Driver and Vehicle Licensing Agency

FEASIBILITY REPORT

Electronic Number Plates [ENP]

PMO Project Reference:
Finance Cost Centre Reference:

Senior Responsible Owner:
Project Manager:

Author	
Date	*4th December 2006*
Version No.	*Version 3.0*

Configuration Control

Document History

Version	Status	Who	Date	Location
0.1	Draft		23.6.06	ENP Feasibility Report V0.1
0.2	Draft		06.7.06	ENP Feasibility Report V0.2
0.3	Draft		19.7.06	ENP Feasibility Report V0.3
0.4	Draft		20.7.06	ENP Feasibility Report V0.4
0.5	Draft		21.7.06	ENP Feasibility Report V0.5
0.6	Draft		11.8.06	ENP Feasibility Report V0.6
0.7	Draft		12.09.06	ENP Feasibility Report V0.7
0.8	Draft		13.09.06	ENP Feasibility Report V0.8
0.9	Draft		26.09.06	ENP Feasibility Report V0.9
1.0	Draft		06.11.06	ENP Feasibility Report V1.0
1.1	Draft		21.11.06	ENP Feasibility Report V1.1
1.2	Draft		22.11.06	ENP Feasibility Report V1.2
2.0	Sign Off		22.11.06	ENP Feasibility Report V2.0
2.1	Restart/ Draft		04.12.06	ENP Feasibility Report V2.1
3.0	Sign Off		04.12.06	ENP Feasibility Report V3.0

Document Change History

Date	Version	Status	Changes	Made by
23.6.06	0.1	Draft	First Draft	
06.7.06	0.2	Draft	Textual Amendments	
19.7.06	0.3	Draft	Textual Amendments	
20.7.06	0.4	Draft	Textual Amendments	
21.7.06	0.5	Draft	Textual Amendments	
11.8.06	0.6	Draft	Textual Amendments	
12.9.06	0.7	Draft	Textual Amendments	
13.09.06	0.8	Draft	Textual Amendments	
26.09.06	0.9	Draft	Textual Amendments	
06.11.06	1.0	Draft	Textual Amendments	
21.11.06	1.1	Draft	Textual Amendments	
22.11.06	1.2	Draft	Textual Amendments	
04.12.06	2.0	Draft	Textual Amendments	

Approved:

SRO : _____**Date:**_____

PPA : _____**Date:**_____
Representative

Distributed to:

	CECG
	Policy
	CRU
	CRU
	PPA
	PPA
	CRU
	CRU
	CRU
	PPA
	BIU
	PSD
	BIU
	PSD/Finance

Project Feasibility Report

1. INTRODUCTION & BACKGROUND 19

1.1 INTRODUCTION & BACKGROUND 19

1.1.2 THE VEHICLES (CRIME) ACT 2001 INTRODUCED A PROVISION TO ENABLE THE MAKING OF REGULATIONS SPECIFYING ADDITIONAL INFORMATION TO BE DISPLAYED ON OR CONTAINED IN NUMBER PLATES. THE PROVISION WAS DELIBERATELY WORDED SO AS TO ALLOW FOR THE POSSIBLE USE OF MICROCHIPS IN NUMBER PLATES. THIS PROVISION WOULD HAVE TO BE ACTIVATED FOR THE USE OF ELECTRONIC PLATES IN A LIVE ENVIRONMENT. **19**

1.1.3 SEVERAL AREAS OF INVESTIGATION ARE UNDERWAY WITHIN THE DEPARTMENT FOR TRANSPORT, WHICH RELATE CLOSELY TO THIS INITIATIVE. THE DEPARTMENT COMMISSIONED TRIALS ON OVERHEAD GANTRIES AND ASKED DVLA TO LOOK AT THE POSSIBILITY OF INSERTING CHIPS ON TAX DISCS. THE DEPARTMENT, INCLUDING TRANSPORT, TECHNOLOGY AND STANDARDS (TTS), ARE SUPPORTIVE AND HAVE INCLUDED THIS TRIAL AS PART OF THEIR WIDER INVESTIGATIONS. A SUMMARY REPORT OF THIS TRIAL HAS BEEN SENT TO THE MINISTER. **19**

1.1.4 THE RESULTS OF THE TRIAL SHOULD PROVIDE USEFUL INFORMATION TO FEED INTO THE DEPARTMENT'S DELIBERATIONS ON THE FEASIBILITY OF ELECTRONIC VEHICLE IDENTIFICATION (EVI). IF IT WAS SUBSEQUENTLY DECIDED THAT ELECTRONIC NUMBER PLATES SHOULD BE INTRODUCED, CONSIDERATION COULD BE GIVEN TO MAKING IT MANDATORY TO FIT CHIPPED PLATES ON ALL NEW VEHICLES WHEN ISSUED WITH THEIR REGISTRATION MARKS. IN ORDER TO ALLOW THEM TO CONTINUE TO OFFER NEW CAR PURCHASERS A CHOICE OF REGISTRATION MARK, DEALERS WOULD NEED TO BE ABLE TO PROGRAMME AND ACTIVATE THESE CHIPS WHEN A CAR WAS PURCHASED. **19**

1.1.5 THE POLICE VIEW ELECTRONIC NUMBER PLATES/EVI AS COMPLEMENTARY TECHNOLOGY TO ANPR. **19**

1.1.6 THE EU HAS ALSO BEEN CONSIDERING THE FEASIBILITY OF EVI AND DVLA WERE MINDFUL OF THIS WHEN TAKING THE TRIAL FORWARD. IN ADDITION, WORK IS ALSO UNDERWAY ON THE DEVELOPMENT OF AN INTERNATIONAL STANDARD FOR EVI. AGAIN, DVLA WILL NEED TO SEE HOW THIS PROGRESSES AND CONSIDER IF THIS IMPACTS ON THE DEVELOPMENT OF ELECTRONIC NUMBER PLATES. **19**

1.1.7 DVLA CONTRIBUTED TO DIRECTS (DEMONSTRATION OF INTEROPERABLE ROAD-USER END-TO-END CHARGING TELEMATICS SYSTEMS) WHICH FINALISED OPERATIONS IN LEEDS DURING MARCH. **19**

1.1.8 THE OUTCOME OF THIS TRIAL WOULD INFORM THE DEBATE ON WHETHER ELECTRONIC VEHICLE IDENTIFICATION IS ADOPTED AND WHETHER THE NUMBER PLATE WOULD HAVE A PART TO PLAY IN ANY FUTURE PROPOSALS. **20**

1.1.9 THE CHANGE PROGRAMME BOARD (CPB) APPROVED THE PROJECT BRIEF ON 24TH NOVEMBER 2005. ..... **20**

1.2 PROJECT BRIEF SUMMARY 20

1.2.1 THE OBJECTIVE OF THE TRIAL WAS TO DETERMINE WHETHER MICROCHIPS PLACED IN NUMBER PLATES COULD POTENTIALLY PROVIDE A RELIABLE AND PRACTICAL METHOD OF IDENTIFYING VEHICLES. ELECTRONIC NUMBER PLATES WOULD BE USED TO PREVENT OR REDUCE THE OCCURRENCE OF VEHICLES BEING INCORRECTLY IDENTIFIED. THERE IS MOUNTING EVIDENCE THAT SOME MOTORISTS ARE DISPLAYING THE WRONG VRM IN ORDER TO EVADE FINES AND CHARGES, RESULTING IN THE KEEPERS OF THE GENUINE VEHICLES ASSOCIATED WITH THAT VRM RECEIVING ENFORCEMENT NOTICES FOR WHICH THEY ARE NOT RESPONSIBLE. IT WOULD ALSO BE USEFUL TO IDENTIFY ONCOMING MOTORCYCLES WHERE THE NUMBER PLATES ARE ONLY FITTED TO THE REAR. **20**

1.2.2 AN IDENTIFICATION NUMBER SPECIFIC TO A VEHICLE IS CONTAINED WITHIN THE ELECTRONIC TAG, WHICH COULD BE READ BY THE POLICE USING A HAND HELD SCANNER OR INSTALLED IN A POLICE VEHICLE. AN IDENTIFICATION NUMBER WAS INVENTED FOR THE PURPOSES OF THE TRIAL, BUT FOR LIVE APPLICATION IT WOULD HAVE TO BE A RECOGNISED VEHICLE IDENTIFIER SUCH AS THE VIN. THE TRIAL WAS GEARED TO TESTING PURELY A VEHICLE CRIME REDUCTION MEASURE, WHICH WOULD SATISFY ENFORCEMENT AUTHORITIES THAT A NUMBER PLATE WAS DISPLAYED ON THE CORRECT VEHICLE. THE CURRENT METHODS OF VEHICLE IDENTIFICATION RELY SOLELY ON A VISUAL READING OR A PHOTOGRAPHIC IMAGE OF THE NUMBER PLATE. THIS SYSTEM CAN BREAK DOWN IF THE WRONG VRM IS FITTED OR THE VRM IS UNREADABLE. ENP COULD ALSO BE USED TO ENHANCE THE SYSTEM OF VEHICLE IDENTIFICATION CURRENTLY BASED ON ANPR EQUIPMENT. **20**

1.3 SCOPE & BOUNDARIES **21**

1.3.1 THE SCOPE OF THE PROJECT WAS ORIGINALLY RESTRICTED TO THE ENP TRIAL. TO FULFIL AN ACTION FROM A MEETING WITH MINISTER FOR TRANSPORT DR STEPHEN LADYMAN AND DFT ROAD PRICING TEAM ON 30 MARCH 2006, HUGH EVANS, HEAD OF DVLA POLICY, AUTHORISED THE TRIAL TO BE EXTENDED TO INCLUDE THE TRIALLING OF TAGS IN A VEHICLE WINDSCREEN AS WELL AS IN NUMBER PLATES AND OF PASSIVE TAGS IN ADDITION TO ACTIVE TAGS. **21**

