DPS SCHEDULE 4: LETTER OF APPOINTMENT AND CONTRACT TERMS

Part 1: Letter of Appointment

Department for Transport
Great Minster House
33 Horseferry Rd
Westminster
London
SW1P 4DR

Dear [redacted],

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 16/02/18.

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 following award by the Customer.
From:	Department for Transport ("Customer")
To:	Ove Arup & Partners Limited ("Supplier")

Effective Date:	10/06/19
Expiry Date:	End date of Initial Period: 09/06/20 End date of Maximum Extension Period: 09/12/20 Minimum written notice to Supplier in respect of extension: 4 weeks

Services required:	Set out in Section 2, Part B (Specification) of the DPS Agreement and refined by: · the Customer's Project Specification attached at Annex A and the Supplier's Proposal attached at Annex B.

Key Individuals:	**Customer** [redacted] - Assistant Economist [redacted] Principal Research Officer

	Supplier [redacted] - Project Director (Arup) [redacted] - Project Manager (Arup) [redacted] - ITS Project Director & Researcher (ITS Leeds) [redacted] (ITS Leeds) [redacted] – Researcher (ITS Leeds) [redacted] – Researcher (ITS Leeds) [redacted] – Researcher (ITS Leeds) [redacted] - Researcher (ITS Leeds)
[Guarantor(s)]	N/A

Contract Charges (including any applicable discount(s), but excluding VAT):

Capped Costs

Activity	Key Task	Role	Name	Discounted Daily Rate	Anticipated Days	Cost	Total Activity
STAGE 1: Initial Development & Planning	Prioritisation of interventions to include within scope	Researcher (task lead)	[redacted]	778	4	£ 3,112.00	
	Prioritisation of interventions to include within scope	Researcher		887	2	£ 1,774.00	
	Prioritisation of interventions to include within scope	Researcher		778	2	£ 1,556.00	
	Analysis of Secondary Data	Researcher (task lead)		887	3	£ 2,661.00	£ 14,549.00
	Analysis of Secondary Data	Researcher		778	7	£ 5,446.00	
						£ -	
						£ -	
STAGE 1: Fieldwork/Research Delivery	Methodology for benefits estimation	Researcher (task lead)		778	8	£ 6,224.00	
	Methodology for benefits estimation	Researcher		778	4	£ 3,112.00	
	Methodology for benefits estimation	Researcher		1275	1	£ 1,275.00	
						£ -	£ 10,611.00
						£ -	
						£ -	
						£ -	
						£ -	
STAGE 1: Data Analysis						£ -	
						£ -	
						£ -	
						£ -	
						£ -	
	Outputs write up	Researcher (task lead)		778	2	£ 1,556.00	
	Review and meetings	Project Director		1275	1	£ 1,275.00	
STAGE 1: Draft and Produce Final Report(s)/Outputs	Review and meetings	Project Manager		887	2	£ 1,774.00	
						£ -	£ 4,605.00
						£ -	
						£ -	
						£ -	
	Project Management	Project Manager	[redacted]	887	1	£ 887.00	
	ITS plan and budget coordination	Researcher (task lead)		778	1	£ 778.00	
STAGE 1: Account Management						£ -	
						£ -	£ 1,665.00
						£ -	
						£ -	
						£ -	
						£ -	
STAGE 1: Other (please provide a full breakdown with descriptors)						£ -	
						£ -	
						£ -	
						£ -	£ -
						£ -	
						£ -	
						£ -	
	Valuation: strategy and coordination	Researcher (task lead)	[redacted]	778	1	£ 778.00	
	Valuation: surveys scope and sampling	Researcher (task lead)		887	6	£ 5,322.00	
STAGE 2: Initial Development & Planning	Valuation: surveys scope and sampling	Researcher		887	3	£ 2,661.00	
						£ -	£ 8,761.00
						£ -	
						£ -	
						£ -	
						£ -	
	Demand Forecasting Methodology	Researcher (task lead)		1275	6	£ 7,650.00	
	Valuation: survey designs	Researcher (task lead)		778	7	£ 5,446.00	
	Valuation: survey designs	Researcher		778	6	£ 4,668.00	
STAGE 2: Fieldwork/Research Delivery	Valuation: surveys data collection	Researcher (task lead)		887	4	£ 3,548.00	£ 23,973.00
	Valuation: surveys data collection	Researcher		887	3	£ 2,661.00	
						£ -	
						£ -	
	Valuation: surveys data analysis	Researcher (task lead)		778	5	£ 3,890.00	
	Valuation: surveys data analysis	Researcher		778	3	£ 2,334.00	
	Benefits calculation: appraisal values	Researcher (task lead)		778	3	£ 2,334.00	
STAGE 2: Data Analysis	Benefits calculation: appraisal values	Researcher		778	1	£ 778.00	£ 14,004.00
	Benefits calculation: implementation	Researcher (task lead)		778	5	£ 3,890.00	
	Benefits calculation: implementation	Researcher		778	1	£ 778.00	
						£ -	
	Outputs write up and presentation	Researcher (task lead)		778	4	£ 3,112.00	
	Outputs write up	Researcher		778	1	£ 778.00	
	Outputs write up and presentation	Researcher		1275	1	£ 1,275.00	
STAGE 2: Draft and Produce Final Report(s)/Outputs	Review and meetings	Project Director		1275	1.5	£ 1,912.50	£ 8,851.50
	Review and meetings	Project Manager		887	2	£ 1,774.00	
						£ -	
						£ -	
	Project Management and peer review coordination	Project Manager	[redacted]	887	2	£ 1,774.00	
	ITS plan and budget coordination	Coordinator		778	1	£ 778.00	
STAGE 2: Account Management						£ -	
						£ -	£ 2,552.00
						£ -	
						£ -	
	Survey costs (fee for survey participants and ITS PhD students helping with data collection)			15000	1	£ 15,000.00	
						£ -	
						£ -	
STAGE 2: Other (please provide a full breakdown with descriptors)						£ -	£ 15,000.00
						£ -	
						£ -	
						£ -	
					Total	£	104,572

The Capped cost for the Project will be £104,572.00 exc. VAT, as per the Supplier's submitted proposal.

	The Capped costs submitted will form part of the contract, and will also be used to benchmark costs for any similar ad-hoc requirements. Rates remain firm for the life of the contract and any subsequent extensions to it. **Payment** Payment can only be made following satisfactory delivery of pre-agreed certified products and deliverables. Before payment can be considered, each invoice must include a detailed elemental breakdown of work completed and the associated costs. The Supplier will be issued with an official Purchase Order Number. This replaces any existing payment arrangements the Supplier may have made.
Insurance Requirements	Please refer to Framework RM6018 Research Marketplace Dynamic Purchasing System terms and conditions.
Customer billing address for invoicing:	Invoices must quote the correct Purchase Order Number and should be submitted as directed in the Purchase Order to: Accounts Payable, DfT Shared Service Centre, 5 Sandringham Park, Swansea Vale, Swansea SA7 0EA. Or via email to SSa.invoice@sharedservicesarvato.co.uk

Alternative and/or additional provisions (including Schedule 6 (Additional clauses)):	N/A

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:
Signature:	Signature:
Date:	Date:

ANNEX A

Customer Project Specification

Issued on 16/04/2019, an extract of which can be seen below.

1. DEFINITIONS

1.1

Accronym	Definition
DfT	Department for Transport
TS	Transport Scotland
Transport User (personal benefit)	Monetary estimates of the benefits to existing and new passengers.
Transport Provider (commercial benefit)	Monetary estimates of the benefits on transport operators' revenues.
Wider economic/social benefits	Estimates of how interventions affect productivity, employment etc and reduce/or costs to local public services.

