



Mini Competition

**Mini Competition against an existing Framework Agreement (MC)
on behalf of **Innovate UK****

**Subject UK SBS Chassis Dynamometer and PEMS Testing for the
Low Emission Freight and Logistics Trial**

Sourcing reference number **PS17265**

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Section 1 – About UK Shared Business Services

Putting the business into shared services

UK Shared Business Services Ltd (UK SBS) brings a commercial attitude to the public sector; helping our customers improve efficiency, generate savings and modernise.

It is our vision to become the leading provider for our customers of shared business services in the UK public sector, continuously reducing cost and improving quality of business services for Government and the public sector.

Our broad range of expert services is shared by our customers. This allows our customers the freedom to focus resources on core activities; innovating and transforming their own organisations.

Core services include Procurement, Finance, Grants Admissions, Human Resources, Payroll, ISS, and Property Asset Management all underpinned by our Service Delivery and Contact Centre teams.

UK SBS is a people rather than task focused business. It's what makes us different to the traditional transactional shared services centre. What is more, being a not-for-profit organisation owned by its customers, UK SBS' goals are aligned with the public sector and delivering best value for the UK taxpayer.

UK Shared Business Services Ltd changed its name from RCUK Shared Services Centre Ltd in March 2013.

Our Customers

Growing from a foundation of supporting the Research Councils, 2012/13 saw Business Innovation and Skills (BEIS) transition their procurement to UK SBS and Crown Commercial Service (CCS – previously Government Procurement Service) agree a Memorandum of Understanding with UK SBS to deliver two major procurement categories (construction and research) across Government.

UK SBS currently manages £700m expenditure for its Customers.

Our Customers who have access to our services and Contracts are detailed [here](#).

Section 2 – About Our Customer

Innovate UK

The Innovate UK is the UK's innovation agency – driving innovation to boost economic growth. It works with people, companies and partner organisations to find and drive the science and technology innovations that will grow the UK economy

Innovate UK is an organisation of around 300 staff, drawn mainly from business. It works across the UK, with a head office in Swindon.

With a strong business focus, Innovate UK drives growth by working with companies to de-risk, enable and support innovation. To do this, they work to:

- Determine which science and technology developments will drive future economic growth
- Meet UK innovators with great ideas in the fields they're focused on
- Fund the strongest opportunities
- Connect innovators with the right partners they need to succeed
- Help its innovators launch, build and grown successful businesses

Since 2007 Innovate UK has committed over £1.8 billion to innovation, matched by a similar amount in partner and business funding. They have helped more than 7,600 organisations with projects estimated to add more than £11.5 billion to the UK economy and create 55,000 extra new jobs

Section 3 - Working with Innovate UK.

In this section you will find details of your Procurement contact point and the timescales relating to this opportunity.

Section 3 – Contact details		
3.1	Customer Name and address	Innovate UK, Polaris House, North Star Avenue, Swindon, SN2 1UE
3.2	Buyer name	Kevin Griffiths
3.3	Buyer contact details	professionalservices@uksbs.co.uk
3.4	Estimated value of the Opportunity	£400,000 - £800,000 excluding VAT – depending on total testing required.
3.5	Process for the submission of clarifications and Bids	<p>All correspondence shall be submitted within the Emptoris e-sourcing tool. Guidance Notes to support the use of Emptoris is available here.</p> <p>Please note submission of a Bid to any email address including the Buyer <u>will</u> result in the Bid <u>not</u> being considered.</p>

Section 3 - Timescales		
3.6	Date of Issue of Mini Competition to all Bidders	14/12/2017
3.7	Latest date/time Mini Competition clarification questions should be received through Emptoris messaging system	20/12/2017 11.00
3.8	Latest date/time Mini Competition clarification answers should be sent to all potential Bidders by the Buyer through Emptoris	22/12/2017 11.00
3.9	Latest date/time Mini Competition Bid shall be submitted through Emptoris	08/01/2018 14.00
3.10	Date/time Bidders should be available if face to face clarifications are required	N/A
3.11	Anticipated rejection of unsuccessful Bids date	19/01/2018
3.12	Anticipated Award Date	19/01/2018

3.13	Anticipated Call Off Contract Start Date	23/01/2018 Kick off meeting to be held 23 or 24 January in Central London (either BEIS or DfT)
3.14	Anticipated Call Off Contract End Date	01/11/2019
3.15	Bid Validity Period	60 Working Days
3.16	Framework and Lot the procurement should be based on	CCS RM1089 (Traffic Management Technology 2) – Lot 8

Section 4 – Specification

Introduction

The Office for Low Emission Vehicles (OLEV) and Innovate UK are currently working together to run the Low Emission Freight and Logistics Trial. The winners of the competition, which will trial low emission technologies on commercial fleets around the UK, were announced on 11th January 2017. <https://www.gov.uk/government/news/low-emission-freight-and-logistics-trial-competition-winners-announced>

Innovate UK is the UK's innovation agency. We work with people, companies and partner organisations to find and drive the science and technology innovations that will grow the UK economy.