1.3.2 THE PARTIES INVOLVED WERE: **21**

- SOUTH WALES, SOUTH YORKSHIRE, NORTHUMBRIA AND HERTFORDSHIRE POLICE FORCES. **21**

- TRANSPORT RESEARCH LABORATORY (TRL). **21**

- RFID CENTRE. **21**

1.3.3 A SMALL DATABASE, HOLDING DETAILS OF A LIMITED NUMBER OF POLICE VEHICLES, WAS A REQUIREMENT FOR THE TRIAL. THIS WAS INDEPENDENT FROM DVLA SYSTEMS AND DID NOT REQUIRE ACCESS TO DVLA SYSTEMS OR DATA. **21**

1.3.4 IN APRIL 2006, DVLA'S IT PARTNER IBM, WERE COMMISSIONED TO PRODUCE AN ANALYSIS OF CONSIDERATION FOR INTRODUCING AN RFID BASED SYSTEM FOR THE PURPOSES OF VEHICLE IDENTIFICATION AND ROAD PRICING. IN SUMMARY, THE ANALYSIS CONCLUDED THE ACTIVE TAG WOULD APPEAR TO BE THE ONLY PROVEN SOLUTION TO IDENTIFY A MOVING VEHICLE AT A REASONABLE DISTANCE IN FREE-FLOWING TRAFFIC. **21**

2 MANAGEMENT SUMMARY **21**

2.1 SUMMARY ANALYSIS & KEY OUTCOMES **21**

2.1.1 TENDER PROCESS. A TENDER AND EVALUATION PROCESS FOR THE ENP TRIAL WAS UNDERTAKEN EARLY 2006. A 3 MONTH CONTRACT WAS AWARDED TO RFID CENTRE. **21**

2.1.2 ALL EQUIPMENT WAS PROCURED ON HIRE TERMS AND RFID CENTRE WERE RESPONSIBLE FOR INSURING THE EQUIPMENT AGAINST DAMAGE, FOR THE MAINTENANCE OR REPLACEMENT OF EQUIPMENT, FOR DELIVERING THE EQUIPMENT TO DVLA AND TO PROVIDE TRAINING IN ITS USE. DVLA WOULD DELIVER THE EQUIPMENT AND PROVIDE TRAINING TO THE POLICE. **21**

2.1.3 THE RFID CENTRE WERE RESPONSIBLE FOR DELIVERING THE EQUIPMENT TO DVLA BY 19 MAY AND TO SET UP AND DISMANTLE ALL EQUIPMENT AT TRL ON 7 JUNE. PCSG GAVE APPROVAL FOR RFID TO PROVIDE WINDSCREEN TAGS WITHOUT THE NEED FOR A FURTHER TENDER EXERCISE. **22**

2.1.4 RFID CENTRE UNDERTOOK TO DESTROY ALL DATA GATHERED DURING THE TRIAL AND PROVIDED DVLA WITH WRITTEN CONFIRMATION THAT THIS HAD BEEN COMPLETED. **22**

2.1.5 TRIAL REQUIREMENTS. RFID CENTRE PROVIDED THE REQUISITE NUMBER OF ELECTRONIC NUMBER PLATES TO BE FITTED TO POLICE VEHICLES, TOGETHER WITH THE READING EQUIPMENT, BACK OFFICE SYSTEM AND A SYSTEM OF LOGGING AND DISPLAYING THE RESULTS OF THE TEST. **22**

2.1.6 DVLA DELIVERED THE TRIAL EQUIPMENT TO PARTICIPATING POLICE FORCES AND PROVIDED TRAINING FOR THE OFFICERS ON THE SETUP AND USE OF THE EQUIPMENT. **22**

2.1.7 DVLA CONDUCTED A SERIES OF TESTS IN PARTNERSHIP WITH FOUR POLICE FORCES. SOUTH WALES AND SOUTH YORKSHIRE TESTING AT 868 MHZ AND HERTFORDSHIRE AND NORTHUMBRIA AT 433 MHZ, TO DETERMINE: **22**

A. WHETHER MICROCHIPS PLACED IN NUMBER PLATES COULD POTENTIALLY PROVIDE A RELIABLE AND PRACTICAL METHOD OF IDENTIFYING VEHICLES BY VERIFYING SYSTEM PERFORMANCE, PARTICULARLY READ-ACCURACY; **22**

B. TO ESTABLISH WHETHER THIS COULD ADD VALUE TO THE IDENTIFICATION OF VEHICLES VIA ANPR EQUIPMENT; AND **22**

C. TO HELP THE POLICE TO ASSESS ITS POTENTIAL FOR COMBATING VEHICLE RELATED CRIME. **22**

2.1.8 THE ELECTRONIC NUMBER PLATES WERE FITTED TO POLICE VEHICLES ONLY (CARS AND MOTORCYCLES). **22**

2.1.9 THE TRIAL CONSISTED OF A SERIES OF TESTS, EACH DESIGNED TO TEST A SEPARATE FUNCTION: **22**

A. EQUIPMENT WAS MOUNTED ON TRIPODS ALONGSIDE POLICE ANPR VANS PARKED AT THE ROADSIDE OR ON BRIDGES CROSSING A MOTORWAY. THE ANPR EQUIPMENT OPERATED ALONGSIDE THE ELECTRONIC EQUIPMENT. **22**

B. HAND-HELD READERS USED FROM A MOBILE POLICE CAR WITH ANPR EQUIPMENT INSTALLED. THE ANPR EQUIPMENT OPERATED ALONGSIDE THE ELECTRONIC EQUIPMENT TO ENABLE A COMPARISON OF THE RESULTS..... **23**

C. HAND-HELD READERS OPERATED BY POLICE OFFICERS ON FOOT. **23**

2.1.10 TESTS WERE ALSO UNDERTAKEN OFF-ROAD AT TRL TO SIMULATE TRAFFIC CONDITIONS THAT WERE CONSIDERED TOO DANGEROUS OR INAPPROPRIATE ON A PUBLIC ROAD. THE USE OF TRL ALSO PROVIDED AN OPPORTUNITY FOR REPEAT TESTING AND EACH TEST WAS REPEATED 15 TIMES TO VALIDATE THE RESULTS. ANPR VANS WERE NOT USED AT TRL. THE OFF-ROAD TESTS WERE REPEATED USING BOTH FREQUENCIES, UNDER IDENTICAL CONDITIONS. **23**

2.1.11 TRL WERE RESPONSIBLE FOR THE HIRING OF VEHICLES AND DRIVERS FOR THE TEST AND MANAGED THE USE/OPERATIONS ON THE TEST TRACK. IN THE UNLIKELY EVENT OF A VEHICLE ACCIDENT, THIS WOULD HAVE BEEN A TRL RESPONSIBILITY. FOR SAFETY REASONS DURING THE TRIAL, DVLA STAFF REMAINED OFF THE TEST TRACK UNLESS ADVISED OTHERWISE BY TRL STAFF. **23**

2.1.12 THE POLICE COMPLETED THEIR TESTS BY 5 JUNE AND THE TRIAL FINISHED WITH THE OFF-ROAD TESTS AT THE TRL, CROWTHORNE ON 7 JUNE. **23**

2.1.13 RFID CENTRE WAS ABLE TO UTILISE THE EXISTING READERS FOR THE WINDSCREEN TESTS, PROVIDED ACTIVE TAGS FOR USE IN THE WINDSCREEN AND A SEPARATE SYSTEM FOR PASSIVE TAGS. **23**

2.1.14 HERTFORDSHIRE (433 MHZ) AND SOUTH YORKSHIRE (868 MHZ) WERE ASKED TO UNDERTAKE WINDSCREEN TESTS AND SOUTH WALES (868 MHZ) AND NORTHUMBRIA (433 MHZ) TO UNDERTAKE NUMBER PLATE TESTS. TESTS WERE ALSO UNDERTAKEN AT TRL OF PASSIVE RFID TAGS PLACED IN A CAR WINDSCREEN AND ON A MOTORCYCLE..... **23**

2.2 SUMMARY RECOMMENDATIONS..... 23

POLICE TEST RESULTS..... 23

2.2.1 ALL THE POLICE FORCES REPORTED SOME RESOURCE DIFFICULTY IN FITTING IN THE TEST SCHEDULE AS THIS WAS ADDITIONAL TO THEIR NORMAL OPERATIONAL DUTIES. THE EXTENT OF THIS WAS NOT FORESEEN EITHER BY DVLA OR THE POLICE AND IT WAS NECESSARY TO REMOVE SOME OF THE TEST SCENARIOS ORIGINALLY PLANNED. THIS RESULTED IN TESTS BEING COMPLETED ONCE, RATHER THAN BEING REPEATED ON URBAN AND RURAL ROADS AND IN DRY, WET AND DARK CONDITIONS. NEVERTHELESS, DIFFERENT TESTS DID TAKE PLACE UNDER ALL OF THE ABOVE CONDITIONS. **23**

2.2.2 AFTER SOME TEETHING TROUBLES, THE POLICE ADAPTED WELL TO THE SETTING UP AND USE OF THE EQUIPMENT AND THE SYSTEM FOR RECORDING RESULTS. BOTH NUMBER PLATE AND WINDSCREEN TESTS PRODUCED HIGH LEVELS OF ACCURACY AT BOTH FREQUENCIES. TWO READS TAKEN BY S WALES POLICE PERFORMED ABOVE EXPECTATIONS. THESE WERE READS TAKEN IN DRY AND WET CONDITIONS FROM A HAND – HELD READER IN A POLICE PATROL CAR PURSUING THE TARGET VEHICLE WITH A THIRD VEHICLE PLACED BETWEEN THEM..... **24**