2. SCOPE OF REQUIREMENT

2.1 The research will estimate the benefit of improved accessibility from specific interventions for all passengers, both disabled and non-disabled. For instance, audio/visual announcements on buses/trains of the next stop will have benefit to both disabled and non-disabled passengers.

2.2 The research will estimate the commercial benefit for transport providers, for example from increased patronage, as a result of improved accessibility.

2.3 The research will estimate the wider economic and social benefits including of cross sector impacts (e.g. reduced health and social care costs) and broader economic impacts (e.g. increased participation to economic activities).

2.4 The work will cover England and Scotland only. Any issues relating to cross-border services (i.e. those crossing the borders between England and Wales) should be flagged up in the study's report and conclusions.

2.5 The focus of this research is on collective passenger transport (bus, train, tram, coach, air travel, maritime travel, and underground) including interchange between modes.

3. THE REQUIREMENT

Key research question: what are the transport user, transport provider, and wider economic/social benefits of specific interventions intended to make transport more accessible to disabled people?

3.1 The objective of the research is to develop a robust methodology to estimate the benefits of making our transport system more inclusive and accessible, specifically:

- Transport user (personal) benefits - experienced by passengers and potential passengers. They should include benefits to all passengers, not just passengers with impairments.

- Transport provider (commercial) benefits - increase in patronage and revenue for transport operators through accessibility improvements.

- Wider economic/social benefits - macroeconomic impacts of making transport more accessible, including gross value added, productivity, employment etc. Cross sector benefits such as reduced health and social care costs.

3.2 The research should provide outputs that are useful both within government and to commercial transport operators. The values to be used within government should be in line with the principles set out in the Green Book[1] and in the DfT's WebTAG, and aspire to be included within a future update to WebTAG guidance[2].

3.3 The research should cover the impacts of interventions on the entire population rather than just existing users. A suggested framework for the different types of impacts of interventions is below. All of these impacts fall within the transport user benefits category:

i. Impacts on existing disabled passengers

These are the most important impacts to capture and usually reflect the main rationale for the policy. Disabled passengers should experience a direct benefit due to improved journey quality and may also decide to travel more often.

ii. Impacts on existing non-disabled passengers

There are often large impacts from accessibility improvements on users outside of the specific target group. For instance, introducing step free access in stations benefits users with pushchairs and heavy luggage as well as wheelchair users. Passengers will find travelling easier and may decide to travel more often.

iii. Impacts on new passengers

Accessibility improvements may incentivise new passengers (both disabled and non-disabled passengers) to start travelling with the relevant mode(s) of transport. The new passengers will experience a direct benefit from the accessibility improvement, and will also generate new revenue from new passengers.

iv. Impacts on wider population who don't currently use the targeted mode.

The wider population may experience an option value from an accessibility improvement. It does not affect their travel currently, but they recognise it could make travel easier for them in the future.

They also could experience an altruistic benefit. They are willing to pay for an improvement that benefits others in society. For example, for an employer, an accessible transport network widens their pool of suitable candidates.

3.4 The research should seek to assess the impacts of accessibility improvements on passengers who face cognitive and mental impairments, as well as those who face physical or sensory impairments. The impacts of accessibility improvements on cognitive and mental

[1] The Green Book: appraisal and evaluation in central government. Available at https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

[2] Transport Analysis Guidance – WebTAG. Available at https://www.gov.uk/guidance/transport-analysis-guidance-webtag

impairments is under researched relative to the impacts on improvements on those with physical or sensory impairments.

3.5 This research should seek take into account the end-to-end journey. The majority of existing research has been mode specific and focused on infrastructure improvements. There has not been sufficient research of the effects of improvements to interchange between modes, to booking and planning a journey, and to the quality of staff assistance.

3.6 A suggested list of potential interventions to assess are laid out in Table 1 in Appendix A.

Work Required

3.7 This project will be broken down into two phases (a scoping stage and a research stage) separated by a contract option.

3.8 Phase 1: Scoping Stage: The researchers should develop a proposed robust methodology for estimating economic benefits from a list of interventions. They will also develop a list of prioritised interventions to be included within the research.

3.9 Phase 2: Research Stage: The researchers will carry out research in line with the methodology set out in the scoping stage on an agreed list of interventions and produce a publishable report summarising their findings.

Phase 1: Scoping Stage

3.10 There are two tasks to be completed within Phase 1 of the research:

i. Develop a list of interventions to be included within the scope of the research

ii. Develop a robust methodology for the research to be carried out within Phase 2

3.11 The list of interventions to be included within the scope of the research should be prioritised using a set of criteria. Suggested, but not exclusive set of criteria include:

i. Strategic rationale: To what extent does the intervention improve transport accessibility for disabled people? How valuable are the benefits to the disabled people?

ii. Feasibility: How feasible would it be to carry out research on this intervention? How likely is research into this topic to provide useful outputs?

iii. Wider benefits: How large are the benefits to commercial operators and wider society?

3.12 Although the research should estimate the benefits of interventions for all transport users, it will be important to prioritise interventions that make a material difference to transport accessibility for disabled people.

3.13 The interventions should look to include those listed in Table 1 in Appendix A. The Supplier shall prioritise within the initial list and is also encouraged to provide new, achievable and cost effective interventions to be included within the scope of the research. The Supplier shall suggest several list options for DfT's consideration, with supporting rationale.

3.14 The proposed methodology for the research should provide proposals for how this will robustly estimate the benefits outlined above.

3.15 The project will likely require primary research in order to provide new insights into the benefits of accessibility improvements, capturing visible and non-visible disabilities. In 2015

the department commissioned a literature review[3] of existing evidence, and it is unlikely that there have been significant developments in the literature since the review was carried out. The Supplier shall use any of the below methods in their proposal, with a supporting rationale:

- Willingness to pay surveys
- Passenger surveys (e.g. the National Transport Survey Panel)
- Household surveys
- Interviews/data collection from transport operators.
- Revealed preference

3.16 Other methods could also be appropriate if they are shown to be cost-effective and robust.

3.17 At the end of the stage the Supplier shall provide the following outputs:

- **A slide pack summarising the recommended list of interventions to take forward** into the second stage of the research and the proposed methodology, focusing on how the proposed methodology will lead to the desired outputs. (There is no requirement in terms of quantity of slides, but it should provide a comprehensive overview of the proposed interventions and methodology).
- **A presentation** of the slide pack to the steering group in DfT, by the appropriate team members. The steering group will be made up of DfT and Transport Scotland officials and relevant academics/external experts.
- **A report** outlining the rationale behind selecting the recommended list of interventions, the proposed methodology for the primary research and how the methodology will be to best approach to achieve the desired outcome. (There is no page limit specified for the report, but it should succinctly cover all the required deliverables).

Contract option

3.18 The decision on whether to continue or not with the contract past Phase 1 is entirely within the Department's discretion. A decision will be taken on whether to continue the contract at a steering group meeting following the delivery of the presentation to the Department.

3.19 The Supplier shall use the deliverables from Phase 1 to judge whether the information that will be gathered from Phase 2 of the research will be of sufficient quality to merit continuing with the project. As well as plans for carrying out primary research, the Supplier shall provide an assessment of the likelihood of successful information gathering, and the expected level of confidence in the results.

3.20 The outputs from Phase 1 of the research should be presented to the Department including the decision criteria used to make a recommendation on continuing with Phase 2, and the potential research approach.

3.21 As part of both Phases 1 and 2, the Department wishes to agree the final form/questions/formats used in interviews, and the tenderer should demonstrate how they intend to build this assurance into their project plans. This assurance can be done by email.