Since 2007 we have committed over £1.8 billion to innovation, matched by a similar amount in partner and business funding. We have helped more than 7,600 organisations with projects estimated to add more than £11.5 billion to the UK economy and create 55,000 extra new jobs.

OLEV is a team working across government to support the early market for ultra-low emission vehicles (ULEV). We are providing over £900 million to position the UK at the global forefront of ULEV development, manufacture and use. This will contribute to economic growth and will help reduce greenhouse gas emissions and air pollution on our roads.

OLEV is part of the Department for Transport and the Department for Business, Energy & Industrial Strategy.

LowCVP is a public Private partnership established by a cross UK Government collaboration in 2002, aiming to provide expert support and stakeholder input to accelerate the uptake of lower carbon fuels and vehicles. LowCVP is an independent company partly funded by the DfT and via its 200 members companies

You will be working closely with LowCVP throughout the project, prior experience of working with LowCVP is not necessary. Please do not contact LowCVP directly in completing this tender, any questions should go through the normal channels.

Aims

DfT, Innovate UK and the Office for Low Emission Vehicles requires chassis dynamometer and Portable Emissions Monitoring System (PEMS) testing (track based) to be undertaken on a variety of vehicles.

The majority of these vehicles will come from the Low Emission Freight and Logistics Trials, The winners were announced on 11th January 2017, with projects planned to start in April 2017. 19 projects have been funded, with 12 using vehicles around the UK from mid-2017 onwards which will be the focus of this contract.

This work will provide evidence in three areas, in comparison to an appropriate diesel equivalent.

- 1) The implications on air quality associated with each vehicle.
- 2) The total energy used and consumption by each vehicle.
- 3) Other green house gas emissions such as CO₂ N₂O and CH₄ for each vehicle.

The successful contractor (and any sub-contractors) will work with LowCVP throughout the project, LowCVP's time should not be included in this tender.

The main duties will involve

- 1) Working with the LowCVP to identify a test method for each of the vehicles.
- 2) Testing
 - a. Project managing the delivery and collection of the vehicle to the testing house(s).
 - b. Undertaking the appropriate tests (it is assumed this will be sub contracted to the testing house(s)).
- 3) Developing a technical report of the results of the testing. Providing all data for LowCVP to review and analyse where appropriate.
- 4) Incorporating LowCVP's 30 page executive summary into the technical report to produce the final report. This report would then be published.

The common UK commercial vehicle test cycles developed by the LowCVP will be used. Information on these can be found in Appendix A.

Innovate UK anticipates that up to 35 vehicles and 17 comparators will need to be tested and this will fall into 7 types of tests outlined in the below table within the Objectives.

For each vehicle type a suitable diesel comparator will also need to be tested, it may be that one diesel comparator test can be used for more than one of the alternative fuelled vehicles.

Objectives

Chassis dynamometer and Portable Emissions Measuring System (PEMS) testing Low Emission Freight and Logistics Trial

There is a requirement for robust and reliable data on the performance of the alternatively fuelled vehicles to be produced and reported back to innovate UK, OLEV and the DfT.

This requires that the majority of vehicle types which have been funded through the Low Emission Freight and Logistics Trials be tested on the LowCVP representative test cycle. Details of which can be found in Appendix A.

Additional vehicles outside of the Low Emission Freight and Logistics Trials may also be tested as part of the contract on the same price schedule.

This will consist of four distinct areas of work. Each of the 12 projects have a variety of technologies, some projects will only require one test, and others will require multiple tests of the different technology variants.

- 1) Developing the monitoring plan for each of the vehicles. For each of the 12 projects it is anticipated that this will involve the following activities, to be completed with advice from LowCVP:
 - a. Understanding the weight of the vehicle and selecting an appropriate test (with or without track based PEMS).
 - b. Understand if additional testing is required for that vehicle type. For e.g. tested with a higher load or tested at different temperatures.
 - c. Identifying a suitable comparator vehicle for each low emission vehicle and consolidating this across all projects so that the minimum comparator vehicles are tested.

d. Understanding what (if any) testing the project will be conducting itself and ensuring the testing complements this where possible. (See note below). The majority of this work is likely to be desk based with 2-3 meetings with LowCVP and Innovate UK.