2.2.3 THE POLICE TESTED TAGS FITTED TO THEIR OWN VEHICLES IN LIVE CONDITIONS. READINGS WERE TAKEN USING HAND-HELD READERS AND MOBILE READERS MOUNTED ON TRIPODS AT THE ROADSIDE OR ON BRIDGES SPANNING THE ROAD. TESTS TOOK

PLACE IN WET AND DRY CONDITIONS AND IN DAYLIGHT AND DARKNESS. TESTS TOOK PLACE IN A VARIETY OF ENVIRONMENTAL CONDITIONS..... **24**

2.2.4 SOUTH WALES AND NORTHUMBRIA POLICE TESTED ELECTRONIC NUMBER PLATES, SOUTH YORKSHIRE TESTED TAGS ATTACHED TO THE INSIDE OF CAR WINDSCREENS AND TO THE TAX DISC HOLDER ON A MOTORCYCLE. **24**

2.2.5 DUE TO TIME CONSTRAINTS, PROBLEMS WITH VEHICLES BREAKING DOWN AND THE ANPR UNITS NOT DELIVERING THE SUPPORT EXPECTED, HERTFORDSHIRE POLICE FORCE WERE UNABLE TO UNDERTAKE ANY TESTS. THIS RESULTED IN TESTS ON WINDSCREEN TAGS TRANSMITTING AT 433 MHZ ONLY BEING TESTED AT TRL. ALL TESTS WERE COMPLETED BY SOUTH WALES, SOUTH YORKSHIRE AND NORTHUMBRIA POLICE FORCES. SOUTH WALES PERFORMED OVER AND ABOVE THE REQUIREMENT BY COMPLETING TESTS IN ALL CONDITIONS. **24**

2.2.6 A SUMMARY OF THE TRIAL RESULTS ARE RECORDED IN ANNEX B AND THE INDIVIDUAL TEST RESULTS ARE AVAILABLE SEPARATELY. THE TEST RESULTS ARE AVAILABLE FROM CRIME REDUCTION UNIT, DVLA, SWANSEA. DVLA HAD TO RESCHEDULE THE TEST PROGRAMME TO ENABLE THE POLICE TO COMPLETE THEIR ALLOCATED SCHEDULE. **24**

TRL TEST RESULTS **24**

2.2.7 DUE TO A MISUNDERSTANDING BETWEEN DVLA AND RFID THERE WERE NO WINDSCREEN TAGS AVAILABLE FOR THE OFF-ROAD TESTS. THIS WAS RESOLVED BY FITTING ONLY ONE TAGGED NUMBER PLATE TO EACH VEHICLE AND USING THE OTHER NUMBER PLATE TAG IN THE WINDSCREEN. **24**

2.2.8 BOTH ACTIVE SYSTEMS PERFORMED WELL DURING THE DAY. BOTH 868 MHZ AND 433 MHZ SYSTEMS CONSISTENTLY RECORDED ACTIVE WINDSCREEN TAGS AT UP TO 100 METRES. THEY ALSO BOTH RECORDED FRONT **24**

2.2.8 NUMBER PLATE TAGS AT BETWEEN 50 AND 100 METRES AND PICKED UP THE REAR PLATES OF APPROACHING VEHICLES AT AROUND 5 METRES. **25**

2.2.9 TESTING COMMENCED WITH THE ACTIVE 868 MHZ. THE FIRST THREE TESTS WERE CARRIED OUT WITH EQUIPMENT ON THE OVERHEAD GANTRY, WITH THE FOURTH 868 MHZ TEST CARRIED OUT FROM THE SIDE OF THE TRACK. THE TESTS WERE THEN REPEATED USING THE 433 MHZ TAGS. **25**

THE VEHICLES WERE THEN FITTED WITH THE PASSIVE WINDSCREEN TAGS. THE TEST WAS CARRIED OUT FROM THE SIDE OF THE TRACK. THE LAST TEST OF THE DAY USED THE 433 MHZ WINDSCREEN AND NUMBER PLATE TAGS AND WAS CARRIED OUT FROM THE SIDE OF THE TRACK **25**

JUSTIFICATION **26**

THE TRIAL WAS UNDERTAKEN ON BEHALF OF THE DEPARTMENT TO SUPPORT THE WIDER INVESTIGATION INTO THE USE OF ELECTRONIC TAGS IN VEHICLES. **26**

3 EXISTING ENVIRONMENT **26**

THIS IS A NEW INITIATIVE AND THE RESULTS OF THE TRIAL WILL BE FED INTO THE DEPARTMENT'S DELIBERATIONS ON THE FEASIBILITY OF EVI **26**

4 DETAIL OF SOLUTION OPTIONS **26**

4.1 OPTION 1 ..... **26**

ON-ROAD HANDHELD TESTS. A SUMMARY OF THE TEST SCENARIOS AND RESULTS UNDERTAKEN BY POLICE FORCES ARE RECORDED IN THE ATTACHED ANNEXES. **26**

4.2 OPTION 2 ..... **26**

ON-ROAD TESTS WITHIN A POLICE CAR USING READER. A SUMMARY OF THE TEST SCENARIOS AND RESULTS UNDERTAKEN BY POLICE FORCES ARE RECORDED IN THE ATTACHED ANNEXES. **26**

4.3 OPTION 3 ..... **26**

ON-ROAD TESTS USING THE READER AT THE ROADSIDE IN CONJUNCTION WITH THE ANPR VAN. A SUMMARY OF THE TEST SCENARIOS AND RESULTS UNDERTAKEN BY POLICE FORCES ARE RECORDED IN THE ATTACHED ANNEXES. **26**

4.4 OPTION 4 ..... **27**

ON-ROAD TESTS FROM AN OVERHEAD BRIDGE IN CONJUNCTION WITH THE ANPR VAN. A SUMMARY OF THE TEST SCENARIOS AND RESULTS UNDERTAKEN BY POLICE FORCES ARE RECORDED IN THE ATTACHED ANNEXES. **27**

4.5 OPTION 5 ..... **27**

OFF-ROAD TEST OF 868 MHZ ACTIVE TAGS. A SUMMARY OF THE TEST SCENARIOS AND RESULTS UNDERTAKEN AT TRL ARE RECORDED IN THE ATTACHED ANNEXES. **27**

4.6 OPTION 6 ..... **27**

OFF-ROAD TEST OF 433 MHZ ACTIVE TAGS. A SUMMARY OF THE TEST SCENARIOS AND RESULTS UNDERTAKEN AT TRL ARE RECORDED IN THE ATTACHED ANNEXES. **27**

4.7 OPTION 7 ..... **27**

OFF-ROAD TEST OF PASSIVE WINDSCREEN TAGS. A SUMMARY OF **T**HE TEST SCENARIOS AND RESULTS UNDERTAKEN AT TRL ARE RECORDED IN THE ATTACHED ANNEXES. **27**

5 CLOSING SUMMARY **27**

5.1 THERE WERE NO SIGNIFICANT DIFFERENCES IN THE RESULTS FOR WINDSCREEN TAGS AND NUMBER PLATE TAGS. BOTH PERFORMED WELL IN TERMS OF SUCCESSFUL READS. HOWEVER, AT THE OFF-ROAD TRIAL, THE WINDSCREEN TAGS WERE OBSERVED TO TAKE THE READS FROM APPROACHING VEHICLES AT A GREATER DISTANCE THAN NUMBER PLATE TAGS. **27**

5.2 THE ONLY SUCCESSFUL READS OF PASSIVE TAGS WERE FROM THOSE ATTACHED TO THE SEAT OF MOTORCYCLES AT VERY CLOSE RANGE. THE MOTORCYCLE HAD TO PASS ALMOST IN CONTACT WITH THE READER. ALL ATTEMPTED READS OF PASSIVE TAGS THROUGH CAR WINDSCREENS FAILED. **27**

5.3 IT WAS DISAPPOINTING THAT HERTFORDSHIRE POLICE WERE UNABLE TO CONDUCT THE TESTS DUE TO OPERATIONAL/PRACTICAL DIFFICULTIES INCLUDING THE UNAVAILABILITY OF TRIAL VEHICLES. CONSEQUENTLY, WINDSCREEN TAGS EMITTING AT 433 MHZ WERE ONLY TESTED OFF-ROAD AT TRL. IT SHOULD BE NOTED THAT HERTFORDSHIRE POLICE WERE VERY HELPFUL IN A CONSULTATIVE CAPACITY. **27**

5.4 DESPITE THESE PROBLEMS LEADING TO A REDUCED NUMBER OF TESTS, THE TRIAL WAS A SUCCESS. SOME TESTS WERE SET THAT WERE EXPECTED TO FAIL TO ESTABLISH THE LIMITS OF THE TECHNOLOGY. IN TOTAL, THERE WERE 95 TEST SCENARIOS FOR ACTIVE TAGS. READS WERE NOT OBTAINED IN 17 TESTS, BUT 15 OF THESE WERE CASES WHERE THE TEST WAS EXPECTED TO FAIL. THIS WAS BECAUSE TESTS WERE SET IN CONDITIONS WHERE **27**

5.4 RFID WOULD NOT BE EXPECTED TO WORK IN ORDER TO DEMONSTRATE THE LIMITS OF THE TECHNOLOGY EG THE TARGET VEHICLE WAS OBSTRUCTED BY A BUILDING WHERE THE METALLIC CONTENT OF THE BUILDING DISTORTS THE TRANSMISSION. THEREFORE, ONLY 2 TESTS DID NOT PRODUCE READS WHERE THEY MIGHT HAVE BEEN EXPECTED TO DO SO, GIVING A READ RATE OF 99%. **28**

5.5 SUCCESSFUL READS WERE TAKEN IN INSTANCES WHERE ANPR WOULD NOT BE EXPECTED TO WORK EG FROM A MOTORCYCLE IN THE OUTSIDE LANE OF A MOTORWAY WITH CARS ADJACENT TO IT IN THE OTHER TWO LANES. **28**