[3] The Impact of a Person's Impairment when Accessing Transport and the Social and Economic Losses as a Result of Restricted Access: Rapid Evidence Review – Final Report. Integrated Transport Planning Ltd and Plymouth University, for the Department for Transport, October 2015. Unpublished, available on request.is there

Phase 2: Research stage

3.22 The purpose of Phase 2 of the research is to:

i. Carry out primary research scoped in Phase 1 of the research

ii. Present evidence in a final report

3.23 The Customer intends to have an expert external peer reviewer look over the research and provide comments and recommendations. The peer reviewer will be contacted separately from the main contract, but this should be included within the project plan.

3.24 At the end of the stage the Supplier shall provide the following outputs:

- **Presentation to the Customer steering group** summarising progress in research and then final results.
- **A technical report** with supporting annexes
- A concise and readable **summary report**
- **All data, information and spreadsheets etc** collected and developed throughout the project.

3.25 The Technical note shall include:

i. A twenty plus page main report that is clearly written, covering the key aspects of the project (method, findings), with recommendations for further research.

ii. Technical appendices detailing the methodology for potential replication, research outputs/results and discussion of use in appraisal and post-implementation evaluation.

3.26 The Summary report shall be concise with the text readable to a lay audience, it willinclude:

i. One-page summary of key findings (potentially presented visually)

ii. Three to four-page executive summary of the research.

3.27 Both the summary and technical report must be available in accessible formats, for instance tagged PDF, MS Word or equivalent, and shall use “social model” language throughout.

3.28 At the end of Phase 2, a presentation will be made to the Department, detailing the findings of the research and must also discuss how robustly the research questions were answered and the limitations to the study.

4. KEY MILESTONES AND DELIVERABLES

4.1 An indicative timescale of 12 months is proposed for the completion of the project. This is allowing for up to 3 months for Phase 1 and up to 9 months for Phase 2.

4.2 Specific details of the research deliverables are outlined in ‘the requirement’ section. The below table lists these deliverables and provides indicative completion dates.

4.3 The Customer will hold an inception meeting with the Supplier to agree a final project scope, project plan and timeline with milestones.

Milestone/Deliverable	Description	Timeframe
1	Phase 1 slide pack	Within week 12 of Contract Award
2	Presentation of phase 1 slide pack	Within week 12 of Contract Award
3	Phase 1 report	Within week 52 of Contract Award
4	Phase 2 summary report	Within week 52 of Contract Award
5	Phase 2 Technical report	Within week 52 of Contract Award
6	All data, information and spreadsheets collected and developed	Within week 52 of Contract Award

5. MANAGEMENT INFORMATION/REPORTING

5.1 Throughout the Contract fortnightly progress meetings will be required between the Supplier and the Customer, plus other meetings as necessary. This could be face-to-face, teleconference or electronic platform, and will be agreed at inception, between the Supplier and the Customer.

6. CONTINUOUS IMPROVEMENT

6.1 Major changes to the way in which the research is being delivered must be brought to the Customer's attention and agreed prior to any changes being implemented.

7. SUSTAINABILITY

7.1 There are no sustainability considerations as part of this project. The Supplier shall follow its own sustainability policies.

8. QUALITY

8.1 No standard accreditations are required for this project. The Supplier's quality of project delivery will be measured in line with the Service Levels and Key Performance Indicators as stated at section 11.

9. STAFF AND CUSTOMER SERVICE

9.1 The Supplier shall provide a sufficient level of resource throughout the duration of the Contract in order to consistently deliver a quality service.

9.2 The Supplier's staff assigned to the Contract shall have the relevant qualifications and experience to deliver the Contract to the required standard, as outlined in the table below.

Essential skills	Desirable skills
Social research skills, including designing surveys, data collection and running interviews in accordance with relevant academic and professional best practice	Prior experience of working with the Department. However, this is not essential and experience within the public sector will be equally acceptable.

Experience of economic appraisal and developing evidence to be used in economic appraisal.	
Project management skills;	
Ability to produce data visualisations and professional research reports, aimed at a non-specialist audience;	
Experience of working effectively and sensitively with stakeholders	
Prior knowledge or experience of work of accessible travel improvements	

9.3 The Supplier shall ensure that staff understand the Customer's vision and objectives and will provide excellent customer service to the Customer throughout the duration of the Contract.

10. SERVICE LEVELS AND PERFORMANCE

10.1 The Customer will measure the quality of the Supplier's delivery by:

KPI/SLA	Service Area	KPI/SLA description	Target
1	Delivery timescales	The Supplier shall adhere to the agreed timescales/project plans unless otherwise agreed by the Customer.	100%
2	Service provision	The Supplier shall ensure that the services provided meet the requirements in section 3.	100%
3	Quality	The Supplier shall use suitable quality assurance processes throughout the contract as agreed with the Customer at the start of the contract.	100%
4	Reporting	The Supplier shall provide spend data and other reporting in a format agreed by the Customer.	Within 5 working days of request.
5	Meetings	The Supplier shall meet with the Customer within 5 working days of the request. Suitable materials and/or presentations shall be prepared for the meetings. Meeting notes shall be provided no later than 3 days after the meeting.	95%

10.2 The Supplier shall make every effort to stick to the dates submitted within their proposals. However, if unforeseen circumstances dictate a change in deliverable date, the Customer should be notified as soon as practicable, with a clear plan setting out the work going forward.

10.1 This project will be broken down into two phases. If the performance is not considered sufficient at the end of Phase 1, the project will not be taken forward into phase 2.

10.2 The decision on whether to continue or not with the contract past Phase 1 is entirely within the Department's discretion. A decision will be taken on whether to continue the contract at a steering group meeting following the delivery of the presentation to the Department.

10.1 In the event of poor performance through the failure to deliver the SLAS/KPIs to time and of appropriate quality, the Customer shall meet with the Supplier to understand the root causes of the issue.

10.2 Continued failure to meet the service level agreements, defined as twice within any rolling 3 month period, will trigger a performance review meeting and the drafting and implementation of an Improvement Plan. This Improvement Plan must be satisfactorily delivered within 30 days of the agreed plan. Where the Supplier fails to deliver an Improvement Plan to the required standard, the Authority/Customer reserves the right to terminate the services in line with Attachment 5 - Terms and Conditions of RM6018 Research Marketplace.

10.3 The Customer may, without prejudice to any other rights and remedies under this Contract, withhold or reduce payments in the event of unsatisfactory performance.

10.4 The Customer reserves the right to terminate the contract early if poor performance continues. The Supplier shall receive formal written warnings and would receive 3 months' notice if the Contract termination was to be initiated.

10.5 The Customer will monitor the work of the Supplier throughout the Project through regular contact between the Supplier and the Customer's day-to-day contact.

10.6 The Customer will manage poor performance by the Supplier as set out in section 10 and in line with the terms and conditions of the resultant Contract.

11. SECURITY AND CONFIDENTIALITY REQUIREMENTS

11.1 There are no specific security requirement in relation to the Supplier's staff.

11.2 Details of the results/deliverables of the contract should not be shared without the Department for Transport's agreement.

12. CONTRACT MANAGEMENT

12.1 This work will be completed by the Supplier's team. They will report to a DfT steering group. The steering group will contain the project manager, project sponsor and a number of Department and external experts. The Customer will expect regular contact via telephone and email during the project, aside from the formal meetings scheduled at the DfT London office.

12.2 The Supplier shall provide a project initiation document, project plan with timelines, risk register and risk management strategy. The Customer also require:

- A face-to-face project initiation meeting with the Supplier at the beginning of the project, with minutes/actions taken by the Supplier and sent by email for confirmation,
- Updates on progress over the phone with minutes/actions taken by the Supplier and sent by email for confirmation (regularity of these updates to be agreed at inception meeting),
- Ad hoc conversations with the Supplier's project manager or Customer nominated experts, as required.