- 2) Undertaking the testing for each of the vehicles. This will utilise the LowCVP test cycles, details of which can be found in Appendix A. Working with the operators to arrange for collection and delivery of the vehicle to the testing house. The cost of moving the vehicles is not part of this tender. Based on the types of vehicles which are being tested we anticipate the following being required.

Test 1	Sub 3.5 tonne vehicles on a chassis dynamometer to cover (as a minimum) PM, NOx, N20, Methane and energy consumption. (Test vehicles 3 / comparator 2)
Test 2	Sub 3.5 tonne vehicles on a chassis dynamometer to cover energy consumption only as the vehicles have no tailpipe (Test vehicles 5 / comparator 1)
Test 3	3.5 tonne – 22 tonne vehicles on a chassis dynamometer to cover (as a minimum) PM, NOx, N20, Methane and energy consumption. (Test vehicles 8 / comparator 5)
Test 4	3.5 tonne – 22 tonne vehicles on a chassis dynamometer to cover energy consumption only as the vehicles have no tailpipe (Test vehicles 3 / comparator 1)
Test 5	22 tonne -44 tonne vehicle on a chassis dynamometer, at a suitable weight, to cover (as a minimum) PM, NOx, N20, Methane and energy consumption. As well as PEMS testing at an appropriate weight to cover PM and NOx as a minimum. (Test vehicles 9 / comparator 5)
Test 6	RCV vehicle on a chassis dynamometer to cover (as a minimum) PM, NOx, N20, Methane and energy consumption. This cycle is under development, the contractor should assume the same costs as test 3. Innovate UK will honour any additional costs of the test cycle, if agreed before the cycle is undertaken and upon presentation of evidence of additional costs. (Test vehicles 4 / comparator 1)
Test 7	Vehicles for which PEMS testing is the only viable way to gather data. To cover PM and NOx as a minimum. (Test vehicles 3 / comparator 2)

The Vehicles in Test 5 are the most time critical and must be completed by the end of July 2018. The rest of the tests should be undertaken by 30 April 2019.

It is not expected that the contractor will attend many of the vehicle tests, if this is being outsourced to a third party testing house. It is expected that they attend enough tests to give confidence in the results.

- 3) Bringing the data from the testing together and compiling a technical report outlining how each vehicle compared against its comparator diesel vehicle. LowCVP will conduct a thorough review of this data to highlight any anomalies and ensure that the testing has produced robust results.
- 4) A Circa 30 page executive summary will be written by LowCVP, the cost of their time is not part of this tender. This executive summary will be published within the final report. This final report will consist of the executive summary and the technical report only. The final report will be in PDF only and branded within the winning bidders standard template with the following logos: Innovate UK, LowCVP, OLEV and DfT.

Note linked to point 1) d.

Of the 12 trials 6 are doing some kind of emissions testing themselves as part of the projects. Some of these are taking place on a Chassis dynamometer and so could replace the tests which are the subject of this tender completely. Other are taking place using PEMS technology and may be using facilities which are unable to replicate the LowCVP test cycle, so will need to be re tested.

In both cases Innovate UK would like the contractor to work with the projects to understand the following:

- 1) If they are able to modify their testing so it fits with the wider programme and uses the LowCVP test cycle
- 2) If a modified version of our monitoring could be appropriate to supplement the monitoring the programme is already undertaking.

This task would be supported by LowCVP who will advise on the current and proposed testing methodologies.

Background to the Requirement

We undertook similar activities in the Low Emission Freight and Logistics Trial Data Acquisition and Reporting tasks outlined above for the Low Carbon Truck Trial. A copy of the report for that competition can be found here:

<https://www.gov.uk/government/publications/low-carbon-truck-and-refuelling-infrastructure-demonstration-trial-final-report>

There is ongoing data gathering and monitoring work is being undertaken by TRL, the latest information on this is provided here: <http://left.trl.co.uk/>. The winning contractor is likely to have some interaction with TRL who are in constant communications with the projects.

This tender has been written explicitly as a standalone piece of work, separately to the work being undertaken by TRL.

Section 5 – Evaluation of Bids

The evaluation model below shall be used for this Mini Competition, which will be determined to two decimal places.

Where a question is 'for information only' it will not be scored.