5.6 DUE TO CRU PROACTIVELY RESCHEDULING AND CHANGING THE SPECIFICATION OF THE TESTS THROUGHOUT THE TRIAL DUE TO POLICE RESOURCE PROBLEMS, CONCLUSIVE DATA WAS RECEIVED FROM THE POLICE FORCES, WHICH ENSURED A HIGHLY SUCCESSFUL TRIAL. THE ORIGINAL TEST SPECIFICATIONS ARE AVAILABLE FROM CRIME REDUCTION UNIT, DVLA, SWANSEA. **28**

5.7 SOUTH WALES POLICE HAVE EXPRESSED THEIR INTEREST TO PARTICIPATE IN ANY FUTURE TRIALS OF THIS NATURE. **28**

5.8 THE TRIAL INVOLVED ONLY A SMALL NUMBER OF VEHICLES. IF THIS TECHNOLOGY WAS FITTED TO ALL VEHICLES THERE IS A POSSIBILITY THAT A “RADIO BLANKET” COULD BE CREATED WITH SIGNALS NEGATIVELY INFLUENCING EACH OTHER. A LARGER SCALE TRIAL MIGHT BE NEEDED TO INVESTIGATE THIS. **28**

5.9 THE TRIAL ONLY USED CARS AND MOTORCYCLES AS TARGET VEHICLES. THE VARIETY OF LOCATIONS USED FOR NUMBER PLATES ON HGVS MIGHT HAVE PRODUCED DIFFERENT RESULTS. THE SAME IS TRUE OF SOME SPORTS CARS, WHICH HAVE NUMBER PLATES VERY CLOSE TO THE GROUND. **28**

5.10 THE TAGS TRANSMIT ON FREQUENCIES THAT ARE EXEMPT FROM LICENSING UNDER THE WIRELESS AND TELEGRAPHY ACT. THESE ARE UNDER-USED FREQUENCIES THAT ARE LEAST LIKELY TO INTERFERE WITH OTHER USERS. HOWEVER, FURTHER INVESTIGATION WOULD BE NEEDED TO DETERMINE THE MOST APPROPRIATE FREQUENCY FOR LIVE ROLLOUT. **28**

5.11 THE INFRASTRUCTURE WAS LOW COST AND INTENDED FOR USE BY MOBILE POLICE ANPR UNITS ALONGSIDE NORMAL ANPR OPERATIONS. ACPO HAS SUGGESTED A LARGER SCALE TRIAL OF LONGER DURATION USING RFID EQUIPMENT MOUNTED ON ROADSIDE GANTRIES OR POLES AND ELECTRONICALLY LINKED TO ANPR EQUIPMENT TO GIVE COMPARATIVE READS. **28**

5.12 THE TAGS TRANSMIT ONLY A UNIQUE VEHICLE IDENTIFIER DEVISED SPECIFICALLY FOR THE TRIAL. THEREFORE THE QUESTION OF DATA SECURITY DID NOT ARISE, BUT THIS WOULD HAVE TO BE ADDRESSED FOR LIVE APPLICATION. **28**

5.13 THE TRIAL WAS GEARED PRIMARILY TO THE REQUIREMENTS OF POLICE ANPR UNITS. IT TESTED THE CONCEPT OF VEHICLE IDENTIFICATION USING RFID TECHNOLOGY AND THE POTENTIAL FOR USE AS A TOOL FOR THE DETECTION OF CRIMINALITY. THE EQUIPMENT AND INFRASTRUCTURE WOULD HAVE TO BE TAILORED AND MADE FIT FOR PURPOSE FOR OTHER APPLICATIONS. **29**

GLOSSARY **30**

ANPR AUTOMATIC NUMBER PLATE READER **30**

BIU BUSINESS IMPROVEMENT UNIT **30**

CECG COMPLIANCE & EXTERNAL COMMUNICATIONS GROUP **30**

CRU CRIME REDUCTION UNIT **30**

DFT DEPARTMENT FOR TRANSPORT **30**

DIRECTS DEMONSTRATION OF INTEROPERABLE ROAD-USER END-TO-END CHARGING **30**

TELEMATICS SYSTEMS **30**

DVLA DRIVER & VEHICLE LICENSING AGENCY **30**

ENP ELECTRONIC NUMBER PLATES **30**

ERB EXECUTIVE REVIEW BOARD **30**

EU EUROPEAN UNION **30**

EVI ELECTRONIC VEHICLE IDENTIFICATION **30**

IBM INTERNATIONAL BUSINESS MACHINES **30**

IT INFORMATION TECHNOLOGY **30**

MHZ MEGAHERTZ **30**

MPH MILES PER HOUR **30**

PMO PROGRAMME MANAGEMENT OFFICE **30**

PPA PROGRAMME & PROJECT ASSURANCE **30**

RFID RADIO FREQUENCY IDENTIFICATION **30**

SRO SENIOR RESPONSIBLE OFFICER **30**

TRL TRANSPORT RESEARCH LABORATORY **30**

TTS TRANSPORT, TECHNOLOGY AND STANDARDS **30**

VRM VEHICLE REGISTRATION MARK **30**

ANNEX A **31**

ANNEX B **34**

SUMMARY OF TRIAL RESULTS **34**

TAG PERFORMANCE (POLICE TESTS) **34**

TAG POSITION **34**

ATTEMPTED READS **34**

SUCCESSFUL READS **34**

INITIAL ACCURACY **34**

EXPECTED READ FAILS **34**

ACTUAL **34**

READ FAILS **34**

ACTUAL ACCURACY **34**

FRONT PLATE **34**

32 ..... **34**

29 ..... **34**

90.6% **34**

3 ..... **34**

3 ..... **34**

100% **34**

REAR PLATE **34**

35 ..... **34**

24 ..... **34**

68.6% **34**

11 ..... **34**

11 ..... **34**

100% **34**

WINDSCREEN **34**

29 ..... **34**

26 ..... **34**

89.7% **34**

1 ..... **34**

3 ..... **34**

95% **34**

MOTORCYCLE (PROJECTING FORWARD) **34**

5 ..... **34**

5 ..... **34**

100% **34**

0 ..... **34**

0 ..... **34**

100% **34**

MOTORCYCLE (PROJECTING BACKWARD) **34**

0 ..... **34**

0 ..... **34**

0 ..... **34**

0 ..... **34**

0 ..... **34**

0 ..... **34**

TAG PERFORMANCE (TRL OFF ROAD TESTS) **34**

TAG POSITION **34**

ATTEMPTED READS **34**

SUCCESSFUL READS **34**

INITIAL ACCURACY **34**

EXPECTED READ FAILS **34**

ACTUAL **34**

READ FAILS **34**

ACTUAL ACCURACY **34**

FRONT PLATE **34**

175 ..... **34**

172 ..... **34**

98.3% **34**

0 ..... **34**

3 ..... **34**

98% **34**

REAR PLATE **34**

176 ..... **34**

148 ..... **34**

84.1% **34**

26 ..... **34**

28 ..... **34**

99% **34**

WINDSCREEN (ACTIVE) **34**

351 ..... **34**

349 ..... **34**

99.4% **34**

0 ..... **34**

2 ..... **34**

99% **34**

PASSIVE TAG **34**

60 ..... **34**

3 ..... **34**

5% **34**

45 ..... **34**

57 ..... **34**

20% **34**

MOTORCYCLE (PROJECTING FORWARD) **34**

59 ..... **34**

57 ..... **34**

96.6% **34**

0 ..... **34**

2 ..... **34**

97% **34**

MOTORCYCLE (PROJECTING BACKWARD) **34**

58 ..... **34**

56 ..... **34**

96.6% **34**

0 ..... **34**

2 ..... **34**

97% **34**

ELECTRONIC NUMBER PLATE TRIALS **35**

TEST AREA **35**

TOTAL TESTS **35**

SUCCESSFUL TESTS **35**

ATTEMPTED READS **35**

SUCCESSFUL READS **35**

INITIAL ACCURACY **35**

EXPECTED READ FAILS **35**

ACTUAL READ FAILS **35**

ACTUAL ACCURACY **35**

NORTHUMBRIA POLICE **35**

25 ..... **35**

17 ..... **35**

27 ..... **35**

19 ..... **35**

70.4% **35**

8 ..... **35**

8 ..... **35**

100% **35**

SOUTH WALES POLICE **35**

37 ..... **35**

31 ..... **35**

45 ..... **35**

39 ..... **35**

86.7% **35**

8 ..... **35**

6 ..... **35**

100%* **35**

TRL TRACK DAY **35**

8 ..... **35**

8 ..... **35**

468 ..... **35**

431 ..... **35**

92.1% **35**

32 ..... **35**

37 ..... **35**

98% **35**

* PERFORMED ABOVE EXPECTATIONS AS TWO OF THE EXPECTED READ FAILS WERE SUCCESSFUL **35**

WINDSCREEN TAG TRIALS **35**

TEST AREA **35**

TOTAL TESTS **35**

SUCCESSFUL TESTS **35**

ATTEMPTED READS **35**

SUCCESSFUL READS **35**

INITIAL ACCURACY **35**

EXPECTED READ FAILS **35**

ACTUAL READ FAILS **35**

ACTUAL ACCURACY **35**

HERTFORDSHIRE POLICE **35**

0 ..... **35**

0 ..... **35**

0 ..... **35**

0 ..... **35**

0 ..... **35**

0 ..... **35**

0 ..... **35**

0 ..... **35**

SOUTH YORKSHIRE POLICE **35**

17 ..... **35**

14 ..... **35**

29 ..... **35**

26 ..... **35**

89.7% **35**

1 ..... **35**

3 ..... **35**

95% **35**

TRL TRACK DAY (ACTIVE) **35**

8 ..... **35**

8 ..... **35**

351 ..... **35**

349 ..... **35**

99.4% **35**

0 ..... **35**

2 ..... **35**

99% **35**

TRL TRACK DAY (PASSIVE) **35**

2 ..... **35**

1 ..... **35**

60 ..... **35**

3 ..... **35**

5% **35**

45 ..... **35**

57 ..... **35**

20% **35**

ANNEX C **36**

1. Introduction & Background

1.1 Introduction & Background

1.1.2 The Vehicles (Crime) Act 2001 introduced a provision to enable the making of regulations specifying additional information to be displayed on or contained in number plates. The provision was deliberately worded so as to allow for the possible use of microchips in number plates. This provision would have to be activated for the use of electronic plates in a live environment.