12.3 Performance and progress will be monitored through regular communication between the Supplier and the Department's Contract Manager. It is expected that frequent progress

reports / meetings / teleconferences will be required to ensure the project stays on track to deliver to a challenging timescale. It is expected that there will be fortnightly teleconferences and formal steering group meetings after each of the milestones, in order to give the project board an opportunity to comment on the deliverables.

12.4 There should be a conversation between the project manager and the team two weeks in advance of each milestone, to ensure that there is enough time to respond to any issues as they arise, as well as meetings after each milestone, to ensure deliverables are to the satisfaction of the Department.

12.5 The Department will not reimburse additional travel and subsistence costs that have not been submitted within the bidding price.

13. LOCATION

13.1 The project team will be based externally, but the project board will be located in Great Minster House in London.

14. Appendix A

Table 1: potential list of specific interventions to improve transport accessibility

Journey Stage	Accessibility Standard	Summary
Journey Planning	Information on the accessibility of transport modes	Those who face impairments can find out if a mode of transport is accessible to them. The information should be accessible online, in hard copy and through a helpline.
Journey Planning	Information on the availability of assistance	Those who face impairments can find out if they will receive assistance at a given stage during their journey. The information is accessible online, in hard copy and through a helpline.
Journey Planning	Accessible Journey Planning Services	Journey planning services (e.g. Citymapper, Google Maps) can be used by people with a range of access needs (including cognitive and mental impairments).There are two key elements: (i) The journey planning services themselves are accessible, e.g. work with screen-reading software; and (ii) Journey planners provides all relevant information on accessibility of transport modes, and availability of assistance for end to end journey.
Journey Planning	Training on travel planning	Individual training to disabled people on how to plan and take journeys
Booking travel	Accessible Booking Websites	Booking websites and apps are accessible to people with a range of access needs (including cognitive and mental impairments.)

Booking travel	Booking Assistance	Assistance on transport mode can be booked in advance by phone via a dedicated helpline and online. Booked assistance can be further differentiated by the length of the notice period required to book assistance.
Booking travel	Single portal for booking assistance	One single accessible portal can be used to book assistance across operators and across modes
Built environment	Accessible crossings	There is tactile paving and rotating cones and dropped kerbs at crossings.
Built environment	Local area navigation systems	Phone application or Bluetooth devices that provides audible directions via earphones. Physical forms of navigation, e.g. tactile paving.
Built environment	Safe navigation of streets	The impact of street clutter, delineation between the road and the pavement, and pavement parking
Built environment	Accessible toilets, seating and 'safe places'	Ability for disabled passengers to access amenities that make journeys easier to make
Stations, Stops, Air and Sea Port Terminals	Audible and visible information at bus stops, train stations, and air and sea port terminals	There are audible and visible announcements at bus stops, train stations, and air and sea port terminals. They provide information on all of the following: services, departure times and facilities.
Stations, Stops, Air and Sea Port Terminals	Level access to vehicles	People using wheelchairs are able to move easily and independently between vehicle and station/stop/terminal. This will make travel easier for people using wheelchairs, pushchairs, with heavy luggage and the visually impaired.
Stations, Stops, Air and Sea Port Terminals	Consistent access to kerbside for taxis/PHVs collecting disabled passengers	Disabled passengers are able to board taxis/PHVs from any point on the pavement within a designated arrival/departure zone.
Stations, Stops, Air and Sea Port Terminals	Provision of accessible ticket machines	Disabled passengers are able to use ticket machines designed to be accessible for them at stations and bus stops
Stations, Stops, Air and Sea Port Terminals	Accessible toilets, seating and 'safe places'	Ability for disabled passengers to access amenities that make journeys easier to make

Staff interaction	All staff with passenger contact have completed disability awareness training	Staff have completed disability awareness training (in, at least, the last 5 years) and are able to provide assistance and support to travellers with a range of accessibility needs (including mental and cognitive impairments.)
Staff interaction	Staff assistance available at stations and stops without booking requirement	Staff are available to provide assistance to disabled people at stations and stops. There is no requirement for advanced booking. E.g. the Special Assistance Service provided at airports is immediately available, i.e. waiting time of no more than 5 minutes.
Staff interaction	Staff provide assistance with interchange	Staff provide assistance with interchange to/from their given mode. E.g. train staff taking passenger to bus stop
On-board vehicles	Wheelchair accessible PHVs and Taxi	Wheelchair accessible PHVs can be booked in the same time as booking being made for non-disabled passengers
On-board vehicles	Audible and visible information on trains/buses and water-bus services, such as the Thames Clipper	Next stop and end destination information is available in accessible formats on both trains and buses. Information is also available on the accessibility of facilities, e.g. accessible toilets
Autonomous vehicles	Human and machine interaction is accessible	The Heathrow personal transport pods, the driverless pod shuttle service at Greenwich and other examples of autonomous vehicles already in operation/ being trialled are fully accessible to disabled people

ANNEX B

Supplier Proposal

The Services will be provided in line with the Supplier's original tender response of 10/05/19, an extract of which is below:

Questionnaire 4 – Quality: Experience and Resources

Question 4.2 – Suitability and expertise

Project Team

The Supplier proposes that ITS will undertake the bulk of the technical work, with the Supplier primarily providing a project management and oversight function, together with peer reviewing work so findings are reported in an accessible way to both a technical and non-technical audience. A mix of junior and senior staff have been put forward to maximise efficiency and provide a realistic allocation of resourcing.

For the technical work, ITS expert leads have been selected for each sub-research task, leveraging each members' core skills and experience to ensure research outcomes are optimised.

Management and Oversight

[redacted] | Project Director (Arup)

[redacted] will be the Project Director for this project. He will be responsible for leading the project and communicating the outputs from our work in an accessible way.

[redacted] | Project Manager (Arup)

[redacted] will be the Project Manager. She will responsible for managing the day-to-day aspects of the project, interfacing with the client, reporting, maintaining the risk register, ensuring Quality Assurance Processes are undertaken, and liaising with external peer reviewer and the DfT Steering Group. Adriana will ensure that all deliverables are suitable for a non-technical audience.

[redacted] | ITS Project Director & Researcher (ITS Leeds)

Richard will lead and oversee all technical work undertaken by ITS, including reviewing all final deliverables. He will specifically take on the lead role for developing the Demand Forecasting Methodology (Stage 2 Fieldwork / Research Delivery).

Researchers

[redacted] | Lead Researcher (ITS Leeds)

Manuel will undertake a bulk of the research, coordination tasks and producing the final deliverables for both stages of the project. With respect to research tasks, he will lead in the initial development and planning task involving prioritisation of the interventions and in developing the methodology for benefits estimation to fulfil the fieldwork / research delivery components for Stage 1. For Stage 2, he will lead the valuation strategy and coordination and survey design tasks to support the fieldwork/research delivery, as well as the benefits calculation tasks that bring the research together.

[redacted] - Researcher (ITS Leeds)

As subject matter lead for accessibility, Bryan will play a key role in the prioritisation of interventions to include within scope for Stage 1. He will also take the lead role in survey scope and sampling tasks and support Jeremy Shires with the data collection for these as part of Stage 2 by liaising with key stakeholders.

[redacted] heavily involved in both stages of the project. Drawing on his expertise, he will play a key role in developing the methodology, designing the surveys and analysing the resulting data.

[redacted] – Researcher (ITS Leeds)

[redacted] will be involved in the fieldwork / research delivery for Stage 2, specifically in assisting with the scope and sampling for the surveys and leading the survey data collection task.

[redacted] – Researcher (ITS Leeds)

[redacted] will lead the Analysis of Secondary Data for Stage 1, with support from Chris Leahy.