To maintain a high degree of rigour in the evaluation of your bid, a process of moderation will be undertaken to ensure consistency by all evaluators.

After moderation the scores will be finalised by performing a calculation to identify (at question level) the mean average of all evaluators (Example – a question is scored by three evaluators and judged as scoring 5, 5 and 6. These scores will be added together and divided by the number of evaluators to produce the final score of 5.33 ($5+5+6 = 16 \div 3 = 5.33$))

Pass / fail criteria		
Questionnaire	Q No.	Question subject
Commercial	FOI1.1	Freedom of Information Exemptions
Commercial	AW1.1	Form of Bid
Commercial	AW1.3	Certificate of Bona Fide Bid
Quality	AW6.1	Compliance to the Specification
-	-	Invitation to Quote – received on time within e-sourcing tool

;

Scoring criteria			
<p>Evaluation Justification Statement In consideration of this particular requirement the Contracting Authority has decided to evaluate Potential Providers by adopting the weightings/scoring mechanism detailed within this Mini Competition. The Contracting Authority considers these weightings to be in line with existing best practice for a requirement of this type.</p>			
Questionnaire	Q No.	Question subject	Maximum Marks
Price	AW5.2	Price	50%
Quality	AW6.2	Vehicle Testing	25%
Quality	AW6.3	Project Management	15%
Quality	AW6.4	Reporting	10%

Evaluation of criteria

Non-Price elements

Each question will be judged on a score from 0 to 100, which shall be subjected to a multiplier to reflect the percentage of the evaluation criteria allocated to that question.

Where an evaluation criterion is worth 20% then the 0-100 score achieved will be multiplied by 20.

Example if a Bidder scores 60 from the available 100 points this will equate to 12% by using the following calculation: Score/Total Points available multiplied by 20 ($60/100 \times 20 = 12$)

Where an evaluation criterion is worth 10% then the 0-100 score achieved will be multiplied by 10.

Example if a Bidder scores 60 from the available 100 points this will equate to 6% by using the following calculation: Score/Total Points available multiplied by 10 ($60/100 \times 10 = 6$)

The same logic will be applied to groups of questions which equate to a single evaluation criterion.

The 0-100 score shall be based on (unless otherwise stated within the question):

0	The Question is not answered or the response is completely unacceptable.
10	Extremely poor response – they have completely missed the point of the question.
20	Very poor response and not wholly acceptable. Requires major revision to the response to make it acceptable. Only partially answers the requirement, with major deficiencies and little relevant detail proposed.
40	Poor response only partially satisfying the selection question requirements with deficiencies apparent. Some useful evidence provided but response falls well short of expectations. Low probability of being a capable supplier.
60	Response is acceptable but remains basic and could have been expanded upon. Response is sufficient but does not inspire.
80	Good response which describes their capabilities in detail which provides high levels of assurance consistent with a quality provider. The response includes a full description of techniques and measurements currently employed.
100	Response is exceptional and clearly demonstrates they are capable of meeting the requirement. No significant weaknesses noted. The response is compelling in its description of techniques and measurements currently employed, providing full assurance consistent with a quality provider.

All questions will be scored based on the above mechanism. Please be aware that the final score returned may be different as there will be multiple evaluators and their individual scores after a moderation process will be averaged (mean) to determine your final score.

Example

Evaluator 1 scored your bid as 60

Evaluator 2 scored your bid as 60

Evaluator 3 scored your bid as 50

Evaluator 4 scored your bid as 50

Your final score will $(60+60+50+50) \div 4 = 55$

Price elements will be judged on the following criteria.

The lowest price for a response which meets the pass criteria shall score 100. All other bids shall be scored on a pro rata basis in relation to the lowest price. The score is then subject to a multiplier to reflect the percentage value of the price criterion.

For example - Bid 1 £100,000 scores 100,

Bid 2 £120,000 differential of £20,000 or 20% remove 20% from price scores 80

Bid 3 £150,000 differential £50,000 remove 50% from price scores 50.

Bid 4 £175,000 differential £75,000 remove 75% from price scores 25.

Bid 5 £200,000 differential £100,000 remove 100% from price scores 0.

Bid 6 £300,000 differential £200,000 remove 100% from price scores 0.

Where the scoring criterion is worth 50% then the 0-100 score achieved will be multiplied by 50

In the example if a supplier scores 80 from the available 100 points this will equate to 40% by using the following calculation: Score/Total Points multiplied by 50 $(80/100 \times 50 = 40)$

The lowest score possible is 0 even if the price submitted is more than 100% greater than the lowest price.