1.1.3 Several areas of investigation are underway within the Department for Transport, which relate closely to this initiative. The Department commissioned trials on overhead gantries and asked DVLA to look at the possibility of inserting chips on tax discs. The Department, including Transport, Technology and Standards (TTS), are supportive and have included this trial as part of their wider investigations. A summary report of this trial has been sent to the Minister.

1.1.4 The results of the trial should provide useful information to feed into the Department's deliberations on the feasibility of Electronic Vehicle Identification (EVI). If it was subsequently decided that electronic number plates should be introduced, consideration could be given to making it mandatory to fit chipped plates on all new vehicles when issued with their registration marks. In order to allow them to continue to offer new car purchasers a choice of registration mark, dealers would need to be able to programme and activate these chips when a car was purchased.

1.1.5 The police view electronic number plates/EVI as complementary technology to ANPR.

1.1.6 The EU has also been considering the feasibility of EVI and DVLA were mindful of this when taking the trial forward. In addition, work is also underway on the development of an international standard for EVI. Again, DVLA will need to see how this progresses and consider if this impacts on the development of electronic number plates.

1.1.7 DVLA contributed to DIRECTS (Demonstration of Interoperable Road-User End-to-End Charging Telematics Systems) which finalised operations in Leeds during March.

1.1.8 The outcome of this trial would inform the debate on whether electronic vehicle identification is adopted and whether the number plate would have a part to play in any future proposals.

1.1.9 The Change Programme Board (CPB) approved the Project Brief on 24th November 2005.

1.2 Project Brief Summary

1.2.1 The objective of the trial was to determine whether microchips placed in number plates could potentially provide a reliable and practical method of identifying vehicles. Electronic number plates would be used to prevent or reduce the occurrence of vehicles being incorrectly identified. There is mounting evidence that some motorists are displaying the wrong VRM in order to evade fines and charges, resulting in the keepers of the genuine vehicles associated with that VRM receiving enforcement notices for which they are not responsible. It would also be useful to identify oncoming motorcycles where the number plates are only fitted to the rear.

1.2.2 An identification number specific to a vehicle is contained within the electronic tag, which could be read by the police using a hand held scanner or installed in a police vehicle. An identification number was invented for the purposes of the trial, but for live application it would have to be a recognised vehicle identifier such as the VIN. The trial was geared to testing purely a vehicle crime reduction measure, which would satisfy enforcement authorities that a number plate was displayed on the correct vehicle. The current methods of vehicle identification rely solely on a visual reading or a photographic image of the number plate. This system can break down if the wrong VRM is fitted or the VRM is unreadable. ENP could also be used to enhance the system of vehicle identification currently based on ANPR equipment.

1.3 Scope & Boundaries

1.3.1 The scope of the project was originally restricted to the ENP trial. To fulfil an action from a meeting with Minister for Transport Dr Stephen Ladyman and DfT Road Pricing Team on 30 March 2006, Hugh Evans, Head of DVLA Policy, authorised the trial to be extended to include the trialling of tags in a vehicle windscreen as well as in number plates and of passive tags in addition to active tags.

1.3.2 The parties involved were:

- South Wales, South Yorkshire, Northumbria and Hertfordshire police forces.
- Transport Research Laboratory (TRL).
- RFID Centre.

1.3.3 A small database, holding details of a limited number of police vehicles, was a requirement for the trial. This was independent from DVLA systems and did not require access to DVLA systems or data.

1.3.4 In April 2006, DVLA's IT partner IBM, were commissioned to produce an analysis of consideration for introducing an RFID based system for the purposes of vehicle identification and road pricing. In summary, the analysis concluded the active tag would appear to be the only proven solution to identify a moving vehicle at a reasonable distance in free-flowing traffic.

2 Management Summary

2.1 Summary Analysis & Key Outcomes

2.1.1 **Tender Process.** A tender and evaluation process for the ENP trial was undertaken early 2006. A 3 month contract was awarded to RFID Centre.

2.1.2 All equipment was procured on hire terms and RFID Centre were responsible for insuring the equipment against damage, for the maintenance or replacement of equipment, for delivering the equipment to DVLA and to provide training in its use. DVLA would deliver the equipment and provide training to the police.

2.1.3 The RFID Centre were responsible for delivering the equipment to DVLA by 19 May and to set up and dismantle all equipment at TRL on 7 June. PCSG gave approval for RFID to provide windscreen tags without the need for a further tender exercise.

2.1.4 RFID Centre undertook to destroy all data gathered during the trial and provided DVLA with written confirmation that this had been completed.

2.1.5 **Trial Requirements.** RFID Centre provided the requisite number of electronic number plates to be fitted to police vehicles, together with the reading equipment, back office system and a system of logging and displaying the results of the test.

2.1.6 DVLA delivered the trial equipment to participating police forces and provided training for the officers on the setup and use of the equipment.

2.1.7 DVLA conducted a series of tests in partnership with four police forces. South Wales and South Yorkshire testing at 868 MHz and Hertfordshire and Northumbria at 433 MHz, to determine:

a. whether microchips placed in number plates could potentially provide a reliable and practical method of identifying vehicles by verifying system performance, particularly read-accuracy;

b. to establish whether this could add value to the identification of vehicles via ANPR equipment; and

c. to help the police to assess its potential for combating vehicle related crime.

2.1.8 The electronic number plates were fitted to police vehicles only (cars and motorcycles).

2.1.9 The trial consisted of a series of tests, each designed to test a separate function:

a. Equipment was mounted on tripods alongside police ANPR vans parked at the roadside or on bridges crossing a motorway. The ANPR equipment operated alongside the electronic equipment.

b. Hand-held readers used from a mobile police car with ANPR equipment installed. The ANPR equipment operated alongside the electronic equipment to enable a comparison of the results.

c. Hand-held readers operated by police officers on foot.

2.1.10 Tests were also undertaken off-road at TRL to simulate traffic conditions that were considered too dangerous or inappropriate on a public road. The use of TRL also provided an opportunity for repeat testing and each test was repeated 15 times to validate the results. ANPR vans were not used at TRL. The off-road tests were repeated using both frequencies, under identical conditions.

2.1.11 TRL were responsible for the hiring of vehicles and drivers for the test and managed the use/operations on the test track. In the unlikely event of a vehicle accident, this would have been a TRL responsibility. For safety reasons during the trial, DVLA staff remained off the test track unless advised otherwise by TRL staff.

2.1.12 The police completed their tests by 5 June and the trial finished with the off-road tests at the TRL, Crowthorne on 7 June.

2.1.13 RFID Centre was able to utilise the existing readers for the windscreen tests, provided active tags for use in the windscreen and a separate system for passive tags.

2.1.14 Hertfordshire (433 MHz) and South Yorkshire (868 MHz) were asked to undertake windscreen tests and South Wales (868 MHz) and Northumbria (433 MHz) to undertake number plate tests. Tests were also undertaken at TRL of passive RFID tags placed in a car windscreen and on a motorcycle.

2.2 Summary Recommendations

Police Test Results

2.2.1 All the police forces reported some resource difficulty in fitting in the test schedule as this was additional to their normal operational duties. The extent of this was not foreseen either by DVLA or the police and it was necessary to remove some of the test scenarios originally planned. This resulted in tests being completed once, rather than being repeated on urban and rural roads and in dry, wet and dark conditions. Nevertheless, different tests did take place under all of the above conditions.

2.2.2 After some teething troubles, the police adapted well to the setting up and use of the equipment and the system for recording results. Both number plate and windscreen tests produced high levels of accuracy at both frequencies. Two reads taken by S Wales Police performed above expectations. These were reads taken in dry and wet conditions from a hand – held reader in a police patrol car pursuing the target vehicle with a third vehicle placed between them.

2.2.3 The police tested tags fitted to their own vehicles in live conditions. Readings were taken using hand-held readers and mobile readers mounted on tripods at the roadside or on bridges spanning the road. Tests took place in wet and dry conditions and in daylight and darkness. Tests took place in a variety of environmental conditions.

2.2.4 South Wales and Northumbria police tested electronic number plates, South Yorkshire tested tags attached to the inside of car windscreens and to the tax disc holder on a motorcycle.

2.2.5 Due to time constraints, problems with vehicles breaking down and the ANPR units not delivering the support expected, Hertfordshire police force were unable to undertake any tests. This resulted in tests on windscreen tags transmitting at 433 MHz only being tested at TRL. All tests were completed by South Wales, South Yorkshire and Northumbria police forces. South Wales performed over and above the requirement by completing tests in all conditions.

2.2.6 A summary of the trial results are recorded in Annex B and the individual test results are available separately. The test results are available from Crime Reduction Unit, DVLA, Swansea. DVLA had to reschedule the test programme to enable the police to complete their allocated schedule.

TRL Test Results

2.2.7 Due to a misunderstanding between DVLA and RFID there were no windscreen tags available for the off-road tests. This was resolved by fitting only one tagged number plate to each vehicle and using the other number plate tag in the windscreen.

2.2.8 Both active systems performed well during the day. Both 868 MHz and 433 MHz systems consistently recorded active windscreen tags at up to 100 metres. They also both recorded front

number plate tags at between 50 and 100 metres and picked up the rear plates of approaching vehicles at around 5 metres.

