

## DPS FRAMEWORK SCHEDULE 4: LETTER OF APPOINTMENT AND CONTRACT TERMS

### Part 1: Letter of Appointment



Dear Sirs,

### **P4024030 / CCSN18A17 - Provision of Vehicle Excise Duty (Roadside) Survey - Letter of Appointment**

This letter of Appointment is issued in accordance with the provisions of the DPS Agreement (RM6018) between CCS and the Supplier dated 28<sup>th</sup> February 2019

Capitalised terms and expressions used in this letter have the same meanings as in the Contract Terms unless the context otherwise requires.

Order Number:	To be confirmed by DfT
From:	Department for Transport ("Customer")
To:	Nationwide Data Collection Ltd ("Supplier")

Effective Date:	11 <sup>th</sup> March 2019.
Expiry Date:	End date of Initial Period 31 <sup>st</sup> October 2019.

Services required:	Set out in Section 2, Part B (Specification) of the DPS Agreement and refined by: The Customer's Statement of Requirements attached at Annex A and the Supplier's Proposal attached at Annex B.
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Key Individuals:	Supplier - <b>REDACTED</b> Customer – <b>REDACTED</b>
[Guarantor(s)]	N/A

Contract Charges (including any applicable discount(s), but excluding VAT):	£267,725.00. See Annex C for breakdown of pricing.
Insurance Requirements	<p>Additional public liability insurance to cover all risks in the performance of the Contract, with a minimum limit of £1 million for each individual claim.</p> <p>Additional employers' liability insurance with a minimum limit of £1 million indemnity.</p> <p>Additional professional indemnity insurance adequate to cover all risks in the performance of the Contract with a minimum limit of indemnity of £1 million for each individual claim.</p> <p>Product liability insurance cover all risks in the provision of Deliverables under the Contract, with a minimum limit of £1 million for each individual claim.</p>
Customer billing address for invoicing:	<p>Invoices must be mailed to the following address:</p> <p><b>REDACTED</b></p> <p>Alternatively, invoices may be sent electronically to the following email address: <b>REDACTED</b></p>

Alternative and/or additional provisions (including Schedule 8(Additional clauses)):	N/A
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## FORMATION OF CONTRACT

**BY SIGNING AND RETURNING THIS LETTER OF APPOINTMENT (which may be done by electronic means) the Supplier agrees to enter a Contract with the Customer to provide the Services in accordance with the terms of this letter and the Contract Terms.**

**The Parties hereby acknowledge and agree that they have read this letter and the Contract Terms.**

**The Parties hereby acknowledge and agree that this Contract shall be formed when the Customer acknowledges (which may be done by electronic means) the receipt of the signed copy of this letter from the Supplier within two (2) Working Days from such receipt**

**For and on behalf of the Supplier:**

**For and on behalf of the Customer:**

Name and Title:

Name and Title:

**REDACTED**

**REDACTED**

Signature:

**REDACTED**

Date:

11<sup>th</sup> March 2019

Signature:

**REDACTED**

Date:

14<sup>th</sup> March 2019

## ANNEX A

### Customer Project Specification

#### 1. Background to requirement/OVERVIEW of requirement

- 1.1 DfT currently produces estimates of VED evasion every two years using a purpose designed roadside survey. These estimates provide an independent check on any evidence obtained by DVLA through its VED enforcement activities. DfT Statisticians use the data obtained via the survey to produce official statistics on Vehicle evasion in the UK.
- 1.2 More information on the statistics published can be viewed here: <https://www.gov.uk/government/statistics/vehicle-excise-duty-evasion-statistics-2017>, along with more technical notes and definitions here: <https://www.gov.uk/government/publications/vehicles-statistics-guidance>. Anonymised raw data from the 2015 and earlier surveys are published on data.gov at: <https://data.gov.uk/dataset/roadside-survey-of-vehicles>.
- 1.3 The purpose of this contract is to collect the raw data required to produce these statistics, not to produce the statistics themselves. The contract is to be managed by the Vehicles & Administrative Statistics team in DfT, who will also produce the statistical reports derived from the raw data collected.
- 1.4 A very high degree of importance is attached to the consistency of the data collected from survey to survey. Therefore it is essential that any Supplier is able to carry out the 2019 survey in a way that is compatible with previous surveys. The detailed size, design and timing of the survey requirement for 2019 is set out in the following sections.
- 1.5 While the requirement for consistency over time places important constraints on the survey methodology, the DfT is keen to innovate to take advantage of technological developments, new ideas and new opportunities. Therefore, further review and development work will take place alongside the 2019 survey, and the Supplier will have the opportunity to actively contribute to this, and potentially shape the design of future surveys.
- 1.6 The Supplier will be responsible for undertaking these activities to the required standards, paying special attention to the required levels of quality and to health and safety. It will be important to work very closely with DfT staff, especially on the design and quality control of the project, and to act flexibly and responsively in response to emerging issues.
- 1.7 DfT is looking to secure high quality performance and excellent value for money, and the appointed Supplier will be required to provide proposals that demonstrate this.
- 1.8 After taking delivery of the data from the Supplier, DfT will carry out further in depth processing of them in order to produce official statistics, including comparing the registration marks with DVLA records, and further cross-checking of data with images in order to further classify the data. This is likely to give a detailed insight into any previously unidentified errors in processing.

## 2. Definitions

Expression or Acronym	Definition
DfT	means Department for Transport, the Contracting Authority
DVLA	means Driver and Vehicle Licencing Agency, an executive agency of DfT responsible for the administration and enforcement of the Vehicle Excise Duty system.
VED	means Vehicle Excise Duty
Bias	means any kind of systematic favouritism in a data collection process, whether deliberate or not, which could give rise to misleading results. For example only sampling vehicles on the fast lane of a motorway and ignoring the slow lane.
Survey year	means the year in which a survey is carried out – i.e. 2018.
Survey Period	means the period from Contract Commencement to Contract Expiry on 31 <sup>st</sup> October 2019.
Site	means one of the 256 survey locations specified in Schedule 1.
Road link	means a stretch of road between two junctions, as defined for the purposes of DfT traffic counts. For the purposes of this survey, a site may be surveyed anywhere along the road link on which it is located.
ANPR	means Automatic Number Plate Recognition.

## 3. Scope of requirement

3.1 The requirement for the VED survey is as detailed:

- 3.1.1 The main requirement is to plan, organise and carry out a camera based roadside survey across 256 sites in the UK in June 2019. The survey will require data processing and validation of the vehicles recorded and that the data is supplied to the Contracting Authority in an agreed secure electronic format;
- 3.1.2 The Supplier is not required to produce any of the statistical estimates derived from the data collected. These will be produced by DfT statisticians; and
- 3.1.3 There is an optional requirement to provide, on a call-off basis for the duration of the Contract, technical support to the DfT in the ongoing development of the roadside survey programme methods. This might include providing expert technical advice on new data capture methods, or carrying out small scale field testing of new methods alongside the main survey programme. There is no binding obligation on DfT to procure any work under this call off element. It is expected that the volume of any work required will be small in comparison with that required for the main June 2019 survey. Potential Suppliers are invited to propose an appropriate pricing methodology for this work.

## 4. The requirement

4.1 The Department requires that a strict data collection protocol is adhered to throughout the duration of the contract. This is outlined below:

### Survey programme

4.2 The Supplier is required to record the registration marks and images of vehicles (which must include the registration mark) observed in traffic at 256 pre-determined roadside sites across the United Kingdom (see list at Schedule 1 below).

- 4.3 All roadside data collection at these sites must be completed during the month of June in the survey year. Within this survey period, (this being the period from Contract Commencement to 31<sup>st</sup> October 2019), and provided all other mandatory requirements are met, the Supplier is free to schedule the data collection as they wish. However, this schedule must be provided to the Department for approval at least one month before the survey is to begin and shared with the relevant Police forces and local highways authorities for information purposes. All administrative arrangements for carrying out the surveys are the responsibility of the Supplier.
- 4.4 Every site must be surveyed twice during the survey period, as follows, achieving the volumes outlined in Section 9 – Volumes and Schedule 1, of this document:
- 4.4.1 for a twelve hour period on a weekday, made up of two six hour sessions, between the hours of 8:00 to 14:00 and between the hours of 15:00 and 21:00; and
- 4.4.2 for one six hour period on a Saturday or a Sunday, either be between 8:00 and 14:00 or between 15:00 to 21:00.
- 4.5 For all vehicles other than motorcycles the data must be collected through the use of video cameras. These must capture clear images of the vehicle and its registration mark, so that the registration marks can be recorded with at least the levels of accuracy defined below, and also so that characteristics of the vehicle, such as its body type, make and colour are clearly visible. These are required for subsequent analysis by the DfT. It is assumed that, as in previous surveys, the Supplier will wish to direct their cameras towards the oncoming traffic in order to achieve this.
- 4.6 On motorway sites, traffic must be surveyed in both directions, while on non-motorway sites traffic need only be surveyed in one direction. Where a carriageway being surveyed has more than one lane, the camera must be switched between lanes on an hourly basis according to the protocols shown below:

	<b>Camera 1 (Direction 1)</b>	<b>Camera 2 (Direction 2)</b>
<i>Motorway sites (assuming 3 lanes each way)</i>		
First hour	Fast lane	Slow lane
Second hour	Middle lane	Middle lane
Third hour	Slow lane	Fast lane
Fourth hour	Fast lane	Slow lane
Fifth hour	Middle lane	Middle lane
Sixth hour	Slow lane	Fast lane
<i>Dual carriageway sites (assuming two lanes each way)</i>		
First hour	Fast lane	Not applicable
Second hour	Slow lane	Not applicable
Third hour	Fast lane	Not applicable
Fourth hour	Slow lane	Not applicable
Fifth hour	Fast lane	Not applicable
Sixth hour	Slow lane	Not applicable
<i>Single carriageway sites (assuming one lane each way)</i>		
All hours	Single lane	Not applicable
Note: The protocol must be repeated twice for weekday recording		

- 4.7 Within the constraints of the protocol above, the images may be captured at any point on the road link on which the survey site lies. It is important that the data are captured on the

correct road link because the survey results for each site are later weighted according to DfT traffic count data for the corresponding road link.

- 4.8 If, due to exceptional circumstances, it is impossible or inadvisable to complete the survey of a site on the scheduled day, the Supplier must reschedule the survey for another day within the survey period at no extra charge to the DfT, whose approval should be sought for the change at the earliest opportunity. Surveying for less than a full 12- or 6-hour survey period is not acceptable. Reasons for rescheduling may include the site becoming unexpectedly inaccessible; the traffic being so disrupted as to be extremely atypical for the site; equipment failure; loss of data already collected; and / or extreme weather conditions.