[redacted] - Researcher (ITS Leeds)

[redacted] is a Research Fellow at the Institute for Transport Studies whose key interests lie in economics, the analysis of big data and urban transport. His primary area of research lies in making use of varied data to better understand the impact of transport provision on users and society. He is currently engaged on a project to assess the impact of multi-modal transport accessibility on property prices, and his previous PhD research focussed on the use of public transport smartcard data to reveal insights about passenger behaviour using discrete choice modelling methods. Chris has also held a number of roles in the transport industry and has substantive experience of transport modelling and appraisal, programme evaluation and working in a policy environment.

Chris will support Phill Wheat to undertake the bulk of the analysis of secondary data as part of the Initial Development & Planning task for Stage 1.

Allocation of Resources

The allocation of resources for the proposed project team is summarised in the table below.

Company	Team member	Category	Number of days		
			Stage 1	Stage 2	Total
Arup	[redacted]	A	1	1.5	2.5
Arup	[redacted]	B	3	4	7
ITS	[redacted]	A	1	7	8
ITS	[redacted]	C	15	24	39
ITS	[redacted]	B	2	9	11
ITS	[redacted]	B	6	14	20
ITS	[redacted]	B	0	7	7
ITS	[redacted]	B	3	0	3
ITS	[redacted]	C	7	0	7

Questionnaire 5 – Quality: Methodology and Approach

Question 5.1 – Scoping stage

Phase 1: Scoping Stage (3 months: June to September 2019)
The aim of Phase 1 is to develop a robust methodology to obtain the benefits of accessibility interventions on both users and the wider society, focusing on a prioritised set of interventions. The

research approach is divided into three tasks: prioritisation, analysis of secondary data and method development.

Task 1.1 – Prioritisation of interventions to include within scope

The Supplier shall first analyse and score each of the 22 interventions detailed in the Statement of Requirements (SoR) as 'Low', 'Medium' or 'High' on each of the three suggested selection criteria: strategic rationale (understood as the impact/significance of the intervention to disabled people), feasibility (understood as the likelihood of getting robust evidence and demand/valuation estimates) and wider benefits (understood as the impact of the intervention to other – non-disabled – citizens and industry). Secondary data such as the National Travel Survey (NTS) may be used to complement the analysis and selection. The Supplier shall also consider the potential for other interventions not considered in the suggested list. The output will be presented in a table with (at least) the 22 interventions on the first column and three further columns (one per selection criteria) including any relevant details, arguments and supporting evidence alongside the scores. This table will provide an indication of which interventions should be prioritised as part of this project. Using the above initial screening, the Supplier shall seek to find a set of interventions that, together, meet the following criteria:

- Wide range of visible and non-visible disabilities covered within the selected set of interventions. For instance, it would be important to cover interventions for people with a physical impairment, with a sensory impairment and with mental health conditions and/or autism. But even within these sub-groups there is large diversity (e.g. wheelchair users, people with arthritis and other walking difficulties) and this will also be considered.
- Coverage of multiple journey stages: the chosen interventions should ideally cover all journey stages identified, from journey planning to travelling on-board vehicles. The rationale for this is that each journey stage would pose specific challenges for benefits estimation, and it would be important to have the opportunity to tackle all of those.
- Modal coverage: a mix of bus, rail and interventions on the environment linked to walk and car.

As an indication, a balanced set of interventions might encompass the following 8 interventions: 'information on the availability of assistance' (journey planning stage), 'booking assistance' (booking travel stage), 'accessible crossings' and 'pavement parking' (built environment and access/egress stage), 'accessible toilets' (stations, stops and terminals), 'staff assistance availability' (staff interaction), 'level access to vehicles' (stations, stops and terminals; interface with vehicles stage), 'audible and visible information' (both at stations/stops and on-board vehicles). These interventions potentially affect a wide range of disabled people, cover all journey stages and all can be reasonably well defined to enable a fair perception and valuation in WTP experiments. There is also some evidence on the implementation of each of these interventions, which means ex-post case studies, helpful for demand analysis, could be identified. Additionally, there is evidence that some of these also impact on other non-disabled users (both unencumbered and encumbered) and the wider society in a significant way, such as level access to vehicles, pavement parking, staff assistance and provision of audible/visible information.

At the start of the project, the Supplier shall work closely with the client to establish the Steering Group (or Advisory Board). Throughout the key initial Task 1.1, as well as through the whole project, the research team will maintain regular communication with the Steering Group and proactively seek their input to ensure the highest quality in the research is achieved.

Task 1.2 – Analysis of NTS and NHT datasets

National secondary datasets can help to build a solid understanding of the current context of accessibility in transport and inform the research. Thus, Task 1.2 will run in parallel to Task 1.1 and will provide the descriptive statistics in the area of accessibility on two key surveys: the National Travel Survey (NTS) and The National Highways and Transportation Public Satisfaction Survey (NHT), which should help prioritise the interventions and inform data/method needs. This task will also serve as a scoping study on the capabilities of these datasets for Phase 2.

The NTS is an obvious source of data as it provides detailed information on respondents and their travel behaviour. However, given the concentration of the sample (dispersed around England), the Supplier proposes that it might be challenging to link individuals to specific public transport accessibility interventions, compared to using a less dispersed data set. The NHT database provides a useful complement. This is a survey undertaken across subscribing local authorities and surveys the public perception of local highways and public transport. The NHT data includes over 800,000 respondents over 10 years and has approximately 800 respondents per local authority per year. The survey asks about disabilities and includes questions on trip rates by mode, perceived ease of access to certain key services (health care, education etc) and satisfaction with various service attributes such as real time information. The advantage of the NHT survey is that it would be feasible to choose a specific groupings of local authorities (such as a combined authority) and undertake detailed spatial analysis, linking, for example the trip rate data to proximity to accessibility improvements (which would need to be collated and mapped – a non-trivial task in itself). This in turn would provide insight on the impact of accessibility improvements to both users and non-users of specific modes. ITS Leeds have unique access to the NHT survey through our Strategic Partnership with the administrators Measure2Improve and the feasibility of providing it has already been discussed.

Task 1.3 – Methodology for benefits estimation

The Supplier proposes that the third task of the Scoping Stage is fundamental to the success of this project – but due to its challenging nature may require more effort than the indicative 3-month timeline suggested in the SoR. To be more precise, the economic appraisal framework (i.e. WebTAG and the underpinning welfare economics theory) needs to be developed/tailored prior to consideration and recommendation of specific methods for empirical benefits estimation such as those described in the SoR (e.g. Willingness-to-pay surveys or passenger and household surveys). This rationale is in line with the findings of the recent International Transport Forum roundtable (OECD/ITF, 2017), which highlights the absence to date of any underlying appraisal framework for accessibility; this is also mentioned in point 3.4 of the SoR. To add to this complex challenge, the Supplier shall also have to assess and address multiple potential layers of valuation analysis which require important ethical considerations: within-intervention (relative values of different solutions to one objective, e.g. level access) and across-interventions (relative values of interventions that solve different problems). In short, the Supplier's proposal for this central task within the Scoping Stage is as follows:

- Task 1.3.1 – Development of the theoretical appraisal framework
- Task 1.3.2 – Development of the empirical methodology for quantification of benefits

To overcome the challenge, the Supplier shall capitalise upon their ongoing work for RSSB, where an 'accessibility appraisal framework' is currently being developed to appraise level access to trains. That is to say, the Supplier has to some extent already done some of the background thinking and will be well-placed to expedite Tasks 1.1 to 1.3.