Section 6 – Evaluation questionnaire

Bidders should note that the evaluation questionnaire is located within the **e-sourcing questionnaire**.

Guidance on completion of the questionnaire is available
at <http://www.ukpbs.co.uk/services/procure/Pages/supplier.aspx>

PLEASE NOTE THE QUESTIONS ARE NOT NUMBERED SEQUENTIALLY

Section 7 – General Information

What makes a good bid – some simple do's 😊

DO:

- 7.1 Do comply with Procurement document instructions. Failure to do so may lead to disqualification.
- 7.2 Do provide the Bid on time, and in the required format. Remember that the date/time given for a response is the last date that it can be accepted; we are legally bound to disqualify late submissions.
- 7.3 Do ensure you have read all the training materials to utilise e-sourcing tool prior to responding to this Bid. If you send your Bid by email or post it will be rejected.
- 7.4 Do use Microsoft Word, PowerPoint Excel 97-03 or compatible formats, or PDF unless agreed in writing by the Buyer. If you use another file format without our written permission we may reject your Bid.
- 7.5 Do ensure you utilise the Emptoris messaging system to raise any clarifications to our Mini Competition. You should note that typically we will release the answer to the question to all bidders and where we suspect the question contains confidential information we may modify the content of the question to protect the anonymity of the Bidder or their proposed solution
- 7.6 Do answer the question, it is not enough simply to cross-reference to a 'policy', web page or another part of your Bid, the evaluation team have limited time to assess bids and if they can't find the answer, they can't score it.
- 7.7 Do consider who your customer is and what they want – a generic answer does not necessarily meet every customer's needs.
- 7.8 Do reference your documents correctly, specifically where supporting documentation is requested e.g. referencing the question/s they apply to.
- 7.9 Do provide clear and concise contact details; telephone numbers, e-mails and fax details.
- 7.10 Do complete all questions in the questionnaire or we may reject your Bid.
- 7.11 Do check and recheck your Bid before dispatch.

What makes a good bid – some simple do not's ☹

DO NOT

- 7.12 Do not cut and paste from a previous document and forget to change the previous details such as the previous buyer's name.
- 7.13 Do not attach 'glossy' brochures that have not been requested, they will not be read unless we have asked for them. Only send what has been requested and only send supplementary information if we have offered the opportunity so to do.
- 7.14 Do not share the Procurement documents, they are confidential and should not be shared with anyone without the Buyers written permission.
- 7.15 Do not seek to influence the procurement process by requesting meetings or contacting UK SBS or the Customer to discuss your Bid. If your Bid requires clarification the Buyer will contact you.
- 7.16 Do not contact any UK SBS staff or Customer staff without the Buyers written permission or we may reject your Bid.
- 7.17 Do not collude to fix or adjust the price or withdraw your Bid with another Party as we will reject your Bid.
- 7.18 Do not offer UK SBS or Customer staff any inducement or we will reject your Bid.
- 7.19 Do not seek changes to the Bid after responses have been submitted and the deadline for Bids to be submitted has passed.
- 7.20 Do not cross reference answers to external websites or other parts of your Bid, the cross references and website links will not be considered.
- 7.21 Do not exceed word counts, the additional words will not be considered.
- 7.22 Do not make your Bid conditional on acceptance of your own Terms of Contract, as your Bid will be rejected.

Some additional guidance notes

- 7.23 All enquiries with respect to access to the e-sourcing tool and problems with functionality within the tool may be submitted to Crown Commercial Service (CCS – previously Government Procurement Service), Telephone 0345 010 3503.
- 7.24 Bidders will be specifically advised where attachments are permissible to support a question response within the e-sourcing tool. Where they are not permissible any attachments submitted will not be considered.
- 7.25 Question numbering is not sequential and all questions which require submission are included in the Section 6 Evaluation Questionnaire.
- 7.26 Any Contract offered may not guarantee any volume of work or any exclusivity of supply.
- 7.27 We do not guarantee to award any Contract as a result of this procurement
- 7.28 All documents issued or received in relation to this procurement shall be the property of the Contracting Authority.
- 7.29 We can amend any part of the procurement documents at any time prior to the latest date / time Bids shall be submitted through Emptoris.
- 7.30 If you are a Consortium you must provide details of the Consortiums structure.
- 7.31 Bidders will be expected to comply with the Freedom of Information Act 2000 or your Bid will be rejected.
- 7.32 Bidders should note the Government's transparency agenda requires your Bid and any Contract entered into to be published on a designated, publicly searchable web site. By submitting a response to this Mini Competition Bidders are agreeing that their Bid and Contract may be made public
- 7.33 Your bid will be valid for 60 days or your Bid will be rejected.
- 7.34 Bidders may only amend the Special terms if you can demonstrate there is a legal or statutory reason why you cannot accept them. If you request changes to the Contract and the Contracting Authority fail to accept your legal or statutory reason is reasonably justified we may reject your Bid.
- 7.35 We will let you know the outcome of your Bid evaluation and where requested will provide a written debrief of the relative strengths and weaknesses of your Bid.
- 7.36 If you fail mandatory pass / fail criteria we will reject your Bid.
- 7.37 Bidders are required to use IE8, IE9, Chrome or Firefox in order to access the functionality of the Emptoris e-sourcing tool.

