapsaicin)</li></ul> Legal Classification of devices (Firearms Act 1968) and Article 45 of the Firearms (N.I.) Order 2004)  Analysis to determine the nature of the contents of a device, and whether the item fits the description of a Prohibited Weapon	Documented in house method (TOX0002) using GC-MS	A
LUBRICANTS	<u>Forensic Analysis</u>		
(Aqueous / non aqueous lubricants, condom / personal lubricant products)	Sampling and extraction of Silicone, Glycerine, propylene glycol based lubricants from swabs– preparation for analysis  Analysis of silicone, glycerine, PEG and propylene-glycol based lubricants	Documented in house method (FSL0114) using <ul style="list-style-type: none"><li>- solvent extraction</li></ul> Documented in house method (FSL0114) using <ul style="list-style-type: none"><li>- FTIR</li></ul>	B  B



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
<b>MARKS AND IMPRESSIONS</b>	<u>Forensic Analysis</u>		
Footwear	Enhancement of footwear marks recovered from scenes	Documented in house method (FSL0026/FSL0090) using <ul style="list-style-type: none"> <li>- lighting techniques</li> <li>- ESLA</li> <li>- gel lifting</li> <li>- digital capture photography</li> <li>- digital scanner</li> </ul>	A, B
	Production of test marks from suspect footwear	Documented in house method (FSL0025/ FSL0090) using <ul style="list-style-type: none"> <li>- casting (dental stone/bio foam)</li> <li>- powders (Bristol black/aluminium/light mineral oil/magnetic powder)</li> <li>- digital capture photography</li> </ul>	A, B
Footwear mark (physically or image)	Assessment, comparison and evaluation of footwear with scene marks	Documented In-House methods (FSL0025) using visual examination, low power microscopy and dimensional measurements	A, B
	<u>Opinion and Interpretation</u>	Documented In-House methods (FSL0025) using <ul style="list-style-type: none"> <li>- Personal experience</li> <li>- Database (FCD0005)</li> <li>- NFRC system for coding of marks (FCD0003)</li> </ul>	A, B
Toolmarks	Enhancement of toolmarks	Documented in house method (FSL0057) using <ul style="list-style-type: none"> <li>- lighting technique</li> <li>- casting</li> <li>- digital capture/photography</li> </ul>	B
	Production of test marks from suspect items	Documented in house method (FSL0057) using <ul style="list-style-type: none"> <li>- casting</li> <li>- digital capture/photography</li> </ul>	B



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
MARKS AND IMPRESSIONS (cont'd)	<u>Forensic Analysis</u> (cont'd)		
Toolmarks (cont'd)	Comparison of submitted marks or marks made from suspect items with marks left at scene	Documented In-House methods (FSL0057) using visual examination, low power microscopy, comparison microscopy, dimensional measurements and photography	B
	<u>Opinion and Interpretation</u>  The evaluation of the significance of any matching and non-matching features between the tool scene impression and reference/control toolmarks	Documented In-House methods (FSL0057) using - Personal experience	B
Marks in blood	Location and enhancement of marks in blood from items recovered from crime scenes	Documented in house method (FSL0026/FSL0070) using - Sulphosalicylic acid Hydrogen Peroxide - methanol and heat fixing acid black 1 and leuco crystal violet	B
PAINT	<u>Forensic Analysis</u>  Search and recovery of paint and paint fragments from clothing and objects	Documented in house method (FSL0115 / FOR0134) using - visual examination - low power microscopy	A, B
	Comparison of recovered and control samples	Documented in house method (FSL0061/FSL0062/FSL0064/FSL00113) using - spot tests - fluorescence - high power microscopy - FTIR	A, B





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PAINT (cont'd)	<u>Forensic Analysis</u> (cont'd)  <u>Opinion and Interpretation</u>  The evaluation of the significance of any matching and non-matching features between the suspect and reference/control paint samples	Documented in house method FOR0052	A, B
ALCOHOL TECHNICAL DEFENCE  Alcohol Technical Defence (in relation to RTA) for sample matrix including Blood/urine/breath	Estimation of alcohol consumption and elimination with respect to validity of drinking patterns: 1) Effect of alleged post accident alcohol consumption on measured breath/body fluids alcohol levels 2) Effect of alleged spiked drink 3) Back calculations of breath/blood/urine alcohol levels to the time of accident or other incident from 8.3 µg% / 20mg% / 27mg% and above	Documented in house method TOX 0031 using mathematical calculations	A
END			