<u>Task 1.3.1 – Development of the theoretical appraisal framework</u>

The Supplier proposes that transport appraisal and CBA (e.g. WebTAG) are not readily tailored to simply add the benefits of accessibility improvements. A series of non-negligible considerations are necessary prior to enabling the expansion of the WebTAG appraisal framework to tackle accessibility interventions. For instance, first, the current framework does not accommodate the fact that different individuals have different physical and mental abilities, and that as such, the transport network design impacts on some groups of individuals in different ways. More fundamentally, in determining the VfM of transport investments, WebTAG tends to conceptualise social welfare in terms of the representative traveller (most visibly in terms of income, but also in terms of other socio-economic-demographic features), rather than distinguish between different segments of society – and this is a deliberate policy decision to avoid the complexities and controversies of social welfare weighting.

Secondly, the Supplier proposes that current appraisal guidelines do not justify the acceptance of altruistic values, which can arguably be an important component of accessibility intervention benefits, as it is recognised in the SoR (note that these are different from private benefits accruing to non-disabled travellers). Third, new possibilities for demand segmentation must be considered, not only for disabled passengers (and the different types of disabilities, with the complexities this entails), but

also for non-disabled passengers (e.g. encumbered passengers vs. unencumbered). Finally, considerations of additionality and benefits aggregation also deserve attention in this area (e.g. particularly if the framework is to accept inclusion of altruistic values), and would inform how and what demand and valuation evidence the Supplier shall seek in Task 1.3.2.

Task 1.3.1 the Supplier shall develop a robust and implementable framework consistent with WebTAG.

Task 1.3.2 – Development of the empirical methodology for quantification of benefits

The Supplier proposes that equipped with a methodological framework, the next task will be to identify what the benefits of the selected accessibility interventions are, to whom they accrue, and what the most suitable methodologies to estimate them are. In this way, the Supplier shall ensure that the required thinking to convert empirical findings into usable values for appraisal has already taken place prior to any data collection exercise. This is particularly relevant within a context of study with limited prior evidence and well-known difficulties to derive robust valuation estimates.

The Supplier proposes that the efforts in this task will aim to cover both demand forecasting and valuation estimation but, mindful of the required resources, will focus on valuation. In both cases, although particularly in the former, the existing evidence is very limited and, generally, context-specific, obtained on an ad-hoc basis and without a clear theoretical basis that would readily support their use in appraisal.

The Supplier proposes that this task will comprise the following efforts: i) identification of quantifiable benefits (informed by Task 1.3.1), ii) literature review; iii) scoping of methods for demand forecasting and valuation estimation. Informed by the conceptual appraisal framework, and in line with standard assumptions and practice in transport appraisal, for each of the interventions they will identify what the attributes/impacts are that would be valued by people and that might also affect the demand for travel.

The research team will build upon the recent Rapid Evidence Review as suggested in the SoR, and also review any newer significant contributions in the literature. The literature review will inform the choice of methodologies and highlight the pros and cons of each. Likewise, it will allow the Supplier to identify the likely challenges in each case, identify ‘easy wins’ and help to prioritise resources where they will derive greatest analytical benefit for the project.

The Supplier proposes that most literature in this area has used willingness-to-pay (WTP) surveys to infer values for the different elements of accessibility interventions (e.g. the value of ramps to access buses, platform humps to access metro/trains, the value of street decluttering, or the value of information provision). These values provide an approximation of the benefit of an intervention. In most cases, demand forecasting is missing and demand assumed not to vary due to lack of evidence. In others, passenger counts and surveys (typically some form of revealed preferences) provide ad-hoc calculation of changes in demand.

The Supplier proposes that the choice of methodology will be driven by the following factors:

- Ability to derive total economic value, including option value, existence value and any potential of altruistic value (this is crucial to explore values also for non-users and the wider society).
- Ability to present and capture realistic trade-offs (e.g. via realistic and acceptable payment mechanisms) and thus values
- Ability to minimise/eliminate risks of strategic bias in responses
- Ability to derive preferences among multiple accessibility interventions in a holistic way
- Ability to include and capture the distinct values of the relevant population groups
- Applicability of outputs (e.g. valuation estimates) to an appraisal framework
- Ease of replicability and scalability of estimates via future larger studies
- Need to comply with an ethical approach in undertaking research with people with impairments.

The Supplier recommends the use of WTP surveys for the estimation of values – e.g. in the form of stated choice experiments or other suitable formats. All methods suggested in the SoR will be explored, alongside a novel and promising method called Participatory Value Evaluation (PVE). All methods considered will be fully compatible with welfare economics principles (i.e. WebTAG and the Green Book).

The Supplier proposes that in relation to demand forecasting, WTP surveys – while well known for their potential to derive relative valuation among attributes/impacts – are not ideal to estimate demand impacts, as they tend to overestimate valuations. Thus, when it comes to passenger demand forecasting, revealed preference methods are likely to be preferred; these could include ex-post analysis of case studies where interventions were implemented and data is available and the use of in-depth passenger surveys (e.g. NTS and NHT data, National Rail Passenger Survey, Disabled Persons Railcard data and concessionary bus pass data).

The Supplier proposes that given the timescales and wide scope and ambition of this project, they may need to prioritise the gathering of robust valuation measures – absolutely essential for any monetisation of benefits – over the evidence on demand forecasting. This prioritisation on valuation may be made on the basis that it is not clear whether a substantially large evidence base exist to trace demand impacts and, in practice, it is easier to make informed assumptions (and sensitivity tests) around demand changes and still provide a full economic appraisal of accessibility interventions – whereas developing the method and evidence base on valuation is not only essential but also more feasible within the project.

The outputs of the Scoping Stage will be provided in a report, a slide pack and a presentation to the steering group in DfT, as required in the Statement of Requirements document. All data, information and spreadsheets collected and developed throughout the project will also be provided.

Questionnaire 5 – Quality: Methodology and Approach
Question 5.2 – Research stage

Phase 2: Research Stage (September 2019 to May 2020)
The aim of Phase 2 is to undertake the primary research and analysis recommended in Phase 1. Phase 2 will be divided into four tasks, some of which are expected to run in parallel (see project plan in the attachment for Q6). These tasks are: demand forecasting, valuation (including primary research), implementation of benefits and recommendations for further research. The plan below explains what data will be used and how it will be collected, the design of surveys and how robust monetary values will be achieved.

Task 2.1 – Demand forecasting (lead: [redacted]
The Supplier proposes that the objective of this task would be to deliver a simple elasticity-based framework for forecasting the demand uplift from accessibility improvements together with recommended elasticities for an appropriate set of interventions and traveller segments. The present context is non-standard in some respects, and this will present some challenges, for example, taking account of threshold effects whereby travellers who were effectively 'excluded' from travel begin to access travel following the relevant interventions; also the interventions may stimulate greater travel by travellers who are not disabled but still derive benefit (e.g. travellers with pushchairs, older population). The team will work closely with the steering group to identify case studies ex-post where interventions had taken place and data is likely to be available to support this task. A feasible demand forecasting approach will be devised for the selected interventions, clearly articulating the inherent assumptions. This task will run in parallel to the rest through Phase 2.

Task 2.2 – Valuation
The Supplier proposes that inferring values for the multiple attributes/elements of accessibility interventions that were selected or for interventions as a whole – where evidence is scarce and ad-hoc – is what will enable them to populate the appraisal framework that will then allow them to calculate the benefits of accessibility interventions. Thus, the success of Phase 2 heavily relies on this task, and proportionate efforts will be placed here. There are four well defined steps in a valuation

exercise: survey scoping and sampling, design of surveys, data collection and analysis. Below the Supplier describes their proposed plan for this task (subject to improvements following Phase 1).