- 7.38 Bidders should note that if they are successful with their proposal the Contracting Authority reserves the right to ask additional compliancy checks prior to the award of any Call Off Contract. In the event of a Bidder failing to meet one of the compliancy checks the Contracting Authority may decline to proceed with the award of the Call Off Contract to the successful Bidder.
- 7.39 All timescales are set using a 24 hour clock and are based on British Summer Time or Greenwich Mean Time, depending on which applies at the point when Date and Time Bids shall be submitted through Emptoris
- 7.40 All Central Government Departments and their Executive Agencies and Non Departmental Public Bodies are subject to control and reporting within Government. In particular, they report to the Cabinet Office and HM Treasury for all expenditure. Further, the Cabinet Office has a cross-Government role delivering overall Government policy on public procurement - including ensuring value for money and related aspects of good procurement practice.

For these purposes, the Contracting Authority may disclose within Government any of the Bidders documentation/information (including any that the Bidder considers to be confidential and/or commercially sensitive such as specific bid information) submitted by the Bidder to the Contracting Authority during this Procurement. The information will not be disclosed outside Government. Bidders taking part in this Mini Competition consent to these terms as part of the competition process.

- 7.41 From 2nd April 2014 the Government is introducing its new Government Security Classifications (GSC) classification scheme to replace the current Government Protective Marking System (GPMS). A key aspect of this is the reduction in the number of security classifications used. All Bidders are encouraged to make themselves aware of the changes and identify any potential impacts in their Bid, as the protective marking and applicable protection of any material passed to, or generated by, you during the procurement process or pursuant to any Contract awarded to you as a result of this tender process will be subject to the new GSC from 2nd April 2014. The link below to the Gov.uk website provides information on the new GSC:

<https://www.gov.uk/government/publications/government-security-classifications>

The Contracting Authority reserves the right to amend any security related term or condition of the draft contract accompanying this Mini Competition to reflect any changes introduced by the GSC. In particular where this Mini Competition is accompanied by any instructions on safeguarding classified information (e.g. a Security Aspects Letter) as a result of any changes stemming from the new GSC, whether in respect of the applicable protective marking scheme, specific protective markings given, the aspects to which any protective marking applies or otherwise. This may relate to the instructions on safeguarding classified information (e.g. a Security Aspects Letter) as they apply to the procurement as they apply to the procurement process and/or any contracts awarded to you as a result of the procurement process.

USEFUL INFORMATION LINKS

- [Emptoris Training Guide](#)
- [Emptoris e-sourcing tool](#)
- [Contracts Finder](#)
- [Tenders Electronic Daily](#)
- [Equalities Act introduction](#)
- [Bribery Act introduction](#)
- [Freedom of information Act](#)

Appendix A

Summary of LowCVP HGV Test Procedures & Cycles:

This document presents a brief outline of the main aspects of the LowCVP test protocols for HGVs. Specific test conditions and requirements will inevitably vary slightly according to the nature of the technology being evaluated. As part of the project LowCVP will provide advice and guidance on the exact testing process.

For chassis dynamometer testing it would be expected that the same test would be run on a baseline vehicle and on the alternatively fuelled vehicle. It would be expected that the test cycle would be run three times for both the baseline and the alternatively fuelled vehicle.

For PEMS testing it would be expected that the test cycles would be run four times for both the baseline and the alternatively fuelled vehicles.

For the purposes of the main document when the word 'test' is used, this is referring to 3 runs on the dynamometer and 4 runs using PEMS.

A version of the test cycles are displayed below to provide an outline of what will be expected.