#### **Motorcycle registration marks**

- 4.9 Motorcycle registration marks are displayed at the rear of each vehicle and therefore are difficult to be surveyed with forward facing cameras. The Supplier is therefore free to propose their own method of data collection for motorcycles, but this must ensure that the registration marks are collected with a high level of accuracy and without the introduction of any systematic bias. It should also avoid compromising the quality of the data delivered for the other vehicle types. An image with the registration plate visible is still required.
- 4.10 The Supplier must ensure that at least 7,500 motorcycle registration marks are collected through this process, and that the resulting data can be integrated with those for other vehicle types.
- 4.11 The quality and robustness of the proposals for motorcycle data collection will be one of the criteria used to evaluate tenders. Desirable characteristics for motorcycle data collection include:
- 4.11.1 images allowing similar audit of registration mark quality to that for other vehicles;
  - 4.11.2 data capture achieves similar coverage of sites and times of day as for other vehicle types in June, or if this is not feasible, then at the least any differences in the coverage of the motorcycle survey are controlled, quantifiable and kept to a minimum.
- 4.12 The motorcycle results are important despite the relatively low volumes of motorcycle traffic because VED evasion rates have previously been found to be particularly high for motorcycles. They therefore have a disproportionate impact on results and are liable to attract particular scrutiny.

#### **Data processing and validation**

- 4.13 The Supplier must maintain a reliable audit trail of the full data collection and processing chain, so that individual records and any changes to them can be identified and tracked throughout the system.
- 4.14 All video footage recorded at each survey site must be run through Automatic Number Plate Recognition (ANPR) software as part of the data processing phase.
- 4.15 The Supplier is required to achieve a total sample (excluding motorcycles) of 1 million vehicles and also meet expected minimum thresholds at each site (see Section 16 and Schedule 1). The site thresholds are generally set somewhat below the levels actually achieved in recent surveys. It is accepted that an occasional site may by chance have less traffic on the day than the site minimum threshold expects – this will be allowed on an exceptional basis providing the correct monitoring protocols for the site were followed.
- 4.16 The Supplier must not selectively process some images and not others in any way which may introduce bias into the data. However, in order to avoid processing many more records

than required, it is permissible for the Supplier to only process those images collected in a given portion of each survey hour. For example, processing the data for the first X minutes in each hour. The quota for each hour should be the same for all sites of a given road type, and the specifics of any such quota sampling must be approved by the DfT before being implemented, as it has important implications for the processing of the results. An audit trail must be maintained of the relative proportions of data processed and not processed, and the unprocessed data must not be discarded until it is known with certainty that it will not be needed. *For motorway and major roads only, the DfT may be prepared to accept an alternative quota system which involves the processing of the first Y vehicles in an hour. This will depend on the weighting system DfT adopts for the survey. In recent years, a quota of 440 vehicles per hour has been used for motorway sites only. Should the appointed Supplier wish to propose an alternative system, this may be discussed with the Authority during the Project Initiation Meeting referenced at 7.1 below.*

- 4.17 Once the initial ANPR process is complete, the Supplier must carry out additional processing in order to:
- 4.17.1 Correct any ANPR results that are found to be in error when compared with the corresponding image, and marking such cases with a 'corrected' flag
  - 4.17.2 Flag any vehicles displaying foreign registration marks
  - 4.17.3 Flag any vehicles displaying trade plates
- 4.18 This additional processing is extremely important, because the Supplier must ensure that an accuracy rate of at least 98% is achieved in the survey data, as described under KPI #3 in Section 15 below. In the past this has involved checking 100% of the records manually. However it is for the Supplier to suggest suitable mechanisms for carrying out the additional processing and quality assuring the outputs to meet the required standards.
- 4.19 The successful Supplier may find it useful to be prepared to make it clear to concerned members of the public that the data recorded in this project are collected for statistical purposes only and are not for enforcement purposes. This will be in line with General Data Protection Regulations.

## 5. Key milestones and deliverables

- 5.1 Potential Suppliers should note the following project milestones that the Authority will measure the quality of delivery against:

Milestone	Description	Timeframe
1	Project Initiation meeting with DfT	Within 2 weeks of the contract award
2	Final project plan and site survey schedule for 2019 approved by DfT	30 April 2019
3	2019 site surveys commence	1 June 2019
4	Completion of 2019 site surveys according to specification, and according to schedule	30 June 2019
5	Delivery of 2019 survey results in accordance with specification and approved project plan	16 August 2019
6	Final 2019 survey report delivered to DfT	31 October 2019
Payment for achievement of key Milestones will take place at the timings indicated in the table at section 17, Payment and Invoicing.		

5.2 In particular, Milestone 5 is on the critical path for DfT's subsequent production of statistical outputs.

## **6. Management information/reporting**

6.1 The Department requires, as a minimum, the following deliverables for each survey:

6.1.1 Main data file - a single electronic file containing data for all vehicles observed in the survey, with the exception of motorcycles. The file is required in 'CSV' format and each record within the file must contain the following fields:

6.1.1.1 The registration mark of the observed vehicle;

6.1.1.2 The Department's identification number for the survey site at which the registration mark was recorded;

6.1.1.3 A flag indicating whether the vehicle was observed on a weekday or a weekend;

6.1.1.4 The date on which the vehicle was observed;

6.1.1.5 The exact time at which the vehicle was observed;

6.1.1.6 The file path locations of the vehicle's ANPR images (so that each registration mark can be linked to the relevant ANPR images);

6.1.1.7 A flag indicating whether the registration mark was amended as part of the Supplier's quality assurance process; and

6.1.1.8 A flag indicating whether the vehicle was observed whilst displaying a foreign registration mark or a trade plate.

6.1.2 Motorcycle data file - a single electronic file containing data for all motorcycles observed in the survey. The file is also required in 'CSV' format and each record within the file must contain the same fields as the main data file above, unless variations are approved in light of the precise motorcycle data collection methods agreed.

6.1.3 ANPR vehicle images - a collection of electronic files containing the images, as captured by the ANPR software, of all vehicles observed in the survey. The quality of the images must be fit for the purpose of visually checking the ANPR results for misreads. The files must be provided in 'JPEG' format and the file path location of each file within the collection must match that given in the main data file. Two images should be provided for each vehicle: one showing the whole vehicle, in colour; and one the registration plate. Variations may be accepted for motorcycles depending on the precise motorcycle data collection methods agreed.

6.1.4 Overall project report - A detailed report summarising the experiences of the Supplier during the course of the data collection, on a site by site basis. The report must describe the experiences at each survey site in terms of: the procedures followed; the survey dates and times; the local conditions encountered; the quantity of data collected; the quality controls employed, and any other pertinent factors.

## **7. Volumes**

7.1 As described in the preceding sections, the requirement is to survey 256 specified sites across the UK twice each during June of the survey year, once for 12 hours on a weekday,

and once for 6 hours on a weekend, according to a set protocol, and carry out additional processing and QA on the results.

- 7.2 The protocol described has generated close to 1.1 million records in each of the last 4 comparable surveys. The Supplier is therefore required to deliver in excess of 1 million records. Minimum requirements for each individual site are also given in Schedule 1, based on previous experience. Please note that the individual site thresholds sum to much less than the total 1 million requirement – they are minimum requirements, not guidelines.
- 7.3 The only acceptable mechanism for limiting the amount of data processed once these minimum thresholds have been met is the quota sampling approach outlined in Section 6. This may only be applied with DfT approval, and it should be noted that some advanced planning and / or calibration is liable to be needed to apply it.

## **8. Continuous improvement**

- 8.1 Within the constraints of achieving consistency with previous surveys, the Supplier will be expected to pro-actively seek to improve the way in which the required Services are to be delivered throughout the Contract duration.
- 8.2 The Supplier should present new ways of working to the Authority during regular Contract review meetings.
- 8.3 Changes to the way in which the Services are to be delivered must be brought to the Authority's attention and agreed prior to any changes being implemented.

## **9. Sustainability**

- 9.1 N/A

## **10. Quality**

- 10.1 See The Requirement, Section 6 and Service Levels and Performance, Section 15.

## **11. Price**

- 11.1 Suppliers must provide Capped Price quotations for delivering the 2019 survey. The requirements for the survey are as described above.
- 11.2 Suppliers must also provide rates for providing technical advice and in-field testing on a call-off basis in support of further developments of the survey methodology (only payable for work not already required to deliver the 2019 survey requirements). For the purposes of the tender, rates should be provided for staff to cover all of the following types of work/roles:
- 11.2.1 Manage the design and implementation of on-road surveys to test new equipment or new data capture protocols;
  - 11.2.2 Provide informed, expert technical advice on the potential for new equipment or methods to improve on the current roadside survey. This could include sourcing equipment for use in trials;
  - 11.2.3 Carry out on-road surveys to test new equipment or methods; and
  - 11.2.4 Carry out any data processing, quality assurance or support tasks associated with the above work.

- 11.3 Prices are to be submitted via Attachment 4 – Price Schedule, excluding VAT.

## **12. Staff and customer service**

- 12.1 The Authority requires Potential Suppliers to provide a sufficient level of resource throughout the duration of the VED (Roadside) Survey Contract in order to consistently deliver a quality service to all Parties.

- 12.2 Supplier's staff assigned to the VED (Roadside) Survey Contract shall have the relevant qualifications and experience to deliver the Contract.
- 12.3 The Potential Supplier shall ensure that staff understand the Authority's vision and objectives and will provide excellent customer service to the Authority throughout the duration of the Contract.

**13. Service levels and performance**

- 13.1 The Authority will measure the quality of the Supplier's delivery by:

KPI/SLA	Service Area	KPI/SLA description	Target
#1	Data coherence	Data and images supplied meet the agreed formats and specifications. This includes the file paths for vehicle images being correctly referenced, so they load correctly in DfT software tools and internal consistency of the data	100% consistency, as assessed by DfT inspection and use of deliverables.
#2	Main data set achieved sample	This must exceed 1 million records in total, while also exceeding the individual site thresholds given in Schedule 1.	>1 million
#3	Main data set quality measure	Assessed by DfT check on a random sample of at least 1,000 records from the main data file against the corresponding ANPR images. An accuracy rate in excess of 98% must be achieved. Accuracy includes matching images for the record being available and correctly linked, the ANPR result matching the registration shown in the images, and 'foreign vehicle', 'trade plate' and 'amended' flags being correctly recorded where appropriate.	98% accuracy
#4	Motorcycle data achieved sample	This must be at least 7,500 records.	>7,500 records
#5	Motorcycle data set quality measure	To be agreed in the light of successful Supplier's data collection method. Preferred measures include comparison of a random sample of registration marks against images; comparison of registration marks against the vehicle type recorded against that registration mark in DVLA records.	To be agreed

- 13.2 Payment of some of the contract price is dependent on achievement of these KPIs, as set out in Section 17 Payment and Invoicing. The Milestones and Deliverables indicated in Section 7, also refer. .

**Contract Management**

- 13.3 As a minimum, the Department expects to meet with the Supplier at the following points during the project:
- 13.3.1 Project initiation (DfT, London).
  - 13.3.2 Site visit(s) for DfT project team, during June 2019, to see roadside sites in action and the data processing operation.
  - 13.3.3 Data collection feedback/discussion, during September 2019 (DfT, London).