Task 2.2.1 – Surveys scope and sampling strategy

The Supplier proposes that scoping and targeting the right people will be one of the challenges of this study: some people with certain disabilities currently do not travel or do so to a lesser extent; some would require specific communication means (e.g. audio or visual); and there are important ethical considerations to keep in mind while approaching the targeted population. Moreover, in all cases they will have to strike a balance across various important groups, including: users and non-users; disabled and non-disabled individuals; among disabled, coverage of multiple disabilities where relevant; and encumbered and non-encumbered users (OECD/ITF, 2017). To expedite this task, the team will draw on the experience of one of its members [redacted] in undertaking surveys targeting disabled people and in communicating with a long list of key stakeholders for that purpose. From current and past experience, [redacted] is well connected with key stakeholders, which places us in an advantageous position to achieve a timely response and interaction at those ends; currently, he is conducting surveys also targeted to various disability groups as part of a project funded by the European Commission. It is anticipated that a mix of online surveys, pen-and-paper and telephone surveys are likely to be needed to achieve a good sample among key groups while following an acceptable ethical procedure. Thus, a combination of targeting strategies will be employed, from direct contact via key stakeholders to more traditional on-site interception (e.g. in stations, terminals, stops and onboard vehicles).

Task 2.2.2 – Surveys designs

The research team shall design a number of tailored surveys, aimed at the estimation of values. At the core of each survey there will be at least one state-of-the-art valuation experiment that enables the Supplier to obtain valuation measures, such as willingness-to-pay (WTP), for the respondent. Besides, each survey will collect essential information about the individual with the purpose of providing segmented values for different groups. The Supplier's initial proposition – subject to refinement during the Scoping Phase and input from the steering group – is a combination of two methodologies: i) traditional Stated Choice (SC) experiments and ii) Participatory Value Evaluation (PVE) experiments. Both of these methods can be said to be part of the wider family of Stated Preference (SP) experiments. Both aim at eliciting people's preferences and valuation of transport accessibility improvements, but each does so in a different way. This sub-section explains the details.

The Supplier proposes that each survey will contain a SC experiment and a PVE experiment as valuation exercises. This combination not only mitigate risks of failure of one approach, but it means they gain insights on valuation from two different (but equally valid) perspectives. The precise form of the valuation experiments is critically important in this topic and will be informed by Phase 1 as well as the early work in Phase 2. The team has vast experience in valuation studies and will carefully craft each experiment and the wider survey taking into consideration the following aspects: i) what the appraisal framework needs (e.g. what units are required, which segmentation levels, how the values would be aggregated, etc.), ii) what has and has not worked in past experiments in the field of accessibility and fields with similar challenges around valuation (e.g. different trade-off/payment mechanisms, perception of attributes and attributes levels, risk of strategic and hypothetical choice bias, etc.) and iii) who the respondents are and whether they require specific consideration (e.g. individuals with cognitive difficulties or sensory impaired). Both types of experiment (SC and PVE) share the advantage of being flexible enough to capture the total value of an intervention.

'Traditional' Stated Choice (SC) experiments. The Supplier proposes that SC experiments are well-known in the field and have been the main approach to capture the value of accessibility in past studies. Main advantages of this approach include: i) wide acceptability, ii) values derived can easily be incorporate into a WebTAG type of appraisal framework and iii) flexibility. However, past experience tells them that there are significant challenges to overcome. One challenge is the choice of 'payment mechanism' if direct monetary values are to be derived. This is very important since some disabled people get free or subsidised travel and thus any trade-off in the survey involving money changes have to be carefully assessed to allow meaningful choices and value estimation.

Also, it is likely that many respondents would struggle or be against trading off their personal money versus enhancements in accessibility (whether they benefit or not). Thus, they will investigate alternative presentations of the money component, including various forms of both personal and public money (e.g. taxes changes or tax relocation), which have been successful in other valuation fields facing similar challenges.

The Supplier proposes that alternatively, WTP surveys could be designed excluding the monetary component, allowing the derivation of values of accessibility improvements relative to other improvements (typically travel time). This so-called 'time-multipliers' approach is very popular in transport appraisal and is already implemented in various areas of WebTAG such as waiting and access/egress time, reliability or crowding valuation. This approach can help to reduce the extent of the problems associated with money payment mechanisms mentioned earlier, while providing the necessary inputs for benefits calculation ultimately (provided that applicable values of travel time (VTT) are available, as is the case in WebTAG). A potential – but not unsurmountable – drawback of this approach is that VTT might vary significantly among the different population groups affected by accessibility interventions, and WebTAG's VTT values may not match the ideal segmentation arising from a tailored accessibility appraisal framework.

Participatory Value Evaluation (PVE). The Supplier proposes that PVE is an innovative method to infer people's preferences and values for public sector investments. Respondents are presented with a set of accessibility interventions and information on their social impacts and are asked to choose the best portfolio of interventions according to their social preferences subject to the governmental and individual budget constraints (see Dekker et al., 2019; Mouter et al. 2019). The social impacts will include all relevant information, e.g. what are the impacts?; who is affected?; how many people? Wider benefits? The tool was developed in The Netherlands and has already been used by the Dutch Ministry of Infrastructure and Water Management to inform public decision-making on investments in water infrastructure (e.g. to prevent flooding). Also the Transport Authority of Amsterdam has used PVE tool to prioritise alternative transport investments by trading-off investments in auto mobility, cycling, public transport and traffic safety projects. The method informs policy makers on the desirability of the different interventions, allows users to delegate their decisions to experts and can directly measure the change in social welfare (in monetary units). The method is fully compatible with welfare economics principles (i.e. the Green Book) due to its foundation in Kuhn-Tucker models.

Dr [redacted], part of the research team, was involved in the development of PVE and thus has access to it and the specific knowledge required to make its implementation feasible within the context of this project. The tool is already implemented in the form of a website and the Supplier will only have to incorporate their specific valuation experiments into it. The necessary code to estimate models has also been developed by Thijs Dekker and would be used for this project.

The Supplier proposes that this novel method is particularly advantageous for topics where people attach a high value to interventions but feel that it is the government responsibility to pay for them (e.g. citizens not directly affected by accessibility improvements) and/or where they have a vested interest and are likely to always choose the option with the intervention regardless of the cost (e.g. disabled people suffering transport exclusion), thus not enabling the estimation of statistically significant values. This is because PVE portrays the experimental choice problem in a way that is more closely aligned with the real choice problem faced by societies: if there are budget constraints and multiple accessibility objectives and solutions, which ones do we value the most as citizens? Another great advantage of this method is that all interventions can be included simultaneously in a single experiment.

The Supplier proposes that in all cases (SC and PVE), the description of the accessibility interventions will be carefully shown to respondents, using not only precise wording but also images and graphics were necessary. As mentioned in the description of Phase 1, feasibility of deriving significant valuation estimates is one of the criteria to select interventions. This means that they will concentrate on interventions that can be well defined and clearly perceived by respondents, thus facilitating the inference of preference and values. Overall, the Supplier anticipates most work to be

needed on targeting key population groups and designing suitable trade-off experiments. The Supplier acknowledges that novel methods (i.e. PVE) may raise concerns with the client, but this risk will be mitigated through Phase 1 where there will be a chance to fully communicate the method; a fall-back plan B might be to redirect resources to more well-established methods, e.g. to more SC experiments.

Task 2.2.3 – Surveys data collection ([redacted] – via stakeholders; J[redacted] – 'in-house')

The Supplier proposes that prior to data collection, an ethical review will be undertaken in line with ARUP and the University of Leeds procedures and requirements. This is crucial as among their target groups of respondents there will be individuals with a range of impairments. These will be targeted via stakeholders ("gatekeepers"), and the Supplier shall work with a representative of each stakeholder to ensure our approach complies also with their ethical guidelines and to ensure informed consent from each participant is obtained. Surveys will be conducted in at least two waves in line with the plan set out during Task 2.2.1 – this allows early testing of outcomes and rectifications. An initial proposition – subject to revision during Phase 1 – is to aim for the following number of respondents (totalling 2,250) and at least two key levels of segmentation (see table below).