2.2.9 Testing commenced with the active 868 MHz. The first three tests were carried out with equipment on the overhead gantry, with the fourth 868 MHz test carried out from the side of the track. The tests were then repeated using the 433 MHz tags.

2.2.10 The vehicles were then fitted with the passive windscreen tags. The test was carried out from the side of the track. The last test of the day used the 433 MHz windscreen and number plate tags and was carried out from the side of the track.

2.3 Justification

The trial was undertaken on behalf of the Department to support the wider investigation into the use of electronic tags in vehicles.

3 Existing Environment

This is a new initiative and the results of the trial will be fed into the Department's deliberations on the feasibility of EVI.

4 Detail of Solution Options

4.1 Option 1

On-Road Handheld Tests. A summary of the test scenarios and results undertaken by police forces are recorded in the attached annexes.

4.2 Option 2

On-Road Tests Within a Police Car Using Reader. A summary of the test scenarios and results undertaken by police forces are recorded in the attached annexes.

4.3 Option 3

On-Road Tests Using the Reader at the Roadside in Conjunction with the ANPR Van. A summary of the test scenarios and results undertaken by police forces are recorded in the attached annexes.

4.4 Option 4

On-Road Tests From an Overhead Bridge in Conjunction with the ANPR Van. A summary of the test scenarios and results undertaken by police forces are recorded in the attached annexes.

4.5 Option 5

Off-Road Test of 868 MHz Active Tags. A summary of the test scenarios and results undertaken at TRL are recorded in the attached annexes.

4.6 Option 6

Off-Road Test of 433 MHz Active Tags. A summary of the test scenarios and results undertaken at TRL are recorded in the attached annexes.

4.7 Option 7

Off-Road Test of Passive Windscreen Tags. A summary of the test scenarios and results undertaken at TRL are recorded in the attached annexes.

5 CLOSING SUMMARY

5.1 There were no significant differences in the results for windscreen tags and number plate tags. Both performed well in terms of successful reads. However, at the off-road trial, the windscreen tags were observed to take the reads from approaching vehicles at a greater distance than number plate tags.

5.2 The only successful reads of passive tags were from those attached to the seat of motorcycles at very close range. The motorcycle had to pass almost in contact with the reader. All attempted reads of passive tags through car windscreens failed.

5.3 It was disappointing that Hertfordshire police were unable to conduct the tests due to operational/practical difficulties including the unavailability of trial vehicles. Consequently, windscreen tags emitting at 433 MHz were only tested off-road at TRL. It should be noted that Hertfordshire police were very helpful in a consultative capacity.

5.4 Despite these problems leading to a reduced number of tests, the trial was a success. Some tests were set that were expected to fail to establish the limits of the technology. In total, there were 95 test scenarios for active tags. Reads were not obtained in 17 tests, but 15 of these were cases where the test was expected to fail. This was because tests were set in conditions where

RFID would not be expected to work in order to demonstrate the limits of the technology eg the target vehicle was obstructed by a building where the metallic content of the building distorts the transmission. Therefore, only 2 tests did not produce reads where they might have been expected to do so, giving a read rate of 99%.

5.5 Successful reads were taken in instances where ANPR would not be expected to work eg from a motorcycle in the outside lane of a motorway with cars adjacent to it in the other two lanes.

5.6 Due to CRU proactively rescheduling and changing the specification of the tests throughout the trial due to police resource problems, conclusive data was received from the police forces, which ensured a highly successful trial. The original test specifications are available from Crime Reduction Unit, DVLA, Swansea.

5.7 South Wales police have expressed their interest to participate in any future trials of this nature.

5.8 The trial involved only a small number of vehicles. If this technology was fitted to all vehicles there is a possibility that a “radio blanket” could be created with signals negatively influencing each other. A larger scale trial might be needed to investigate this.

5.9 The trial only used cars and motorcycles as target vehicles. The variety of locations used for number plates on HGVs might have produced different results. The same is true of some sports cars, which have number plates very close to the ground.

5.10 The tags transmit on frequencies that are exempt from licensing under the Wireless and Telegraphy Act. These are under-used frequencies that are least likely to interfere with other users. However, further investigation would be needed to determine the most appropriate frequency for live rollout.

5.11 The infrastructure was low cost and intended for use by mobile police ANPR units alongside normal ANPR operations. ACPO has suggested a larger scale trial of longer duration using RFID equipment mounted on roadside gantries or poles and electronically linked to ANPR equipment to give comparative reads.

5.12 The tags transmit only a unique vehicle identifier devised specifically for the trial. Therefore the question of data security did not arise, but this would have to be addressed for live application.

5.13 The trial was geared primarily to the requirements of police ANPR units. It tested the concept of vehicle identification using RFID technology and the potential for use as a tool for the detection of criminality. The equipment and infrastructure would have to be tailored and made fit for purpose for other applications.

Conclusions

5.14 This trial was a proof of concept exercise aimed at establishing the potential for using microchip technology for identifying vehicles in real traffic conditions. Before any firm conclusions could be drawn about the suitability of EVI for vehicle excise duty/ vehicle crime reduction purposes, it would be necessary to move to a larger scale trial of longer duration and incorporating a larger and more varied pool of vehicles as a test group.

5.15 It would also be beneficial to test RFID equipment electronically linked to ANPR to give comparative reads. In this way, it would be possible to detect 'mis-matches between the EVI data and the photographic image, indicating a cloned vehicle.

5.16 The infrastructure for the trial was low cost and intended purely for use by individual officers or by mobile ANPR units. For any follow – up trial, consideration should be given to making use of EVI equipment mounted on roadside poles or gantries.

5.17 The Driver and Vehicle Licensing Agency records its profound gratitude to the South Wales Police, the South Yorkshire Police, the Northumbria Police, and the Hertfordshire Constabulary, for their participation and assistance in this trial.

GLOSSARY

ANPR	Automatic Number Plate Reader
BIU	Business Improvement Unit
CECG	Compliance & External Communications Group
CRU	Crime Reduction Unit
DfT	Department for Transport
DIRECTS	Demonstration of Interoperable Road-User End-to-End Charging Telematics Systems
DVLA	Driver & Vehicle Licensing Agency
ENP	Electronic Number Plates
ERB	Executive Review Board
EU	European Union
EVI	Electronic Vehicle Identification
IBM	International Business Machines
IT	Information Technology
MHz	Megahertz
mph	Miles Per Hour
PMO	Programme Management Office
PPA	Programme & Project Assurance
RFID	Radio Frequency Identification
SRO	Senior Responsible Officer
TRL	Transport Research Laboratory
TTS	Transport, Technology and Standards
VRM	Vehicle Registration Mark

Annex A

TEST SCENARIOS FOR POLICE

TESTS BY OFFICERS ON FOOT

Test Scenario 1: To take a reading of a static vehicle from a hand-held reader taken at 1 metre with no obstructions allowing line of sight.

Test Scenario 2: To take a reading of a static vehicle from a hand-held reader taken at 25 metres with no obstructions allowing line of sight.

Test Scenario 3: To take a reading of a static vehicle placed totally behind an obstruction (a high-sided vehicle). Reading to be taken using a hand held reader at a distance of 25 metres.

Test Scenario 4: To take a reading of a static vehicle placed totally behind an obstruction (a building). Reading to be taken using a hand held reader at a distance of 25 metres.

TESTS FROM WITHIN A POLICE CAR

Test Scenario 5: To take a reading of a vehicle travelling at 30mph using a reader inside a police car following at 50 metres. The reading is to be taken through glass (from within a police car).

Test Scenario 6: To take a reading of a vehicle travelling at 50mph using a reader inside a police car following at 50 metres. The reading is to be taken from behind glass (within a police car) at a distance of 50 metres.

Test Scenario 7: To take a reading of a vehicle travelling at 30mph but behind an obstruction (another vehicle). Reading to be taken from behind glass (within a police car) at a distance of 50 metres.

TESTS CONDUCTED AT THE ROADSIDE

Test Scenario 8: Reading of a vehicle approaching at 30mph. Reading to be taken from a tripod mounted reader at a roadside in conjunction with an ANPR reading.

Test Scenario 9: To take a reading of a vehicle approaching at 70mph. Reading to be taken from a tripod mounted reader at a roadside in conjunction with an ANPR reading.

Test Scenario 10: To take a reading of a vehicle approaching at 100mph. Reading to be taken from a tripod mounted reader at a roadside in conjunction with an ANPR reading.

Test Scenario 11: To take readings of two vehicles passing simultaneously but travelling in opposite directions at 30 mph. Reading to be taken from a tripod mounted reader at a roadside in conjunction with an ANPR reading.

Test Scenario 12: To take readings of two vehicles passing simultaneously but travelling in opposite directions at 70 mph. Reading to be taken from a tripod mounted reader at a roadside in conjunction with an ANPR reading.

Test Scenario 13: To take a reading of 3 approaching vehicles, driving abreast and passing simultaneously on a three-lane road at a speed of 70mph. Reading to be taken from a tripod mounted reader at a roadside in conjunction with an ANPR reading.

Test Scenario 14: To take a reading of a motorcycle between two vehicles in neighbouring lanes. All three vehicles approaching and passing simultaneously on a three-lane road at a speed of 70mph. Reading to be taken from a tripod mounted reader at a roadside in conjunction with an ANPR reading.

TESTS FROM AN OVERHEAD BRIDGE

Test Scenario 15: To take a reading of a vehicle approaching at 30mph. Reading to be taken from a tripod mounted reader on an overhead bridge in conjunction with an ANPR reading.

Test Scenario 16: To take a reading of a vehicle approaching at 70mph. Reading to be taken from a tripod mounted reader on an overhead bridge in conjunction with an ANPR reading.