- 13.4 The Potential Supplier should budget for attendance at these meetings within their quoted price for the survey.
- 13.5 In addition to these meetings, the DfT expects the Supplier to keep them regularly informed of progress and any emerging issues during the project, to inform them promptly if problems arise and for the project manager and other key personnel to be readily available to discuss the progress of the project with DfT. The frequency and method of contact will be agreed with the appointed Supplier during the Project Initiation meeting.
- 13.6 The Supplier must at their own expense pass on to DfT before the contract ends any materials produced in the course of the contract.

#### **14. Security and confidentiality requirements**

- 14.1 The Department for Transport takes data security extremely seriously and applies agreed government security procedures to all contracts involving the collection and handling of data.
- 14.2 The Supplier must treat the data collected in this project, consisting of images of identifiable vehicles in use with location and time details, as personal data (Impact Level 3), and therefore must ensure they comply with all of the Terms and Conditions associated with this contract in respect of the handling of Personal Data, and the related Terms and Conditions relating to Business Continuity, Security and Staff Vetting. Please describe what your Staff Vetting procedures consist of, as part of your tender response.
- 14.3 Potential Suppliers must provide specific details of how they will ensure they meet these requirements, which will be one of the criteria used to assess tenders.

#### **15. Payment and invoicing**

- 15.1 Payment can only be made following satisfactory delivery of pre-agreed certified products and deliverables.
- 15.1.1 20% of the contract price will be paid on the Department's acceptance of a formal declaration by the Supplier that all site surveys have been completed in accordance with the specification.
- 15.1.2 30% of the contract price will be paid on the Department's acceptance that the delivered survey data files and ANPR images meet KPI#1 (coherence) and KPI#2 (achieved main sample).
- 15.1.3 30% of the contract price will be paid on the Department's acceptance that KPI#3 (main sample quality), KPI#4 (achieved motorcycle sample) and KPI#5 (motorcycle quality) have been met.
- 15.1.4 20% of the contract price will be paid on the Department's acceptance of the final project report.
- 15.2 The Key Milestones and Deliverables at Section 7 and Service Levels and Performance measures at Section 15 also refer.
- 15.3 Before payment can be considered, each invoice must include a detailed elemental breakdown of work completed and the associated costs.
- 15.4 Payment will be arranged through a BACS system of payment. The appointed Supplier details will be requested by the Authority's Project manager following contract award.
- 15.5 Payment can only be made following satisfactory delivery and receipt by the Authority of the deliverables indicated in Section 7 of this document.

- 15.6 Before payment can be considered, each invoice must include a detailed elemental breakdown of work completed and the associated costs.
- 15.7 A Purchase Order number will be provided to the appointed Supplier in advance of receipt of the agreed upon deliverables. This number must be included on any Supplier invoice.
- 15.8 Invoices must be mailed to the following address:
- 15.8.1 **REDACTED**
- 15.9 Alternatively, invoices may be sent electronically to the following email address: **REDACTED**

**16. Contract Management**

- 16.1 Will be undertaken by the Authority.

**17. Location**

- 17.1 The location of the Services will be carried out at 256 sites as described in Schedule 1. Other activities may be carried out at location(s) to be decided by the appointed Supplier, subject to data security considerations, and specified in their proposal. The main base of the DfT customer is **REDACTED**, and it is expected that project meetings, with the exception of site visits, will take place here unless the DfT agrees otherwise.

**Schedule 1: Survey site locations with road type and required sample thresholds**

SiteID	Region	SiteType	RoadNo	Easting <sup>1</sup>	Northing <sup>1</sup>	Weekday threshold reqt.	Weekend threshold reqt.
EA01	EA	Motorway	M1 J6	512300	200200	5,140	2,350
EA02	EA	Motorway	M11	543000	254400	5,030	2,360
EA03	EA	A Urban	A1134	545000	255700	4,140	1,630
EA04	EA	A Rural	A1	518700	265000	3,720	2,920
EA05	EA	Minor Urban	C	542100	298000	670	290
EA06	EA	Minor Rural	B1382	558000	282000	790	340
EA07	EA	A Urban	A1242	626800	308500	2,120	920
EA08	EA	A Rural	A143	639700	292900	4,860	3,100
EA09	EA	Minor Rural		627100	320000	390	90
EA10	EA	Minor Rural	C336	587800	337200	20	9
EA11	EA	A Urban	A1308	604800	259000	210	110
EA12	EA	A Rural	A12	652100	301500	6,320	2,010
EA13	EA	Minor Urban		655100	294000	60	18
EA14	EA	Minor Rural	B1116	628100	270000	670	250
EA15	EA	A Urban	A6	508700	223000	4,250	1,920
EA16	EA	Minor Rural	A507	500000	237600	3,260	700
EA17	EA	Minor Urban	C	506100	234000	920	180
EA18	EA	Minor Rural	C	496100	256000	170	50
EA19	EA	A Urban	A1013	562000	178300	2,840	980

EA20	EA	A Rural	A12	584000	216600	5,040	2,560
EA21	EA	Minor Urban	C	599000	228000	100	40
EA22	EA	Minor Urban		558100	178000	670	340
EA23	EA	A Urban	A119	535300	213900	2,370	1,180
EA24	EA	A Rural	A414	520300	206700	5,730	1,510
EA25	EA	Minor Urban	C	519000	228000	330	70
EA26	EA	Minor Rural	B156	530100	202000	3,660	1,870
EM01	EM	Motorway	M1 J24	446500	331300	5,040	1,790
EM02	EM	Motorway	M1	447100	336100	5,010	2,520
EM03	EM	A Rural	A617(P)	446000	366300	2,090	2,020
EM04	EM	A Rural	A515	417900	348000	2,280	1,160
EM05	EM	Minor Urban	B	447100	371000	490	260
EM06	EM	Minor Urban	C	438100	337000	1,600	700
EM07	EM	A Rural	A6	454600	318000	5,340	810
EM08	EM	A Rural	A426	456100	295000	1,520	800
EM09	EM	Minor Urban	B	452100	307000	1,140	400
EM10	EM	Minor Rural		448000	292000	240	140
EM11	EM	A Rural	A17	507000	347300	4,640	1,610
EM12	EM	A Rural	A16(T)	535300	380000	2,070	740
EM13	EM	Minor Rural	C	534000	388000	970	570
EM14	EM	Minor Rural	B1131	498800	368700	2,510	880
EM15	EM	A Urban	A6900	487300	278300	2,660	1,300
EM16	EM	A Rural	A45	456000	261700	1,060	1,100

EM17	EM	Minor Urban	B	481100	281000	780	430
EM18	EM	Minor Rural	C	476000	282000	50	40
EM19	EM	A Rural	A17	483800	355000	2,580	1,120
EM20	EM	A Rural	A612	469700	350000	1,570	590
EM21	EM	Minor Urban	B6387	467000	368000	1,340	550
EM22	EM	Minor Rural		465000	384000	50	60
GL01	GL	Motorway	M1 MSA	522300	190600	5,170	2,330
GL02	GL	Motorway	M11	546600	199000	4,620	2,330
GL03	GL	Motorway	M4	506000	178400	5,080	2,590
GL04	GL	A Urban	A102M	540000	178400	4,460	2,350
GL05	GL	A Urban	A205(P)	535000	173000	3,390	1,340
GL06	GL	A Urban	A23	531100	179300	1,350	950
GL07	GL	A Urban	A4	520000	178000	5,470	820
GL08	GL	A Urban	A316	517300	175000	6,260	3,340
GL09	GL	A Urban	A224(P)	547000	165000	1,770	1,680
GL10	GL	A Urban	A20	545000	172000	4,720	2,390
GL11	GL	A Rural	A21	547000	162700	2,870	2,220
GL12	GL	A Urban	A2	545000	175000	5,600	2,560
GL13	GL	Minor Urban		520000	182000	100	30
GL14	GL	Minor Urban	C	526000	198000	420	190
GL15	GL	Minor Urban	C	532000	162000	1,370	1,020
GL16	GL	Minor Urban	B	535000	183000	4,190	2,090
GL17	GL	Minor Rural	B552	522200	194000	2,060	1,230

GL18	GL	Minor Rural	B	541200	184000	1,510	1,250
GL19	GL	Minor Rural	C	513100	184000	600	60
GL20	GL	Minor Rural		548100	164000	140	120
NE01	NE	Motorway	M6 J40	356300	518500	4,620	2,290
NE02	NE	Motorway	A1 M	430100	523900	4,630	2,530
NE03	NE	A Rural	A174(P)	460000	522000	2,990	2,840
NE04	NE	A Rural	A19	445000	530000	4,440	3,340
NE05	NE	Minor Urban	C118	451000	518000	2,370	1,820
NE06	NE	Minor Rural	B1269	461100	518000	1,910	1,050
NE07	NE	A Urban	A167	429100	516000	5,720	3,250
NE08	NE	A Rural	A167	427800	552000	6,020	2,660
NE09	NE	Minor Urban	C	412100	531000	320	200
NE10	NE	Minor Rural	B6032	424000	542000	2,090	670
NE11	NE	A Urban	A69	418600	566000	3,640	3,120
NE12	NE	A Rural	A183	439000	565600	2,350	1,460
NE13	NE	Minor Rural	C	429100	567000	2,170	740
NE14	NE	Minor Urban		427000	576000	2,040	620
NI01	NI	Motorway	M1	-6.019	54.5113	3,000	1,290
NI02	NI	A prim Rural	A3	-6.3816	54.4496	3,860	2,240
NI03	NI	A prim Rural	A1	-6.3181	54.2576	3,000	1,000
NI04	NI	A Non prim Rural	A515	-7.2824	55.0118	2,290	2,150

NI05	NI	A Non prim Rural	A2	-6.0764	55.11	390	380
NI06	NI	A Non prim Rural	A50	-5.901	54.2294	2,110	1,210
NI07	NI	A prim Urban	A2	-5.8433	54.6373	1,000	850
NI08	NI	A prim Urban	A505	-7.2373	54.6095	2,420	980
NI09	NI	A Non prim Urban	A20	-5.6746	54.5804	2,090	760
NI10	NI	B Rural	B95	-6.1696	54.7172	2,460	710
NI11	NI	B Rural	B185	-6.6807	55.1691	1,060	320
NI12	NI	B Rural	B162	-6.7881	54.6945	310	130
NI13	NI	B Rural	B64	-6.9098	54.9399	430	310
NI14	NI	B Rural	B23	-5.993	54.5154	4,000	700
NI15	NI	C/Unclass Rural		-6.3557	54.8483	90	50
NI16	NI	C/Unclass Rural		-6.6182	54.2573	180	50
NI17	NI	C/Unclass Rural	B535	-7.4632	54.3605	310	50
NI18	NI	C/Unclass Rural		-5.613	54.6678	150	60
NI19	NI	B Urban		-5.8305	54.8733	720	440
NI20	NI	C/Unclass Urban		-6.6486	55.1997	2,180	1,600
NW01	NW	Motorway	M56 J14	344600	373500	5,020	2,500
NW02	NW	Motorway	M62	394200	413200	5,030	2,520
NW03	NW	A Urban	A41	337800	375000	3,690	2,240
NW04	NW	A Rural	A34	383100	360000	4,230	1,420
NW05	NW	Minor Urban	B	352100	377000	3,520	1,540