Required Cycle Characteristics

Parameter	Long Haul	Regional Delivery	Urban Delivery	City Centre Delivery
Distance (km)	> 20	> 7.5	> 7.5	> 4.0
Average speed (km/h)	> 65	50 – 60	30 – 45	15 – 25
Stops/km	< 0.2	0.2 – 0.7	0.8 – 1.2	> 1.2
Aerodynamic speed (km/h)	75 – 85	65 – 75	50 – 60	20 – 30
Characteristic acceleration (m/s^2)	0.07 – 0.09	0.09 – 0.13	0.12 – 0.25	0.12 – 0.25
Kinetic Intensity (per km)	0.14 – 0.18	0.20 – 0.36	0.70 – 1.10	2.50 – 3.10

Definitions:

Distance: Total travelled from start to end of test run.

Average speed: Total distance / time taken to complete cycle (excluding time spent stationary at start and end of test run).

Stops/km: Number of periods of at least 1 second spent stationary during the cycle (including at start and end) / Distance.

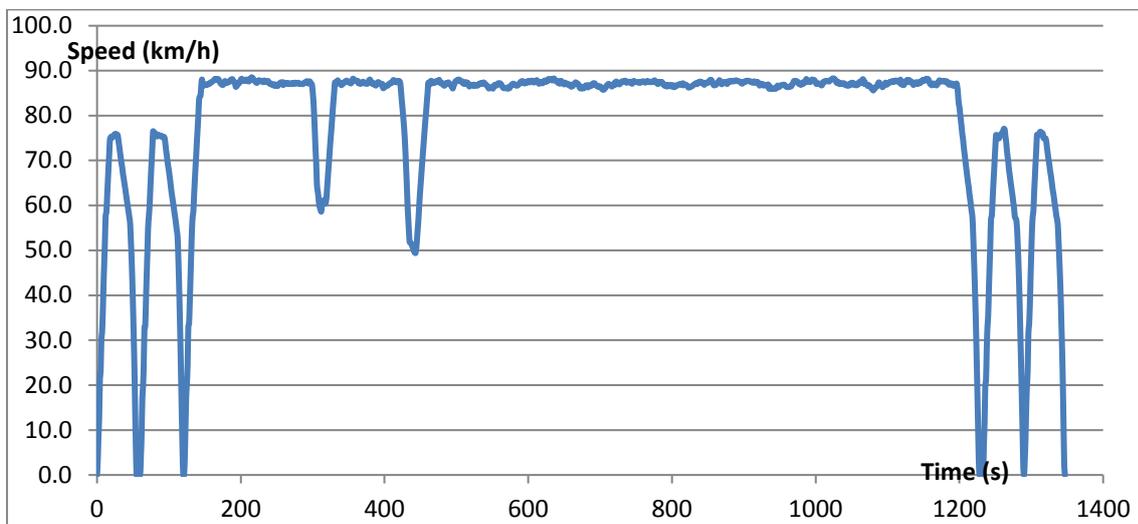
Aerodynamic speed: The square root of the ratio of the overall average cubic speed to the average speed.

Characteristic acceleration: The positive part of the specific kinetic and potential energy per distance associated with moving a vehicle over the duty cycle.

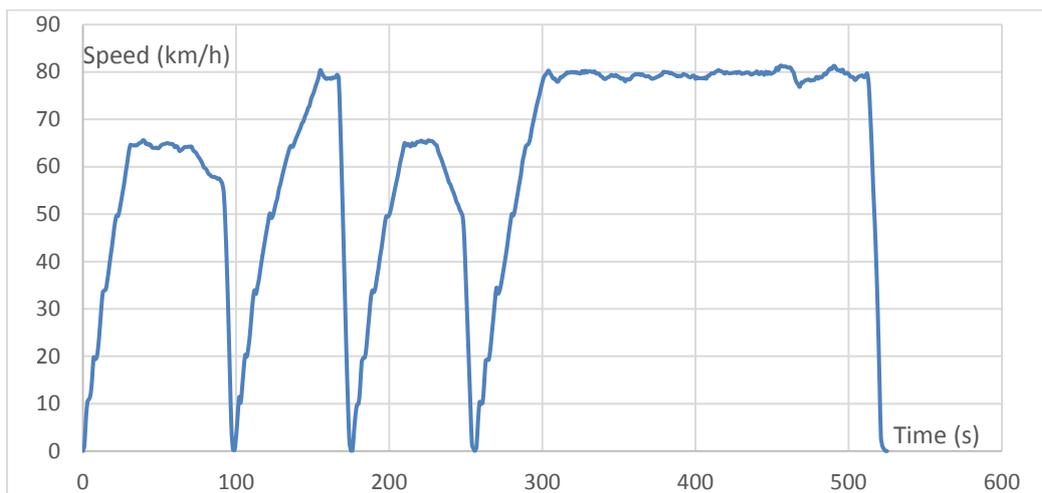
Kinetic Intensity: The ratio of the Characteristic acceleration to the square of the Aerodynamic speed.