Test Scenario 17: To take a reading of a vehicle approaching at 100mph. Reading to be taken from a tripod mounted reader on an overhead bridge in conjunction with an ANPR reading.

Test Scenario 18: To take readings of two vehicles passing simultaneously but travelling in opposite directions at 30 mph. Reading to be taken from a tripod mounted reader on an overhead bridge in conjunction with an ANPR reading.

Test Scenario 19: To take readings of two vehicles passing simultaneously but travelling in opposite directions at 70 mph. Reading to be taken from a tripod mounted reader on an overhead bridge in conjunction with an ANPR reading.

Test Scenario 20: To take a reading of 3 approaching vehicles, driving abreast and passing simultaneously on a three-lane road at a speed of 70mph. Reading to be taken from a tripod mounted reader on an overhead bridge in conjunction with an ANPR reading.

Test Scenario 21: To take a reading of a motorcycle between two vehicles in neighbouring lanes. All three vehicles approaching and passing simultaneously on a three-lane road at a speed of 70mph. Reading to be taken from a tripod mounted reader on an overhead bridge in conjunction with an ANPR reading.

Annex B

Summary of Trial Results

Tag Performance (Police Tests)

Tag Position	Attempted Reads	Successful Reads	Initial Accuracy	Expected Read Fails	Actual Read Fails	Actual Accuracy
Front Plate	32	29	90.6%	3	3	100%
Rear Plate	35	24	68.6%	11	11	100%
Windscreen	29	26	89.7%	1	3	95%
Motorcycle (projecting forward)	5	5	100%	0	0	100%
Motorcycle (projecting backward)	0	0	0	0	0	0

Tag Performance (TRL Off Road Tests)

Tag Position	Attempted Reads	Successful Reads	Initial Accuracy	Expected Read Fails	Actual Read Fails	Actual Accuracy
Front Plate	175	172	98.3%	0	3	98%
Rear Plate	176	148	84.1%	26	28	99%
Windscreen (active)	351	349	99.4%	0	2	99%
Passive Tag	60	3	5%	45	57	20%
Motorcycle (projecting forward)	59	57	96.6%	0	2	97%
Motorcycle (projecting backward)	58	56	96.6%	0	2	97%

Electronic Number Plate Trials

Test Area	Total Tests	Successful Tests	Attempted Reads	Successful Reads	Initial Accuracy	Expected Read Fails	Actual Read Fails	Actual Accuracy
Northumbria Police	25	17	27	19	70.4%	8	8	100%
South Wales Police	37	31	45	39	86.7%	8	6	100%*
TRL Track Day	8	8	468	431	92.1%	32	37	98%
* Performed above expectations as two of the expected read fails were successful								

Windscreen Tag Trials

Test Area	Total Tests	Successful Tests	Attempted Reads	Successful Reads	Initial Accuracy	Expected Read Fails	Actual Read Fails	Actual Accuracy
Hertfordshire Police	0	0	0	0	0	0	0	0
South Yorkshire Police	17	14	29	26	89.7%	1	3	95%
TRL Track Day (active)	8	8	351	349	99.4%	0	2	99%
TRL Track Day (passive)	2	1	60	3	5%	45	57	20%

Annex C

SPECIFICATION FOR PROVISION OF AN ELECTRONIC NUMBER PLATE (ENP) TRIAL FOR THE DRIVER AND VEHICLE LICENSING AGENCY [DVLA]

1 INTRODUCTION

1.1.The DVLA intends to award a contract to one or more preferred suppliers who can provide technical solutions to the specified requirement.

1.2 The contract is primarily for DVLA but it is also available for use by other contracting authorities that form part of the Department for Transport and its associated bodies. This includes its executive agencies; non-departmental public bodies it sponsors; and other government departments and their associated bodies. At this point in time DVLA does not know if other government departments have a requirement.

1.3 Whilst suppliers must be able to deliver all aspects of the requirement, the Agency reserves the right to request one or more suppliers to deliver specific requirements.

2 BACKGROUND INFORMATION

The Organisation

2.1The Driver and Vehicle Licensing Agency (DVLA) is an Executive Agency of the Department for Transport, the largest agency within the Driver and Vehicle Operator group of agencies. DVLA employs approximately 6,500 staff split between headquarters in Swansea, 40 local offices and 3 Continuous Registration centres.

DVLA's key purpose is to establish and maintain an accurate record of all who are entitled to drive various types of vehicles, together with a register of all vehicles entitled to travel on public roads. The vehicle register allows DVLA to collect vehicle excise duty on behalf of the Treasury throughout the UK, with the Driver and Vehicle Licensing Northern Ireland (DVLNI) operating on our behalf in Northern Ireland. DVLA and DVLNI disclose information from the vehicle register free of charge to the following bodies;
Local authorities for any purpose connected with the investigation of an offence or decriminalised parking contravention;

The police (The vehicle register is downloaded to the Police National Computer on a daily basis);

Customs and Excise

Information is also provided for a fee to any person who can show reasonable cause for requiring it and anonymised vehicle data is sold to various companies for the purpose of providing a vehicle checking service.

2.2 Besides the general public, the Agency maintains close liaison with a wide range of public and private bodies including the Police, Courts, insurance companies, the motor industry, the Post Office, medical centres and other Department for Transport Agencies and Directorates.

2.3 Further information about the Agency and its ongoing initiatives can be found on the Agency Website www.dvla.gov.uk.

The Requirement Background Information

In order for DVLA to provide accurate information concerning vehicles and their registered keepers, it is essential that each vehicle should be correctly identified. Each vehicle is marked with a vehicle identification number (VIN) allocated by the manufacturer and a vehicle registration mark (VRM) allocated by DVLA in conjunction with the trader responsible for registering the vehicle at point of sale.

While it is necessary to examine the vehicle at close quarters to read the VIN, the key identifier at a distance is the VRM as displayed on the front and rear number plates. Therefore, the correct VRM must be displayed on the vehicle to which it is allocated and the VRM must be displayed in a format that makes it easily readable to the naked eye and to Automated Number Plate Recognition (ANPR) equipment and cameras. The typeface, size, colouring and British Standard that number plates must conform to are specified in regulations and it is an offence to display the VRM in any other format. It is also an offence to fail to display the correct VRM on a vehicle.

By regulation, plates must display the name and post – code of the supplying outlet, and supplying outlets must be registered. Nevertheless, because plates are relatively easy to manufacture, people intending to use false plates to clone a vehicle might by – pass the regulations governing the supply of plates by making their own. Fitting an electronic registration tag (ERT) to number plates would make unauthorised manufacture more difficult.

Stolen vehicles are often fitted with false number plates in order to disguise their true identity, and the same applies to vehicles used for criminal activity such as ram – raiding or theft of petrol from garage forecourts. There is mounting evidence that some motorists are displaying the wrong VRM in order to evade fines and charges, resulting in the keepers of the genuine vehicles associated with that VRM receiving penalty notices for which they are not responsible. Furthermore, displaying the VRM incorrectly through mis-spacing or defacing the characters can make it difficult to recognise.

The current methods of vehicle identification rely solely on a visual reading or a photographic image of the number plate. This system can break down if the wrong VRM is fitted or the VRM is unreadable

Electronic Vehicle Identification (EVI)

The Department for Transport (DfT) is conducting a feasibility study into the use of microchip technology as a more secure and reliable means of identifying vehicles, but no firm strategic decisions have been made. The results of this trial will help to further inform the feasibility work being conducted by DfT. There is no presumption that EVI would involve the use of microchip technology in number plates as a microchip could potentially be located elsewhere in the vehicle. For trial purposes, placing microchips in number plates provides a convenient and practical way of testing the technology in a live environment and allowing the enforcement authorities to evaluate its potential. It would also test the practicality of using the number plate as the location for an electronic tag.

STATEMENT OF REQUIREMENT

Trial of Electronic Number Plates

DVLA is to conduct a series of tests in partnership with the police with the following objectives.

To determine whether microchips placed in number plates could potentially provide a reliable and practical method of identifying vehicles by verifying system performance, particularly read - accuracy

To establish whether this could add value to the identification of vehicles via ANPR equipment.

To help the police to assess its potential for combating vehicle - related crime.

The purpose of this document is to invite tenders for the supply of equipment by means of hire for use in this trial, together with specified support services. As four geographical areas will be used, it might be possible to test different technical solutions. If there is more than one service provider, the equipment provided by each will also be tested in any off – road tests that are conducted.

The trial will be conducted by four police forces (South Wales, South Yorkshire, Northumbria and Hertfordshire). The electronic number plates will be fitted to police vehicles only (cars and motorcycles). The test scenarios will be duplicated as closely as possible by the four forces involved. However, the results of any test undertaken by only one of the forces involved shall be assessed on their own merits.

The trial will consist of a series of 'set – piece' tests, each designed to test a separate function as shown at appendix A. Tests will cover three main areas as follows;

i) equipment installed in police static ANPR vans parked at the roadside or on bridges crossing a motorway. The equipment will be positioned either inside or alongside the vans or attached to the roof. The ANPR equipment will be operating alongside the electronic equipment so that it will be possible to compare results. Please note that it will not be possible to interface electronically with existing police equipment

ii) hand – held readers used from a mobile police car with ANPR equipment installed. The ANPR equipment will be operating alongside the electronic equipment so that it will be possible to compare results. It will not be possible to install the equipment in the vehicle or to interface electronically with existing police equipment.

iii) hand – held readers operated by police officers on foot. In this case, there will be no ANPR equipment in use for comparison

There will also be some off-road tests to simulate traffic conditions that might be considered dangerous or inappropriate on a public road. Off – road testing could also ensure repeat tests under identical conditions and test a wider variety of vehicles. At least half a day will be set aside for this.