NW06	NW	Minor Rural		359100	374000	450	400
NW07	NW	A Urban	A5063	381600	398400	2,560	530
NW08	NW	A Rural	A580	370000	400100	5,840	2,280
NW09	NW	Minor Urban	B5207	358100	400000	2,860	910
NW10	NW	Minor Rural	C	381000	386000	1,730	430
NW11	NW	A Urban	A41	334400	384000	5,360	2,030
NW12	NW	A Urban	A553(P)	328000	390400	3,290	2,090
NW13	NW	Minor Urban		343000	388000	3,760	1,070
NW14	NW	Minor Rural	C	337000	403000	640	50
NW15	NW	A Urban	A681	385000	421700	5,340	2,000
NW16	NW	A Rural	A585	335000	440700	6,870	2,950
NW17	NW	Minor Urban		349100	406400	580	170
NW18	NW	Minor Rural	B6478	372200	445700	610	240
NW19	NW	A Rural	A5271	327000	523500	2,820	1,220
NW20	NW	A Rural	A686(P)	359900	536800	730	270
NW21	NW	Minor Urban	C	341000	553000	150	30
NW22	NW	Minor Rural		360000	494000	90	20
SC01	SC	Motorway	M90J6	310900	703700	4,600	2,110
SC02	SC	Motorway	M8	310000	671400	4,570	2,520
SC03	SC	A Rural	A9	278000	702300	4,000	3,000
SC04	SC	A Rural	A905	290600	685000	2,340	1,000
SC05	SC	Minor Urban	C	291100	692000	630	340

SC06	SC	Minor Rural		281100	684000	70	40
SC07	SC	A Rural	A709	300000	577200	2,480	770
SC08	SC	Motorway	A74(M)	310100	593000	3,940	1,940
SC09	SC	Minor Urban	C	278000	610000	40	10
SC10	SC	Minor Rural	B729	288000	584000	300	100
SC11	SC	A Rural	A977	293200	690000	930	440
SC12	SC	A Rural	A90	312600	680900	5,100	2,340
SC13	SC	Minor Urban		349100	700000	470	310
SC14	SC	Minor Rural	C	326100	700000	540	140
SC15	SC	A Urban	A978	392400	807600	1,020	300
SC16	SC	A Rural	A920(P)	335800	840000	670	270
SC17	SC	Minor Urban	B9019	359000	866000	90	30
SC18	SC	Minor Rural		399000	866000	560	330
SC19	SC	A Rural	A697	371000	646000	720	190
SC20	SC	A Rural	A1	364100	677700	4,290	2,050
SC21	SC	Minor Urban		315100	652000	170	70
SC22	SC	Minor Rural	B8020	309100	676000	320	110
SC23	SC	A Rural	A862	255000	858500	1,300	250
SC24	SC	A Rural	A831	249400	830400	680	200
SC25	SC	Minor Urban	C	143100	848000	100	50
SC26	SC	Minor Rural	B	266200	846000	1,120	250
SC27	SC	A Rural	A83	186000	687900	1,030	330

SC28	SC	A Rural	A70	291500	642800	1,070	310
SC29	SC	Minor Urban		265100	654000	3,100	1,210
SC30	SC	Minor Urban		240000	682000	40	25
SC31	SC	A Urban	A85	340000	729500	2,550	2,140
SC32	SC	A Rural	A90	316500	721900	2,580	2,100
SC33	SC	Minor Urban	C	335000	758000	200	60
SC34	SC	Minor Rural	B961	351100	738000	380	110
SE01	SE	Motorway	M2	571300	168600	4,720	2,290
SE02	SE	Motorway	M4	475000	169600	5,080	2,530
SE03	SE	A Urban	A2030	465300	100000	2,100	1,280
SE04	SE	A Urban	A25	501400	150500	3,790	1,130
SE05	SE	Minor Urban	B3058	424100	97000	2,140	990
SE06	SE	Minor Rural	B3058	429200	92000	1,860	720
SE07	SE	A Rural	A249	587500	164000	4,870	2,330
SE08	SE	A Rural	A258	632600	156600	1,780	1,600
SE09	SE	Minor Urban	B2097	574000	166000	3,850	1,280
SE10	SE	Minor Rural	C	556000	168000	220	110
SE11	SE	A Urban	A246	501200	150000	2,390	1,280
SE12	SE	A Rural	A2044	527500	148000	2,350	980
SE13	SE	Minor Urban	B376	507000	168000	2,120	1,280
SE14	SE	Minor Rural		492000	156000	760	170
SE15	SE	A Rural	A259	566000	106000	5,310	2,840
SE16	SE	A Rural	A22	546000	123700	4,590	2,500

SE17	SE	Minor Urban	B2131	487200	132000	1,430	150
SE18	SE	Minor Rural		527100	124000	80	30
SE19	SE	A Urban	A41	482000	213500	490	760
SE20	SE	A Rural	A34	449400	179700	4,680	2,420
SE21	SE	Minor Urban	C	486500	168000	550	150
SE22	SE	Minor Rural	B4424	444000	178000	510	200
SW01	SW	Motorway	M5	355000	179700	5,000	2,550
SW02	SW	Motorway	M4	415500	181900	4,610	2,340
SW03	SW	A Rural	A39	359000	152100	2,080	470
SW04	SW	A Rural	A4	365000	169200	2,750	1,770
SW05	SW	Minor Urban		360000	170000	5,830	1,470
SW06	SW	Minor Rural		289000	146000	210	90
SW07	SW	A Rural	A388(P)	232700	840000	2,020	1,920
SW08	SW	A Rural	A39(T)	240000	123800	2,260	1,200
SW09	SW	Minor Urban		324000	90000	90	20
SW10	SW	Minor Rural	C	227000	94000	30	20
SW11	SW	A Rural	A35	370200	89600	7,520	2,990
SW12	SW	A Urban	A35	416000	93100	8,290	2,470
SW13	SW	Minor Urban		366000	78000	4,710	1,660
SW14	SW	Minor Rural	B3157	347000	91000	2,510	870
SW15	SW	A Urban	A40	395200	221400	3,120	1,060
SW16	SW	A Rural	A4019	389800	226000	3,460	720

SW17	SW	Minor Urban	B4216	372100	226000	1,510	400
SW18	SW	Minor Rural	C	393100	223000	1,620	520
SW19	SW	A Urban	A36	414700	130700	4,360	1,140
SW20	SW	A Rural	A3102	399500	170000	840	370
SW21	SW	Minor Urban		414800	130000	330	40
SW22	SW	Minor Rural	B3109	383200	162000	1,920	630
WA01	WA	Motorway	M4 J45	265300	199300	4,850	2,400
WA02	WA	Motorway	M4	335000	189300	4,940	2,280
WA03	WA	A Rural	A477(T)	225000	213300	1,000	1,000
WA04	WA	A Rural	A478(P)	213000	201100	840	470
WA05	WA	Minor Urban	C	241000	240000	220	80
WA06	WA	Minor Rural	B4333	229100	246000	280	190
WA07	WA	A Urban	A4042	331200	188000	4,000	1,150
WA08	WA	A Rural	A40	351000	212600	5,210	1,780
WA09	WA	Minor Urban		322000	198000	730	330
WA10	WA	Minor Rural	B4233	334000	214100	100	150
WA11	WA	A Rural	A55	277500	378500	5,730	2,740
WA12	WA	A Rural	A5	324800	341100	2,550	1,470
WA13	WA	Minor Urban	B5101	330100	352000	440	240
WA14	WA	Minor Rural	C	243000	340000	100	40
WA15	WA	A Urban	A4119	317700	175500	2,020	1,550
WA16	WA	A Rural	A4054	307600	200000	900	300

WA17	WA	Minor Urban	B4273	308100	192000	1,780	960
WA18	WA	Minor Urban	C	294000	206000	720	250
WM01	WM	Motorway	M5 J2S	400000	289600	4,700	2,320
WM02	WM	Motorway	M54	384200	305600	4,980	2,300
WM03	WM	A Urban	A34	385600	345000	3,930	580
WM04	WM	A Rural	A52	400000	346900	1,150	460
WM05	WM	Minor Urban	B5041	387100	344000	2,230	550
WM06	WM	Minor Rural	C	381100	330000	1,020	270
WM07	WM	A Urban	A426	450000	274100	3,080	780
WM08	WM	A Rural	A45	437500	275000	4,380	2,210
WM09	WM	Minor Urban	C	431100	298000	1,360	190
WM10	WM	Minor Rural	B4029	442000	281000	1,410	320
WM11	WM	A Urban	A44(P)	385900	254100	4,800	1,240
WM12	WM	A Rural	A4103(P) )	371500	247400	1,160	1,290
WM13	WM	Minor Urban		375000	308000	610	180
WM14	WM	Minor Rural	C	355000	338000	260	80
WM15	WM	A Urban	A435	407800	284000	2,240	1,780
WM16	WM	A Rural	A45	425000	282600	4,070	2,100
WM17	WM	Minor Urban	C	402000	296000	1,560	450
WM18	WM	Minor Rural		423300	274200	150	50
YH01	YH	Motorway	M62 J37W	482000	429900	4,150	1,860
YH02	YH	Motorway	M1	438000	393300	4,930	1,900

YH03	YH	A Urban	A63	509600	428400	5,820	3,560
YH04	YH	A Rural	A614	474600	427300	2,000	1,160
YH05	YH	Minor Urban		504000	432000	50	30
YH06	YH	Minor Rural	C	508100	472000	130	50
YH07	YH	A Rural	A6069	397000	451400	1,800	380
YH08	YH	Motorway	A1	435900	475000	4,660	2,330
YH09	YH	Minor Urban	C	429100	453000	260	110
YH10	YH	Minor Rural	C	421000	472000	140	70
YH11	YH	A Rural	A629	403000	445100	2,570	870
YH12	YH	A Urban	A58(P)	423500	430000	670	890
YH13	YH	Minor Urban		431000	434000	350	70
YH14	YH	Minor Rural	B6273	442200	414000	1,520	460
YH15	YH	A Rural	A629(P)	439000	394500	4,010	1,740
YH16	YH	A Rural	A616	420000	401200	1,130	1,390
YH17	YH	Minor Urban	C	429000	406000	650	330
YH18	YH	Minor Rural	B6067	446000	386000	910	650

Notes:

1. Northern Ireland site locations shown as longitude followed by latitude, Great Britain sites shown as 6-digit National Grid reference.
2. Thresholds for sites are the minimum sample sizes expected to be achieved per site - please see Section 6 above (sub-heading 'Data processing and validation') for details.
3. In general the site thresholds are set below the minimum number of observations in any of the three previous surveys.