Examples of each cycle are provided below; note that these graphs show only the speed vs time traces, not any elevation changes that would also need to be measured to accurately calculate the cycle characteristics.

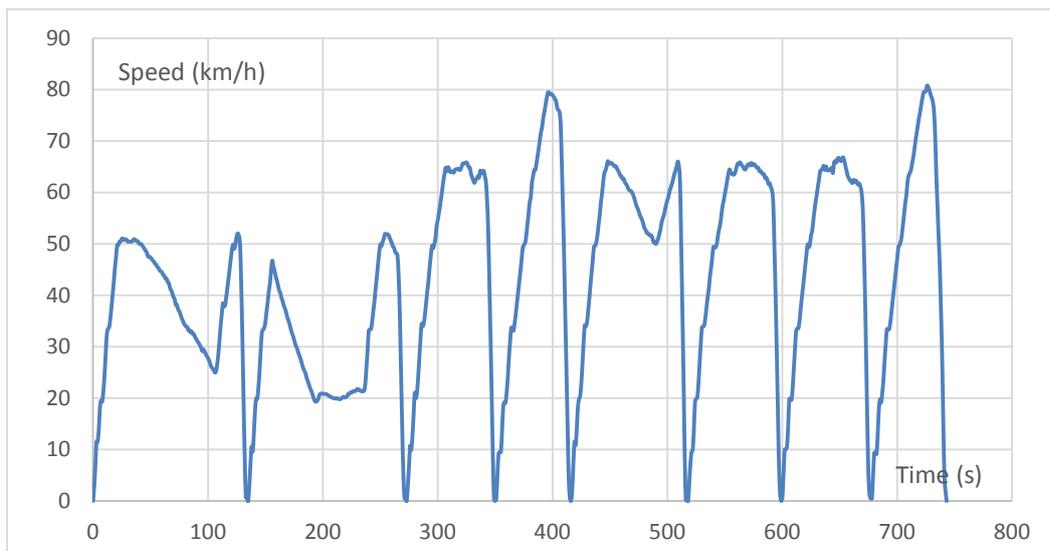
Example of Long Haul Cycle:



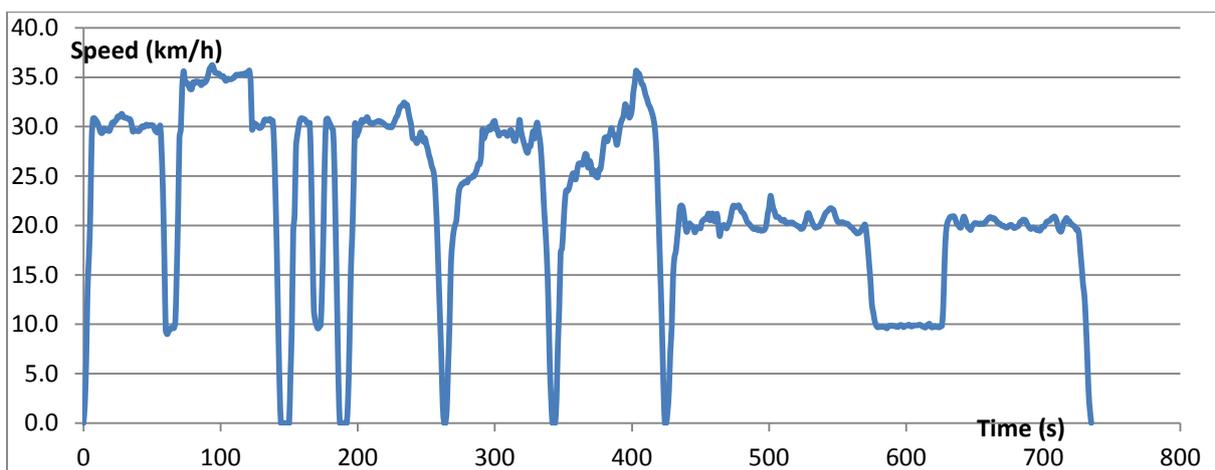
Example of Regional Delivery Cycle:



Example of Urban Delivery Cycle



Example of City-Centre Delivery Cycle:



Combined dynamometer test cycle