The service provider will provide the requisite number of electronic number plates to be fitted to police vehicles, together with the reading equipment, back office system and a system of logging and displaying the results of the test. The service provider will deliver the equipment to DVLA at Swansea Vale and provide training in its use. The training should consist of a written 'operating script' accompanied by an oral presentation. DVLA will, in turn, deliver the equipment and the training brief to the bodies conducting the tests.

DVLA will provide the vehicle details required for the 'back – office' system.

The service provider will not be involved directly in the testing process itself or in presenting or assessing the results. It is requested that the service provider should not make direct contact with any of the testing bodies.

Relevance of International Standard

ISO 24534 currently exists in draft form and provides an overall framework and specification for "fully featured" electronic registration identification. It is not the intention to test against the criteria in the draft ISO in its entirety but certain elements of the trial draw upon draft ISO 24534 for guidance.

Test Criteria

The technology will be evaluated against the following criteria.

i) Whether the data stored in the ERT is readable in a variety of environmental and traffic conditions.

ii) Whether the data is readable when the electronic plates are fixed to stationary vehicles through to vehicles moving at high speed. Draft ISO 24534 specifies that a reader should be capable of reading a unique vehicle identifier at vehicle passing speeds according to a class of definitions covering up to 500 kph. The trial will test for passing speeds of up to 100 mph, which encompasses the 150kph (93.21mph) standard in the draft ISO

iii) Whether the data is readable irrespective of whether the vehicle is moving towards or away from the reader, or passing by its location. If possible, the reading should indicate whether the vehicle is approaching or retreating.

iv) Whether the data is readable from inside a static police vehicle parked at the roadside or on a bridge spanning a motorway. The system should be capable of identifying vehicles as they pass by the reader in any lane of either carriageway.

v) Whether the data from a specific targeted vehicle is readable from a hand – held reader used by a police officer on foot at a range of 1, 25 or 50 metres.

vi Whether the data from a specific targeted vehicle (moving or stationary) is readable from inside a mobile police patrol vehicle at a range of up to 100 metres

vii Whether a specific targeted vehicle can be uniquely identified from within a group of vehicles fitted with an ERT.

viii Although the longevity of the ERT will not be tested, suppliers would be expected to include this information with the tender. Please note that ISO 24534 provides 7

lifetime classifications. We regard ERT B4 (a lifetime of 10 years), as a benchmark and suppliers are asked to comment on this.

ix The plates would be expected to withstand reasonable accident damage without the ERT being dislodged or rendered inoperative.

x The number plates to which the ERT is fitted would be expected to meet the requirements of the Road Vehicles (Display of Registration Marks) Regulations 2001 and the British Standard BS AU 145d. Please note that a voluntary standard for 'theft – resistant' number plates is under development, but plates meeting this standard will be tested independently of this trial.

Technology

The Supplier would be free to propose a technical solution capable of meeting the criteria of the trial. Bids must include the relevant technical specifications of the equipment, e.g. frequency band, transmission power, and state the standards it adheres to if any.

Service providers must consider whether it would be necessary to obtain a Wireless Telegraphy licence from the Office of Communications (Ofcom) under the Wireless Telegraphy Act 1949. The tender will be awarded subject to the granting of the licence to support the use of the proposed radio frequency. The licence must be obtained before testing takes place.

Infrastructure and equipment

The Electronic Registration Identification (ERI) system would consist of the following.

- An on board ERT fitted to both number plates (or single number plate in the case of motorcycles)
- Air interface between the vehicle ERT and a hand – held reader operated by officers on foot or onboard equipment operated from static and mobile police vehicles.
- Sensor system to detect the presence of a vehicle at a specific location and initiate communications between the reader and the ERT.
- ERI (back office) to support the ERI system application.
- Software to enable the recording and downloading of results and presentation in a useable format. The MS Excel spreadsheet format would best suit DVLA's requirements, allowing for statistical and graphical analysis and export to other software applications.
- An input set – up to enable entry of time, date and test number.
- Tripod for mounting a reader inside a police ANPR van.
- Magnetic clamp for fixing reader to the outside of a police ANPR van.

All equipment would need to have the following features to ensure its practicality for police use.

- It must be portable, and easily transported to and from police vehicles.
- It must be suitable for use by officers on – foot, or to be mounted inside or alongside a police ANPR van, or to be securely mounted on top of a police van.
- There must be no modifications needed to police vehicles or existing on – board equipment. The system must be 'stand – alone'.
- It would need to be independently powered to enable it to operate as a stand – alone system. The power supply must last for a reasonable period without the need for re-charging (service providers are asked to include this information).
- It would need to withstand out – door conditions, including wet conditions, and 'ruggedised' to minimise the risk of accidental damage.
- It must be simple to set up, operate and dismantle.
- There must be no interference with or by police on – board equipment.

ISO 24534 specifies that the VIN should be the unique vehicle identifier, but allows for additional vehicle – related information such as the VRM. For the purposes of the trial, the chips would be programmed with the VIN of the vehicles to which the electronic plates are fitted. The readers would be linked to a back office system consisting of a dedicated database built specifically for the purposes of the trial, enabling the vehicle to be identified against information held on the database. For the purposes of the trial, the reader would not be linked directly into the DVLA vehicle register or the police national computer, so there would be no automatic update to the dedicated database and no 'foot – print' of the reading left on the vehicle record.

The details held on the back office system would be:

a) vehicle registration mark
b) make
c) model
d) colour
e) vehicle identification number.

For trial purposes, the data contained in the ERT and the back – office system will be anonymous, i.e. it will not relate to any individual or corporate vehicle keeper. However, service providers should indicate what security measures could be used with their system.

Pricing Schedule

The following equipment and services shall be provided as part of a pricing schedule for the contract. You should provide prices net of VAT.

DVLA will be responsible for meeting the cost of procuring the equipment from the service provider on hire terms. Please note that the number plates might be subjected to deliberate damage during the trial to simulate accident damage.

ITEM	PRICE
25 number plates fitted with ERT – 5 sets per force (three for cars and two for motorcycles) and 5 for off – road tests (for a car, a van, a coach, a motorcycle and a heavy goods vehicle).	
5 readers – 1 per force and 1 for off – road tests	
5 tripods – 1 per force and 1 for off-road tests.	
5 x IT system – 1 per force and 1 for off-road tests.	
Insurance cover for damaged equipment	
Cost of delivery to DVLA and collection of equipment at the end of the trial.	
Cost of providing training in use of equipment	
Any other costs	
TOTAL	

Timetable

It is envisaged that the trial will commence March and be completed by the end of May, although additional time might be required to mop up any tests that have not been completed within the allotted time.

Responsibilities

DVLA will be responsible for the overall organisation and supervision of the trial and will appoint a trial manager. Specific responsibilities will be: -

- To select a supplier or suppliers of the equipment by a process of competitive tender.
- To liaise between the supplier and the tester to facilitate the delivery and maintenance of equipment, training of participants, conduct of the tests and collation of test results.
- To visit test sites to oversee the tests and to provide advice and guidance and to deal with any difficulties that might arise.
- To deliver a report of the trial for presentation to the Minister, participants and the public.

Supplier

- To supply the hardware and software in accordance with the contract made as a result of the competitive tender process.

- To obtain a licence from Ofcom if necessary.
- To be responsible for the maintenance or replacement of equipment.
- To provide training in the use of the equipment.
- To deliver the equipment to DVLA.
- The supplier will not participate in conducting or supervising the tests or in collating, reporting or evaluating the results.

Police

- To appoint an officer responsible for co-ordinating the tests in each area.
- To conduct the tests in co-operation with DVLA.
- To determine the days, times and locations of the tests.
- To ensure that suitable police vehicles and officers are available for the designated days and times.
- To produce the results of the trial using the software provided.

Off – Road Testing Facility

- To appoint an officer responsible for liaison with DVLA.
- To provide test facilities in consultation with DVLA.
- To ensure that vehicles and personnel are available for the designated days and times.

Home Office Scientific Development Branch

To provide practical or technical advice and assist in evaluation of results as required.

4 RESPONSE

4.1 The Agency requires 1 original and 3 copies of your proposal.

- A brief CV of the company, illustrating its suitability to provide a technical solution to meet the trial criteria and supply the equipment.
- Details of the system and equipment to be provided.

Cost of providing the equipment on a hire basis and cost of providing specified support services

4.2 Fees

4.2.1 All prices must be submitted exclusive of VAT.

Evaluation Criteria

5.1 Award of the contract will be based on the most economically advantageous tender submitted in response to the Agency's requirement. Award criteria will be based on most economic advantageous tender

The factors that will be taken into consideration, in order of importance with weightings of 1 – 10 (with 10 being most important) are as follows: -

- a clear indication that the supplier understands the requirement by the provision of evidence that supports their submission - 10;
- solid evidence that the supplier can fulfil the Statement of Requirement - 10;
- the timescale in which the tenderer could deliver – 7;
- price – 7;
- evidence of a flexible and co-operative approach to all aspects of the services tendered for – 5;
- application of early resource and time to the agreement and subsequent commitment and speed of reactions to ensure an excellent service – 5.
- The quality and presentation of the bid- 4.

6 ADMINISTRATION OF CONTRACT

6.1 The overall contract manager will be an appointed member of staff from Crime Reduction Unit at DVLA, supported by other Agency personnel. The Contractor will be required to appoint a named individual who will take overall responsibility for the contract.

6.2 In addition, meetings will be held as required to assess the performance of the contract and the services provided.

7 DURATION OF THE CONTRACT

The contract will be for a period of up to 3 months.

8 INVOICES AND PAYMENTS

8.1 All invoices/statements must be sent to the Contract Manager (who will be nominated after the award of contract). All invoices must state the correct quantity delivered, DVLA Purchase Order Number, Contract Number, Item Code. Failure to state all required information, could lead to delay in payment.

8.2 In the event of your request for payment not being sent to the contract manager DVLA will not be held responsible for any loss or delay.