## ANNEX B

### Supplier Proposal

QUESTIONNAIRE 4 – DELIVERY		
Question Number	Question	Supplier's Response
4.1	Please describe your plans for carrying out data collection to acquire the vehicle images and supporting information required to deliver the requirements set out in the tender, including your assessment of survey coverage, proposals for quality assessment/KPIs. (Other than for motorcycles). Please include supporting evidence for any assumptions or methodological choices in your plans.	<p><b>Response to Questionnaire 4.1</b></p> <p><u>Scheduling</u></p> <p>On award of the contract we would immediately start designing the survey schedule to ensure that all the sites were scheduled to be completed for both the weekday and weekend requirements all spread evenly over the 4 weeks of June 2019. As we have successfully conducted these surveys previously and we are very much aware of the need for the overall continuity of the monitoring of the sites from previous years we would design the schedule to ensure compatibility with the previous data sets. The schedule would cover the different geographical areas at the same time, with different staff and cover all road types. For example, we would not start the surveys only covering the motorways and major roads and then move onto the lower flow roads. There are a few locations that cover the same road –but some distance apart, however for these we would schedule these on different days. One very important aspect would be that we would also design into the schedule some spare capacity so that if for any reason we would be able to re-survey sites that were not covered as per the scheduled data and time. The survey schedule would be provided to yourselves for comment/update and agreement several weeks prior to the June surveys.</p> <p><u>Camera Technician Training and Site Plans</u></p> <p>The camera technicians, all of whom have carried out this project in previous years would be provided with maps, site locations that include OSGR's, detailed instructions and all the appropriate equipment would then carry out the surveys according to the agreed survey schedule. All the technicians are full time members of staff, but would still attend a refresher briefing and be provided with a full detailed site manual. We would actually look to install the cameras in exactly the same locations, as for previous VEDS projects and hence the technicians would carry out the same areas as previously conducted. We would ensure all appropriate permissions were obtained and inform the LHA's / HA of our surveys.</p> <p><u>Camera Equipment</u></p>

	<p>All the data would be recorded digitally using high quality cameras, as used the last time the surveys were conducted. Each camera system consist of a telescopic mast with a camera placed on top with all the recording and 12v power supplies contained in a metal box at the base of the mast. We now have 225 individual camera systems in place throughout the UK and therefore can easily accommodate these surveys in June 2019. The systems are extremely flexible allowing cameras to be installed at the most appropriate locations in order to get good quality views of the vehicle plates. All equipment is labelled with full address and telephone contact details including a mobile number (directly to the Project Manager) which will be in operation 24 hours a day throughout the month of June 2019. All the cameras would be set-up to record in colour to capture front number plates and provide a good view of the vehicle. Time would be spent by the technicians to ensure a good well focused and sharp image was being captured. This is achieved by connecting an HD monitor to view the camera images. They are then able to make adjustments to the images – including, focus, image size, image location on the camera and shutter speeds.</p> <p>All technicians would be supplied with extra cameras as back up, over and above those actually required, in order to cover for any equipment breakdowns or vandalism which may occur. They all have highly visible vehicles (to Chapter 8 requirements) which have powerful reflective light bars and fitted out so that the equipment is safely carried and accessed easily when installing on site. We have invested considerable sums of money to ensure that we comply with all the appropriate Health and Safety regulations. We would provide appropriate risk assessments to cover all aspects of the project.</p> <p>For the single carriageway roads the cameras would normally be installed by the side of the road, avoiding parked vehicles and other obstacles, also avoiding traffic signals or other areas of queuing. We would seek to capture all the plates that in one direction that past the agreed survey location. The cameras would be checked throughout the day with a visual check provided by connection to the HD monitor issued to all technicians.</p> <p>For the motorway locations we would move the camera systems (covering both directions) each hour from one lane to the next lane in accordance with the specified protocol. We would actually record at least 50 minutes in each lane. We have developed a special methodology for filming from motorway over bridges – we either use our mast cameras (that actually arrive on site as one item) and strap to the railings or if not possible to use tri-pods setup on the pavement. We have appropriate risk assessments and method statement ready to provide to the relevant authorities.</p>
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		<p>We have also invested in the new MAV HD Infra-Red cameras that automatically read the number plates and store images of the vehicles. These cameras will be incorporated at a number of locations where traffic volumes are high, where we believe that they will add value to the data recorded. We have developed particular software so that the down load from the cameras is compatible with our current systems, which will then allow the normal manual checking procedures to be used as for the rest of the project.</p> <p><u>Monitoring Database</u></p> <p>As this is a large complex project with tight deadlines we need to maintain complete control and understanding of exactly where we are for each site through all stages of the surveys. For example, if a site was not conducted in June we need to know that so that the surveys can be re-arranged before the end of the survey period. We will, as we have done for previous surveys, maintain a detailed monitoring control database, on a site by site basis. This will be used to ensure that at any one time we were able to fully understand the exact progress from site survey through to analysis of each site. This will be updated multiple each day as the surveys have been completed through to when each site had been processed. This is a key tool to enable ourselves to understand, monitor the overall survey progress and to ensure that no sites get missed or not analysed in accordance with the overall survey specification to meet the tight deadlines that need to be achieved.</p> <p><b>REDACTED</b></p>
4.2	<p>Please describe your proposals for collecting motorcycle data to meet the requirements set out in the tender, including your assessment of survey coverage, proposals for quality assessment/KPIs. Please include supporting evidence for any assumptions or methodological choices in your plans.</p>	<p><b>Response to Questionnaire 4.2</b></p> <p><u>General</u></p> <p>The recording of motorcycle plates is extremely difficult, but we are very much aware that they need to be captured to a high degree of accuracy, in particular in recent years they have been shown to exhibit higher levels of evasion than other vehicle classes. The capture of motorcycle plates is extremely difficult and we have over many years tried alternative methods that improve on the absolute quality of the data presented. Motorcycles can overtake and weave through traffic giving little opportunity to view the plate. The other issue that we have experienced is the fact that many motorcycles are ridden in groups and so all can pass at the same time. Further, many plates</p>

		<p>are particularly small and can be angled upwards to reduce the viewing opportunity. Poor weather can have a significant impact on the number of motorcycles on the roads on any particular day. Considering, the above and our previous experience we have been able to suggest viable methods to overcome these concerns and to then gain acceptable numbers of motorcycle plates with images required to allow the registration plates to be validated.</p> <p><u>Our Proposal for Recording Motorcycle Plates</u></p> <p>The recording of Motorcycle Plates would be undertaken in accordance with the above main survey schedule with all collected during June 2019. These plates would be recorded on the same roads, but we would use different cameras to those of the main survey as we would not want to influence or reduce the capture quality of the front plates. We would look to record all 7,500 motorcycle plates by either a hand held faster shutter speed camera by staff located on site and by installing video cameras viewing the vehicles travelling away from the camera. We would look to provide the full number plate together with the associated photographic image that would allow the client to carry out complete checks for all 7,500 motorcycle plates as maybe required. Previously we provided well over the 7,500 photographic images, using this method, therefore by adding rear facing video cameras at particular locations/sites we would look to provide all the plates required.</p> <p>We are very much aware that it is essential to ensure an unbiased sample, therefore we would select some 75 locations spread evenly throughout the whole geographical area roads that have a good volume of traffic where motorcycles would be likely to be on the road. These would be made up of the same 50 locations as undertaken in 2017, but with an additional 25 for the 2019 surveys. We think that this would provide an enhancement of the previous set of surveys and show our commitment to continually making improvements to the overall data set and in particular to these very difficult plates to capture. These would also be based on the police areas that the sample of the surveys was originally based and would be spread among the two-way roads. It would also be based further on our local knowledge of the roads in the areas covered by our teams throughout the UK. We would provide the list of proposed locations for the Department to comment prior to the surveys being undertaken. At these locations at the time of recording front plates for the main survey we would also install another camera looking at rear plates. From our experience and detailed testing this would provide a good set of quality images. This is also a system that we used in 2017 and it produced good results.</p>
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		<p>For the motorways we would continue to use the high quality hand held cameras that staff would use to take images of motorcycle plates. We have found from experience that on motorways in particular motorcycles tend to weave more between vehicles and also travel in groups they can be easily missed by the video cameras. However, with the hand held cameras staff can point in the correct direction and the precise location to take images. Then following taking the image we are able to zoom in to enhance the image of the plates to provide a clear readable image, collecting plates that a video camera would not be able to gain. This is again the same method that we did use in 2017 and it worked well, but we are always looking at ways to enhance our methodology and hence this time we will be adding our MAV HD camera to view the rear plates at the locations where we have obtained large numbers of motorcycles previously.</p> <p>The extraction of plates from the rear view video cameras would be undertaken in the Ossett office by experienced staff viewing the camera footage. When a motorcycle is seen then the plate would be read and an image of the motorcycle, with plate would be taken and added to the file of images. Essentially the motorcycle data file presented will be in the format of the main file, but will have the file name of the associated motorcycle image thus enabling any review by the Department to be undertaken.</p> <p>For the plates recorded via the hand held cameras they would be presented in the same manner with the motorcycle image contained in a separate file, named on the main file again enabling any subsequent review to be undertaken. This</p> <p>The motorcycle plate files would be referenced by plate extracted, site, date, time, road and image. Just to be clear we would supply at least 7,500 motorcycle plates with associated images of the rear number plate. Last time 2017 we supplied over 9,000 and in fact this time we will set out to improve on this number (but unfortunately weather does have a significant influence on the numbers of motorcycles on the roads).</p>
4.3	Please describe how you would plan and carry out the post processing and quality assurance of the raw data collected at sites in order to deliver the data content and quality requirements set out in the tender. Please include supporting evidence for any	<p><b>Response to Questionnaire 4.3</b></p> <p><u>General</u></p> <p>The processing of the camera footage will all be undertaken in the Ossett office within a secure, quality controlled and security conscious environment. We can confirm that no data processing would be off-shored to cheaper processing areas. As the overall survey</p>

assumptions or methodological choices in your plans.

schedule is very tight we would actually start the data extraction/checking process at the start of June 2019. Our processing ensures that there is not data bias and that an accuracy rate of 98% or more is achieved. On this point we actually achieved 99.3% accuracy rate for the 2017 surveys and almost the same for the 2015 surveys. As we have consistently exceeded this extremely high accuracy rate we would keep our extraction and processing systems and procedures exactly the same as for the previous surveys. Whilst our procedures and processes do involve a large element of manual data checking we have shown it to be very effective in being able to provide an accurate set of data. This will then ensure that the on-going monitoring between the various year's data sets is not compromised in any way, which is we believe a fundamental element to the whole data collection project.

#### Our Data Processing and Checking Systems

Once the surveys start in June camera footage starts to be returned to the office almost immediately. When it arrives in the office we have a very strict and immediate checking in process. Firstly, the footage is carefully checked for completeness, including day/date/time period, that it was recorded as per schedule, for quality and for readability of the registration plates showing the front view of vehicles. Then if all acceptable that it passes those basic checks the monitoring database is updated for that site and day – showing a tick for that data that it has been successfully recorded. The next stage is for the footage to be run through our automatic number plate readers, which then extracts the number plate as a text file, an image of the plate and an image of the vehicle with date/time. The resultant individual computer files (one for each site and day) are then examined manually by our team of experienced data analysts to carry out the detailed checks of the plates extracted by the computer files. Each individual plate as extracted by the automatic reader is compared against the image of the vehicle and the number plate, using our specialist software created over the years for this particular purpose. If the extracted plate is wrong it can be corrected with a marker added indicating that the image was corrected. This manual examination of each individual vehicle registration plate is very labour intensive it is all undertaken within the Ossett office within a very strict quality environment. We would not send overseas as we see that as a risk to the security the dataset and also much harder to maintain the very high accuracy requirements specified. This is one of the key areas of our checking procedures that ensure the final set of registration plates pass the 98% + accuracy rate.

We then have a detailed system of data checks, all undertaken by supervisory staff. Firstly, for all analysts' initial files undertaken the supervisor would carry out a 100% check to ensure that they were 100% correct. If an

analyst does not achieve an on-going accuracy rate of 99% then all their work will be checked and updated, and if they do not achieve in effect a 100% accuracy rate then they will be removed from this process. Once staff have achieved the accuracy rate, thereafter an on-going check of 10% of all plates in each file will be undertaken by the supervisor. In addition of those plates with the marker (denoting that they have been edited) will be subject to extra checks. For all UK plates a marker of '1' will be added to the file, for any foreign plates a marker of '3' will be added and for any trade plates we will also add a marker of '5' to the file. All these markers would be added during the manual verification process and are the same as we have provided in previous VEDS projects, which is good for consistency.

For the motorway sites we would extract the 220 + 20 for each hour in each direction by the lane under observation from the start of the hour. This will add extra data, and will help when low flows in the outside lane may mean less than 220 can be extracted in that hour. For the other sites we are aware of the minimum sample requirements for each site and would seek to exceed these as we would not restrict or reduce the amount of data extracted, thus ensuring no bias in the sampling of the data set. Vehicles would not be selected in a systematic manner by colour/vehicle type/make/model/age/ or area. They would be presented completely on a random basis and our method does that automatically to gain all plates from each camera site. We would in fact use all the recorded camera footage for the non-motorway sites for analysis.

Following the above, files for each of the 256 sites, for each weekday and weekend will have been created. The data set is then run through one of our standard registration plate format checking programs. A final viewing would then be undertaken by our analyst and would present the data in one large database once all checked.

Whilst we would undertake the majority of the analysis using post processing of the camera footage, we do have cameras that carry out the extraction on site and these will be used at certain location, however for this project it does not really make any difference as it is the manual checking that takes the most elapsed time to complete – the files are in fact the same.

The format of the returned data would be exactly as specified and as we have provided for the previous surveys. There would be a file containing all the vehicle registration numbers and a file with all the associated vehicle images that are all linked. The data would be provided by hand on a FIPS 140-2 portable hard drive, which is password protected. The final report would detail the surveys undertaken and all the various subsequent data checks. It would contain a large table

indicating on a site by site basis exactly how many vehicle number plates were recorded for both the weekday and weekend surveys. We would be aiming to comfortably exceed the outlined specified plates required for each site, aiming for 1.2 million plates overall. In fact all the camera footage would be processed to gain the maximum number of registration plates.

#### Summary of the Data Validation and Analysis Procedures

The following list identifies the various stages of the Data Validation and Analysis Procedures involved, together with further detailed procedures as follows:

Stages 1 and 2 – Soon after winning the contract, work would be started on designing this year's survey. Video Technicians will be allocated time and work schedules to ensure thoroughness in data collection.

Stages 3 and 4 – The camera files are carefully checked-off when they come into the office, so that a close eye can be kept of all sites that have been done.

Stage 5 – The camera footage is run through our automatic number plate readers, which extract both the number plate as a text file, and an image of the plate and the vehicle. The time that the vehicle was seen on site would also be added to the record. We have learnt that these readers whilst mostly accurate are not 100% so we have developed further steps to make updates. It should be noted that we would not rely on just the extracted plate from the automatic reader, but just use it as a tool to improve our initial speed of extraction.

Stage 6 – The resultant computer files are then examined manually and if the plates have been extracted as expected (number plates and images), they are set up by **REDACTED**, one of our data analysts.

Stage 7 – The files are then provided to one of the video supervisors for the video analysts to carry out the next checking stage. These staff are all very experienced and fully trained in conducting this type of work and undertake this on a day to day basis. A detailed manual / set of instructions would be developed to ensure that all staff were able to carry out this verification work accurately and consistently.

Stage 8 – The individual number plates as extracted by the automatic reader are then compared against the image of the vehicle and the number plate. This is using specialist software that we have developed over many years for us to use for this type of survey. These images of the number plate can then easily be compared by the video analyst with the number plate that has already been extracted. If it is wrong it can be directly edited and a

	<p>marker added to the file. We are expecting a 99% accuracy rate using this method.</p> <p>Stages 9 and 10 – The video supervisor would do a 100% check on all analysts' work for the first file, then check a minimum of 10% of those plates with the marker (been edited) and 5% of analysts' other work to ensure that they have the plates recorded correctly. If an analyst does not achieve an accuracy rate of 99% or better, then all of their work will be checked and updated.</p> <p>Stage 11 – Following the above, files would be created for each of the 256 sites, for each weekday and weekend half-day, prior to the final checks.</p> <p>Stage 12 – The data will then be run through one of our standard programs that checks the format of the vehicle registration plate surveys to ensure that they are in accordance with the standard allowable formats. A final viewing will then be conducted by <b>REDACTED</b>, who will also add the basic header information required and then entered into the final data set to be readied to send to the Department Of Transport. The actual number of vehicle registration numbers recorded for each site will also be recorded and added to the summary database that will form a major part of the final survey report.</p>
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**QUESTIONNAIRE 5 – CAPABILITY**

Question Number	Question	Supplier's Response
5.1	Please provide relevant qualifications, knowledge and experiences for all key staff and explain how this will be used to successfully deliver the project.	<p><b>Response to Questionnaire 5.1</b></p> <p><u>General</u></p> <p>Nationwide Data Collection are a leading Transport and Traffic Data Collection company that is run by extremely experienced Directors and Managers in traffic data collection projects through a network of offices that are geographically located throughout the UK including Ireland. As a company we have successfully undertaken this project over many years, and each time we have made improvements from the previous surveys and have always exceeded the 98% accuracy rate. For continuity purposes we would have the same staff that undertook the VEDS surveys last time in 2017. For example in 2017 we managed to obtain photographic records for over 9,000 motorcycle plates, which had not been previously achieved. If awarded this contract we will provide further innovations and enhancements. Our general Team Structure is shown in the attached diagram with full details of the various key staff set out below :- (It should be noted that we have built into the</p>

structure extra capacity at all levels which demonstrates that others could move into key areas if required.)

Management Team

Project Director / Manager - **REDACTED** – Would be responsible for the day to day management and overall direction of the contract. **REDACTED** has wide experience of undertaking Transport related projects involving ANPR projects. A Chartered Civil Engineer with over 35 years' experience. Prior to joining NDC, worked at Babbie Consultants as Technical Director (now Jacobs Consultants) then Count On Us, responsible for the successful delivery of the VEDS in 2007 and 2008. The 2009 – 2017 surveys by NDC, **REDACTED** was the driving force behind the success of all these surveys. Instrumental in the design of the methodology for the above surveys that led to a significant improvement in the accuracy of the data collected by the use of cameras and ANPR systems. **REDACTED** would be responsible for direct liaison with DfT and planning and organisation of staff working on the project. **REDACTED** will maintain overall responsibility for the NDC management of contract, quality control procedures, scheduling and ensuring that all the project mile-stones are fully met. **REDACTED** would also ensure that the client was completely up to date with all aspects of the surveys and subsequent data processing and the presentation of the reports. **REDACTED** will play a full role in this contract to ensure that the 98% accuracy rate is achieved. In effect **REDACTED** will micro-manage all aspects of this project from start to finish.

Back up For Project Manager – **REDACTED** – **REDACTED** is the Managing Director of Nationwide Data Collection with over 35 years' experience conducting and directing numerous transport data collection projects. **REDACTED** also oversees the Warwick office. **REDACTED** was involved with the 2015 and 2017 VEDS projects and would ensure that all appropriate staff allocated from Warwick would perform their duties as requested. He would also be able to step in, if necessary, to manage the project.

Regional Director / Office Manager – Each regional NDC office (Midlands, London, Scotland, Ireland) will ensure the allocation of engineers and completion of surveys within their own specific area. This means that we have appropriately trained camera technicians who are local to the survey locations who would be tasked with carrying out the filming. Most of these staff have undertaken the sites previously and hence we would be able to even offer continuity of the exact monitoring locations from the 2017 surveys. Each technician is

equipped with a highly visible van (to Chapter 8 ) with a set of cameras that are ready to install.

Camera Services Manager – REDACTED (based in the Ossett office)– Would be responsible for ensuring that the programming and conduct of the site data collection is undertaken as agreed with the client. REDACTED successfully undertook the same role for the 2017 VEDS surveys. REDACTED is the driving force behind all NDC ANPR projects and has relevant experience particularly with the design and install of ANPR survey equipment. He is responsible for the design and building of NDC camera systems and has recently overseen the build of some 420 HD Infra-Red peli-case camera systems, which are currently being rolled out to all our camera technicians throughout the company. The main input from REDACTED will be at the start of the project developing and agreeing an overall survey site schedule. This will be based upon the 2017 schedule in order to maintain continuity and will cover all of sites throughout the UK, and conducting site visits. He would then conduct the training of camera technicians and conducting the refresher courses. He would be responsible for organising camera technicians (throughout the UK) and providing each with their individual work schedules ensuring that technicians from all offices are fully informed of their work schedules and have required equipment.

Back up For Camera Services Manager – REDACTED (based in the Ossett office) – would be an assistant to REDACTED and would be able to take over his role if it proved necessary. REDACTED has undertaken numerous camera based ANPR surveys and is currently involved in the design, building and general maintenance of the camera systems. He has been at the forefront of the design of the systems that NDC now use for ANPR surveys. He would also be assigned to undertake a number of the VEDS sites in the North of England.

#### Site Based Teams

Site Camera Technicians –14 fully trained camera technicians and suitable vans are in place and available for this project and could be used for this project. These staff and equipment are used to undertake ANPR surveys to record vehicle registration numbers at locations across the UK. All staff were involved in the successful delivery of the 2017 surveys. They will be assigned geographical areas to conduct the Surveys with staff redundancy facilitating spare capacity should anyone be unavailable. The incorporation of extra resources to accommodate spare capacity is that we know from experience that not all sites will be undertaken exactly according to the schedule. A site may have to be stopped (say traffic accident, or very

poor weather or some other cause) so it is very likely that some repeats may be required and all this does is to plan for these occurrences. Any repeats would be identified to the Dft and then conducted within the June survey period.

Office Based Team (Ossett)

Survey Monitoring Manager - REDACTED – REDACTED is a graduate (with Maths A-Level) with over 15 years' experience and has been a key member of the VEDS team having also worked on many previous VEDS projects including the 2015 and 2017 surveys. He would be responsible for checking the camera footage had been recorded properly, maintaining the monitoring data base and for running the footage through the ANPR registration plate readers to extract the vehicle registration plates, with the photographic images. He would then check the output files and then pass them onto the camera analysis supervisors for the detailed manual checking of each vehicle number plate. He would update the monitoring data base once the files had been completed including the recording of the exact numbers of registration plates that had been extracted. Mark will also present the file data set on the hard-drive to be provided to the client.

Back-up Survey Monitoring Manager – REDACTED – REDACTED is a graduate with over 6 years' experience undertaking a similar role as REDACTED above. She would provide assistance as required, but would also be available to take over the role completely if necessary. She has worked on the 2015 and 2017 VEDS projects.

Camera Analyst Supervisors – REDACTED and REDACTED – They would be responsible for a team of camera analyst staff who would be checking the files of vehicle registration plates. They would oversee some 10 staff each ensuring that they were undertaking the detailed checking properly implementing the full checking systems that we would have in place. Both REDACTED and REDACTED have worked on the 2015 and 2017 VEDS projects in a similar role. Both are very much aware of the exacting accuracy requirements that are needed to ensure that the data is 98% + accurate. One area that REDACTED's team would have extra responsibility is the extraction of the motorcycle plates. She would ensure that the photographic images were recorded together with the actual registration plate input onto the spread sheet. This exercise requires screen shots to be extracted and takes some time and last VEDS project we allocated a sub-team to undertake this process.

Office Video Analysis Staff – Large number of experienced video analyst staff whose extract data from

		<p>video camera footage. Work is continuously checked and verified by their team leaders including the verification of ANPR. We have some 20 staff who undertake this work. This includes the verification of the plates and updating if required (adding flags if necessary). Whilst they are experienced we would undertake a special set of individual training and go through all the staff checks as detailed previously. Each person would be at a work station that had both the registrations play back and the file of extracted plates to check – we make the process as efficient as possible. We expect staff to be 100% accurate. Over 90% of the staff have previously undertaken the VEDS project so know exactly what is expected.</p>
5.2	<p>Please provide evidence of similar or related projects which demonstrate your ability to deliver the requirements of this project.</p>	<p><b>Response to Questionnaire 5.2</b></p> <p><u>General</u></p> <p>Nationwide Data Collection are a leading Transport and Traffic Data Collection company that is run by extremely experienced Directors and Managers in traffic data collection projects through a network of offices that are geographically located throughout the UK including Ireland. As a company we have successfully undertaken this project over many years, and each time we have m <b>TYPES OF SURVEY / ANALYSIS</b></p> <p>Types of Surveys undertaken recently throughout the UK include:</p> <ul style="list-style-type: none"> <li>- ANPR Surveys and Analysis</li> <li>- Origin-Destination surveys using vehicle registration plates</li> <li>- Car Parking Surveys using vehicle registration plates</li> <li>- Station concourse Passenger Surveys</li> <li>- Video Surveys</li> <li>- Manual Classified Counts</li> <li>- Coding subsequent transport forms</li> <li>- Public Transport Surveys</li> <li>- Roadside Interviews</li> <li>- Vehicle Occupancy</li> </ul>

- Pedestrian Surveys

**Vehicle Excise Duty Evasion – Roadside Surveys 2009, 2010, 2011, 2015 (DfT Project Manager – REDACTED)**

The team that are being put forward this year formed the previous Project Management and comprised the majority of the staff who organised and conducted the surveys undertaken in previous years. This is true of both the office and site operations. For the surveys we ensured that the data was recorded on cameras and then subsequently corrected and validated manually in the office. The Project Management team produced the methodology that was successfully used (cameras at each location, all subsequent images from ANPR machines checked manually) to ensure that we maintained high accuracy rates for each year. We actually managed to record some 1.5 million number plates in June 2009 with an error rate less than 1.3 %, whilst in 2010 we recorded a similar number of plates again with an error rate of around 1.3% . In 2011, a reduced survey we provided 1.1 million plates again achieving an error rate of less than 1.3 %.

We have been able to achieve error rates well within the project specification over many years together with a high number of plates also being recorded. This demonstrates that we have a proven team, with a proven set of equipment that is able to meet (and actually exceed) the 98% accuracy rate that is necessary.

For the 2010 survey an email received on 26<sup>th</sup> August from REDACTED (after all the data had been presented) stated the following :-

'We have completed our accuracy check on 3,000 images and am pleased to report that the misread rate is 1.04% +/- 0.27%. So you are easily within the required limits and have improved yet again, on the previous year's figure. Well done. '

**In respect of the 2011 data the following response was sent :-**

**From:** REDACTED [\[mailto:REDACTED\]](mailto:REDACTED)  
**Sent:** 08 September 2011 09:39  
**To:** REDACTED  
**Subject:** RE: VEDS 2011 Data

**REDACTED**

Sorry for the delay in getting back to you about the report and accuracy checks; unfortunately one of the members of the division has had to go away on a family emergency so I have had to carry out 8 interviews this

week in her place...this is all taken up far too much of my time.

Anyhow, I have managed to fit in the accuracy checks around the interviews and am pleased to report that you were well within the accuracy requirements – on a sample of 800, only 1.2% were wrong. I'm also happy to see the colour images this year; these can be a real help when we check some of the very difficult to read reg marks later in the process.

So, as the data meets all the requirements and you have provided the final report so I am happy for you to submit the final two invoices.

Regards,  
**REDACTED**

Vehicle Licensing Statistics

Tel: **REDACTED**

**REDACTED**

Thanks for this. I've put in a request to have this GRN'ed so you should get paid pretty swiftly.

We have not made any final decision on next year, but it is likely that we are going to start running surveys every other year from now on. This is because, like everything, we have to significantly reduce how much we spend. The key factor in this is whether the VED evasion figure remains fairly steady again, as it has done for the past few years. If it does seem to be hold steady (which is what we expect) then it is less critical to have survey data every year (though we will miss the data, as we are using it for more and more things).

Therefore it is highly likely that the next survey will not be until June 2012.

This change is certainly not a reflection on the quality of work you have done for us over the past few years but it is simple a cost saving exercise. We have been very happy with your surveys, data and professionalism. Of course, there is always the chance that this year's figures start to look quite different to last year's, in which case we will definitely be revisiting our thoughts about ongoing surveys and we will, of course, let you know in this circumstance.

I'd be more than happy to discuss on the phone if you would like.

Finally, I would like to thank you and your whole team for the work you have done for us over the whole contract. We would be delighted to receive a tender from

you when we put out the next survey contract, and will, of course, ensure that you know about it when it comes.

Regards,  
**REDACTED**

Vehicle Licensing Statistics

Tel: **REDACTED**

**Vehicle Excise Duty Evasion – Roadside Surveys 2015 & 2017 - DfT Project Manager **REDACTED** (will be able to provide confirmation of our performance)**

The team that are being put forward this year formed the current Project Management and comprised the majority of the staff who organised the surveys undertaken in previous years. This is true of both the office and site operations. For the surveys we ensured that the data was recorded on cameras and then subsequently corrected and validated manually in the office. The Project Management team produced the methodology that was successfully used (cameras at each location, all subsequent images from ANPR machines checked manually) and ensured that less than 1% of all vehicle registrations were shown to be in error. In fact the 2017 VEDS results show an 99% accuracy rate which supersedes all our previous year's accuracy results with some 1.2 million plates provided some 200,000 over the actual survey specification. In addition for the 2017 VEDS results we actually provide over 9,000 motorcycle plates (actual specification 7,500) all presented with photographic evidence which was an improvement on the 2015 VEDS project results.

**Transport Research Laboratory – Mobile Phone and Seatbelt Surveys**

The project involves the collection of data on the use of mobile phones and the wearing of seat belts from observations of vehicles passed at 33 locations in the London area. This survey that is also in association with Transport for London is an annual survey and is used to monitor changes in usage of mobile telephones by vehicle drivers. It will be used the TRL to help enforcement agencies develop strategies to encourage the continued reduction of non-hands free telephones.

**Carlisle ANPR Surveys**

A major project involving the deployment of over 40 camera systems located around Carlisle recording full vehicle number plates. In effect, a ring was put around Carlisle with all number plates recorded for vehicles going in and out of the city. All cameras needed to record accurately and run all at the same time, all time-

synchronised to the nearest second. In the order of 100,000 full registration plates were recorded on one day. In the office we used our ANPR number plate machines to extract the plates and add the exact time of passing. We then used our own software to manually check the plates to see that they were successfully and correctly transferred onto appropriate files for detailed analysis. The registration plates from all sites were subsequently matched to produce sets of matrices for the AM, Off-Peak and PM time periods. For this project, we actually managed to obtain over 95% of all the possible registration plates, which is excellent as some are unreadable (obscured, dirty, sun reflection etc.). This survey demonstrates our ability to carry out large ANPR surveys and subsequently process the data in accordance with the client's requirements.

### **York ANPR Surveys**

We have successfully completed the above project. This involved the deployment of 35 individual camera systems all recording full vehicle number plates covering both light and dark time periods. The resulting camera images have been run through the ANPR machines extracting many thousands of both the number plates and vehicle images. The images were verified manually to ensure that the full number plate extracted is correct. As much of the survey has been carried out during night time conditions, this is more important as we also had some effect of dazzle from the vehicle headlights. However, as our camera systems are of such good quality we were still able to read the full number plates. We gained 95% of all vehicle registrations for both survey periods. The resulting data was then matched to obtain origin-destinations of vehicle movements between the various sites by vehicle type and within agreed journey times.

### **North Wales Corridor Study**

This study required the stopping of drivers to ask a number of questions relating to the journey on which they were travelling. Questions covered the journey origin/destination, purpose, parking, frequency of journey etc. At some locations pre-paid questionnaires produced both in English and Welsh were also distributed. At each location we had 10 staff with experienced supervision to oversee the surveys. Prior to the surveys senior management were responsible for discussing all the arrangements with the Police, Welsh Assembly and the appropriate Council staff. In total approximately 20,000 interviews were achieved and the data was coded in our coding office. A series of range

and logic checks are performed on the coded data files to ensure all information is correct. In addition to the Roadside Interview Surveys, we also carried out a series of traffic counts by installing our high mast video camera systems to record vehicle movements, with the subsequent camera footage analysed in the office.

**M81 Hollywood Cross to Tallaght Road Improvement Scheme, Dublin Kildare National Design Office 2008**

This was an important study requiring data that would be used to help in the design of a major road scheme in Ireland. The study involved a number of elements including the collection of traffic data over a 12 hour period, with ANPR surveys, MCC and JTS all recorded. Over 25 camera systems were installed at a number of different locations with most recording full vehicle registration numbers all over a 12 hour period for each direction of travel. The resulting camera footage was analysed in the office within a quality controlled environment by our own in-house experienced analysts. Full vehicle registration plates were extracted using our ANPR systems and then manually verified. The resultant data files were then matched to provide origins/destinations and journey times of vehicles over a wide area. The results of this survey will form a key element of the data used in the design and justification of this new highway.

This demonstrates that we have permanent staff and resources already available in Northern Ireland.

**Camera Related Surveys**

We have undertaken numerous surveys throughout the UK (London and the South West, Midlands, Wales, Northern England, Scotland, Northern Ireland and Southern Ireland) that use a large number of our camera systems. These surveys require that the junction is filmed and then in the office staff analyse the resultant camera footage. We currently undertake up to 20 different projects a week using our cameras some project requiring over 50 systems to be employed at any one time. We have in the office some 25 to 30 staff who then transcribe the camera images to produce the results.

**MAV HD Infra-Red ANPR**

Camera Surveys – We have undertaken numerous ANPR surveys that use these cameras that automatically record the vehicle registration plates as vehicles pass. The results are then downloaded from the cameras directly onto our server. We then

		<p>undertake the subsequent matching, if for a cordon survey or provide vehicle emissions if for a CAZ or similar. Whilst these cameras are the state of the art and will be incorporated as part of the VEDS project all the images would still need to be checked manually for errors hence we would use these in particular locations with high flows of traffic.</p>  <p>NATIONWIDE DATA COLLECTION VED TE/</p>
5.3	Please provide a schedule detailing the allocation of key staff and resources to tasks.	<p><b>Response to Questionnaire 5.3</b></p> <p><u>General</u></p> <p>Nationwide Data Collection undertake Traffic Data Collection surveys every day throughout the year and are managed by extremely experienced Directors and Managers who have substantial experience undertaking data collection projects.</p> <p>We provided in response to Q 5.1 some details of the key staff, their previous experience conducting this VEDS project in previous years in particular 2015 and 2017, we now outline below exactly the staff who would be employed on this project. We have divided the staff between office and site based as the project is almost equally divided between the two. Please also refer to our diagram showing the proposed Project Team Structure which demonstrates how all the various staff are integrated to deliver the overall project. We have also included extra staff to add back-up if required showing extra resources are available.</p> <p><u>Office Based Staff</u></p> <p><u>Project Manager/Director</u> – REDACTED, B.Eng., C.Eng., M.I.C.E. (Ossett Office) REDACTED is a Director of Nationwide Data Collection and would be the project manager responsible for all aspects of the day to day running of the project from start to finish. He has overseen the VEDS project many times previously always ensuring that the data has been provided on time, to budget and to (normally better) the accuracy levels as specified. REDACTED would be the first point of contact, would attend any meetings and more than likely hand over personally the hard drive at the end of the contract. It would be expected that REDACTED would spend between 1 and 2 hours each day (or more as needed) on the project. It is a project that does require a high level of expertise to ensure it is delivered on time to the very high accuracy levels specified.</p>

Back Up To Project Manager – REDACTED, (Warwick Office) REDACTED is the Managing Director of Nationwide Data Collection and is more than suitable experienced to run this project. He would be available to step in if necessary to manage the project, which is not expected, but demonstrates our overall 'Strength in Depth'.

Camera Services Manager – REDACTED, (Ossett Office) REDACTED would be responsible for design the survey schedule and then to oversee and organise all aspects of the camera field work. REDACTED worked on the 2017 VEDS project in a similar role and is currently manages the camera technicians in Ossett. He is also responsible for the design and building of the cameras and systems that we use for our ANPR surveys. For the first 10 weeks, until the end of the fieldwork phase (June 30<sup>th</sup> 2019) he would in effect be fully employed on this project.

Back Up To Camera Services Manager – REDACTED, (Ossett Office) REDACTED would be undertaking the site surveys in the North of England, however if the need arose he would be able to cover the Camera Services Manager role. REDACTED has been deeply involved in the design and build of the ANPR camera systems and has conducted numerous ANPR projects. During May / June 2019 REDACTED would be fully employed on this project.

Regional Office Managers – Nationwide Data Collection would involve all the regional offices, each who have a very experienced manager in charge and all who have helped with the conduct of the VEDS Project in 2015 and 2019. They would ensure that the resources required to cover the sites in their areas were made available. These are :-

REDACTED – Scotland Office

REDACTED – London Office

REDACTED – Midlands and Wales Office

REDACTED – Northern Ireland and Ireland Offices

Survey Monitoring Manager - REDACTED – REDACTED (Ossett Office) who has undertaken the VEDS Project on many occasions including 2015 and 2017 would be responsible for overseeing the monitoring data base and for running all the footage through the ANPR extraction software. He has over 15 years relevant experience. He would then set-up the files to pass onto the camera analysis supervisors to go through the files checking the vehicle number plates are correct. REDACTED would in effect be full time on this project from May until mid- August 2019.

Back-Up To Survey Monitoring – REDACTED (Ossett Office) who is a graduate with over 6 years' experience who worked on the 2015 and 2017 VEDS Project would

be able to step in if required to be the Survey Monitoring Manager.

**REDACTED** / **REDACTED** – (Ossett Office) Camera Analyst Supervisors – We have two members of staff who again have both worked on the 2015 and 2017 VEDS Project. They would oversee the data analysts who will be checking each and every one of the vehicle number plates. They would have two separate teams and would be responsible for undertaking all training and checks on the work output by the data analysts. They would also update the monitoring data base so that we knew exactly where we were through the project. That last point is extremely important as the project has strict deadlines to achieve.

Office Camera Analyst Staff (Ossett Office) - We have 20 individuals who undertake our camera footage analysis on a day to day basis. They would be further trained and would undertake the vehicle number plate checking. Some 80 % of the staff have previously worked on the 2017 VEDS Project and from the output it shows that we have an excellent team able to provide the accuracy necessary to undertake this project.

Site Based Camera Technician Staff – We have 15 different full-time individuals that are available to carry out the site camera surveys. They would be allocated geographical areas with exact locations, date, time where the cameras need to be installed. Each technician is fully equipped with a highly visible van (To Chapter 8 Regulations) containing all the appropriate camera equipment. All the technicians are fully trained, but would also undergo additional training to ensure that they were fully able to carry out the work as specified. The staff are as follows :-

**REDACTED** (Ossett Office) – Has undertaken VEDS Projects during 2015, 2017 and has extensive experience conducting ANPR surveys.

**REDACTED** (Ossett Office) – Has conducted numerous ANPR surveys .

**REDACTED** (Ossett Office) - Has conducted numerous ANPR surveys.

**REDACTED** (Ossett Office) – Has conducted numerous ANPR surveys and was involved in the 2017 VEDS projects.

**REDACTED** (Warwick Office) - Has conducted numerous ANPR surveys and was involved in the 2017 VEDS projects.

**REDACTED** (Warwick Office) – has undertaken the VEDS project over very many years and looks after a number of locations in the Midlands – he would undertake the same sites.

		<p><b>REDACTED</b> (Warwick Office) - Has conducted numerous ANPR surveys and was involved in the 2017 VEDS projects.</p> <p><b>REDACTED</b> (London Office) – He has conducted these surveys over many years and would again carry out the sites near to London.</p> <p><b>REDACTED</b> (London Office) - He has conducted these surveys over many years and would again carry out the sites near to London.</p> <p><b>REDACTED</b> (Ossett Office) - He has conducted these surveys over many years and would again carry out the sites near to South Wales area.</p> <p><b>REDACTED</b> (Ireland Office) – Phil has conducted the majority of the VEDS projects in Ireland over many years. He would again undertake these surveys.</p> <p><b>REDACTED</b> (Scotland Office) - has conducted the majority of the VEDS projects in Scotland over many years. He would again undertake these surveys.</p> <p><b>REDACTED</b> (Scotland Office) – has carried out these surveys over a number of years going back to 2009. He now lives in the North of Scotland and would cover the sites in that large area.</p>
5.4	Please provide a risk register outlining what you see as the main risks to delivery of the project, and the actions you will take to mitigate them.	 <p>Response to Q54 v2.docx</p>
5.5	Please provide evidence showing how you will ensure the security of the personal data (vehicle images with time and location details) collected and processed on your systems. This includes the physical and digital security of the data at every stage of the project from collection to transmission to DfT, staff vetting procedures, deletion of the data and subsequent cleaning / disposal of hardware / devices used to store the data.	<p><b>Response to Questionnaire 5.5</b></p> <p><u>General</u></p> <p>Nationwide Data Collection are responsible for carrying out numerous Transport Projects on behalf of both Private and Public clients. Some of these are extremely sensitive in nature and the security of data is always of extreme importance. Therefore, Nationwide Data Collection are very security conscious through all stages of each project from site data collection to data stored on our computer systems. We confirm that we will fully comply with the measures set out in the ITT. This section describes the systems in place to minimise any possible loss of data, covering the site data collection,</p>

subsequent processing of the data in the Ossett office and then the data transfer to the DfT.

#### Site Security

Recording of the registration plates onto video camera files using commercial equipment is secured in a metal box which is individually locked and then padlocked with high tensile steel chains to an appropriate piece of fixed street furniture. We would not leave any completed camera footage in the box. All our site equipment fully labelled with details of the company, offices and contact telephone numbers. Camera files are recorded and immediately stored in rear of vehicles within a locked cabinet. All vans have a series of deadlocks which can only be opened by the correct key. They are all appropriately alarmed. At the end of the survey day the camera footage would be physically brought into the office directly by our camera technicians or one of our supervisors and not sent in the post.

#### Physical Office Security

The office environment is very secure. The office that the original camera footage is processed is itself is situated in a secure area in Ossett, that overnight is locked to vehicles with only staff allowed to visit individual offices and premises. The office is also individually alarmed with entry key code and is securely locked with 5-lever insurance approved locks. Keys and entry codes are restricted to senior staff only. Only designated visitors are allowed to come into the office and only then when accompanied by a senior member of staff.

NDC is registered under the data protection act and we therefore are legally bound to take security of our information extremely seriously. Our registration number with the Information Commissioner's office is Z1633744.

#### Computer Security

The data will be processed in our Ossett office where it will be held and accessed on our own office based Information and Communication Technology (ICT) that is internal to the office. The full technical security measures are:-

Netgear Pro-safe Enterprise Firewall / Netgear Layer 2 Switch with VLAN / Wireless System protected by WPA-PSK2 128Bit Key / Server 2012 R2, Using standard Group policy Lockdowns for desktops / Server 2012 NTFS security using Active directory accounts on all files / Exchange server 2013 With SSL based webmail and email system / Eset exchange mail security / Eset Fileserver security / Eset Client security on all workstations / Windows 7 Pro or above deployed to all connected PC's With Update services installed.

In addition to the above security measures the verification and checking of the vehicle registration data would be undertaken on a dedicated server in the office that does not allow any of the computer systems that the operators use to send or receive electronic mail. Their machines would not be enabled to connect to the internet and therefore data could not be sent out by the staff employed to carry out the checking process.

#### Staff Awareness of Security Arrangements

All staff will be made aware of the security arrangements and exactly what was expected of them as individuals. The camera technician would have included within their instructions how they should store and look after the recorded camera footage whilst on site. In the office the instruction manual would have a specific section to cover the arrangements.

#### Data Transfer to DfT

The final sets of data comprising the vehicle registration plates together with the associated vehicle images will at the end of the project be transferred onto removable hard disk. This is a secure disk requiring special passwords to open (that will be provided to DfT in a separate document). It would then be transported by a senior member of staff by hand directly to the DfT offices in London.

## Part 2: Contract Terms



**Contract Terms v6.0**

See also the MS Word Doc. Version provided separately

## ANNEX C – PRICE BREAKDOWN

**REDACTED**