The Supplier proposes that a range of locations in England and Scotland will be selected for the on-site surveys. Mindful of budget, they will resource surveys internally to save costs. The main aim of the surveys is to obtain sufficiently large samples for each key population group to obtain significant valuation estimates; however, within each group the Supplier shall seek further segmentation as much as is feasible (e.g. by impairment, unencumbered vs. encumbered; by age, etc.).

		Approach via:		Approach/intercept "On-site"			
Segmentation*	**Target Groups**	**Stakeholders**	**Online panel**	**Bus Stations**	**Rail-intercity**	**Rail-suburban**	**SUB-TOTALS**
Disabled vs. nondisabled	Groups of people with range of impairments	500					500
	Non-disabled		500				500
By usage of Public Transport (PT)	PT users			350	350	350	1050
	PT non-users		200				200
*Each segmentation would be present within the other (e.g. within people with impairments, there will be PT users and non-users)							

The Supplier proposes that results should serve as first evidence that populates the accessibility appraisal framework with robust estimates, whereas achieving nationally representative estimates would be the focus of a larger valuation study. The 500 figure for disabled people is only indicative; sub-groups will be identified in line with Phase 1 and that, through stakeholders, they can collect a sample to cover a range of impairments.

Task 2.2.4 – Surveys data analysis

The Supplier proposes that the data will be analysed using state-of-the art choice models, widely used and accepted for the calculation of relative values and welfare changes. Advanced models will enable the computation of significant valuation estimates of accessibility attributes and/or interventions for the relevant preidentified segments of the population in line with the developed appraisal framework to fit into WebTAG. This will aim to include both user and non-user benefits.

Task 2.3 – Benefits calculation: implementation of estimates in an appraisal

The Supplier proposes that this task will bring all outputs together and demonstrate the implementation of the research using a package of interventions as a case study to calculate their benefits. While the valuation estimates may not be nationally representative (due to the limited samples dictated by the budget for this project) by the end of the study, they aim to deliver significant estimates that can demonstrate the functionality of their proposed methodology for further WebTAG expansion.

Task 2.4 – Recommendations for appraisal: evidence robustness and further research

The Supplier proposes that the research will conclude by providing indications of where further research is needed to complete the appraisal framework, e.g. for which interventions the evidence is less robust, or which surveys are needed at a wider scale to obtain nationally representative values.

The Supplier acknowledges that the proposed Phase 2 is an ambitious and resource-intensive undertaking, and thus will be subject to changes based on the method agreed in Phase 1 with input from the Customer's steering group. The overarching aim will be to ensure that the project delivers a robust evaluation of a few accessibility interventions through a method that can be easily replicated to other interventions.

The outputs of the Research Stage will be provided in a technical report with supporting annexes, a summary report and a presentation to the Customer's steering group. All data, information and spreadsheets collected and developed during the project will be provided. The research may be used to write one or more academic papers for in world-leading transport journals.

Questionnaire 6 – Quality: Project management and service delivery
Question 6.1 – The Supplier's ability to complete the work timely

Governance Structure

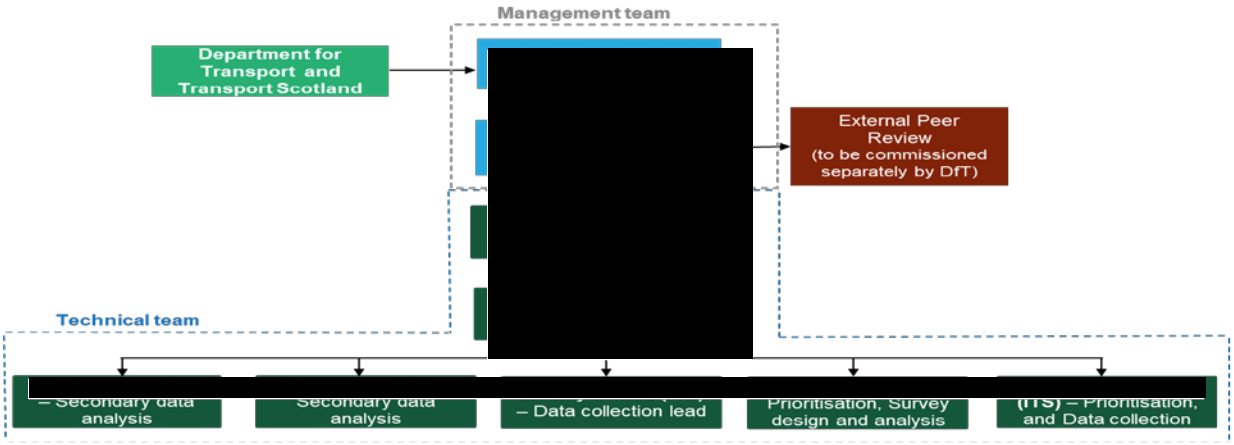
This research project will be delivered by a joint Arup-ITS team. Contractually, Arup will be the lead consultant with ITS acting as a subcontractor.

The responsibilities between Arup and ITS have been clearly allocated, with Arup taking the role of overseeing and coordinating the project, monitoring progress and supporting in the reporting of the work, and ITS being responsible for the technical work, which involves developing the methodology as well as undertaking the required survey work and the bulk of the data analysis, including valuation and forecasting.

The work will be led by [redacted] who will be the Project Director, and managed on a day-today basis by [redacted], who will be the Project Manager. He shall oversee the whole project, being responsible for meeting the overall project requirements. As the Project Manager, Adriana will work closely with ITS to carefully monitor progress against the proposed project plan set out in the next sub-section, updating the Customer on fortnightly calls and providing progress reports as agreed at the inception meeting. She shall liaise with the external peer reviewer to be commissioned by the Customer to meet the Customer's peer review requirements.

From ITS' side, [redacted] will direct the project with [redacted] an economic appraisal expert with a strong focus in economic appraisal and accessibility, leading on the research. To deliver the work [redacted] will work with a team of ITS researchers comprising of Thijs Dekker, [redacted] and [redacted], who will provide their specific expertise on the prioritisation of interventions, method development and survey design, data collection and analysis and implementation, as well as Phill Wheat and [redacted], in addition to acting as the ITS Project Director, will lead on the demand forecasting, his key area of expertise. Drawing on a diverse team of researchers with expertise in different key areas will allow the Supplier to deliver tasks more effectively and to make the most of the ITS expertise in this subject. [redacted] as the lead researcher, will be able to effectively lead them and draw on their input as required across both Phases 1 and 2 liaising with [redacted], the overall Project Manager.

The following chart shows the Supplier's proposed governance structure:



Project plan

This project is structured into two phases over 52 weeks. Within these two stages, the Supplier has identified key tasks to be completed and overall timescales. The project plan accommodates time for an external peer review to be commissioned by the Customer separately to this project.

Inception

The project is expected to commence on the 10th June 2019. The Project Director, Project Manager and the key ITS team members, Richard and Manuel, will attend an inception meeting to discuss the final project scope, project plan and agree a communication strategy throughout the project. An internal communication plan between Arup and ITS will also be established.

Phase 1 – Scoping stage

The first stage consists of two main tasks: 1) identifying and prioritising interventions to be included within the research and 2) developing a robust methodology to be implemented in Phase 2. This phase is expected to last about 20 weeks, with draft outputs being provided in week 15.

At the end of Phase 1, the Supplier shall deliver a report and slide pack, as well as a presentation to the Customer, in September.

Phase 2 – Research stage

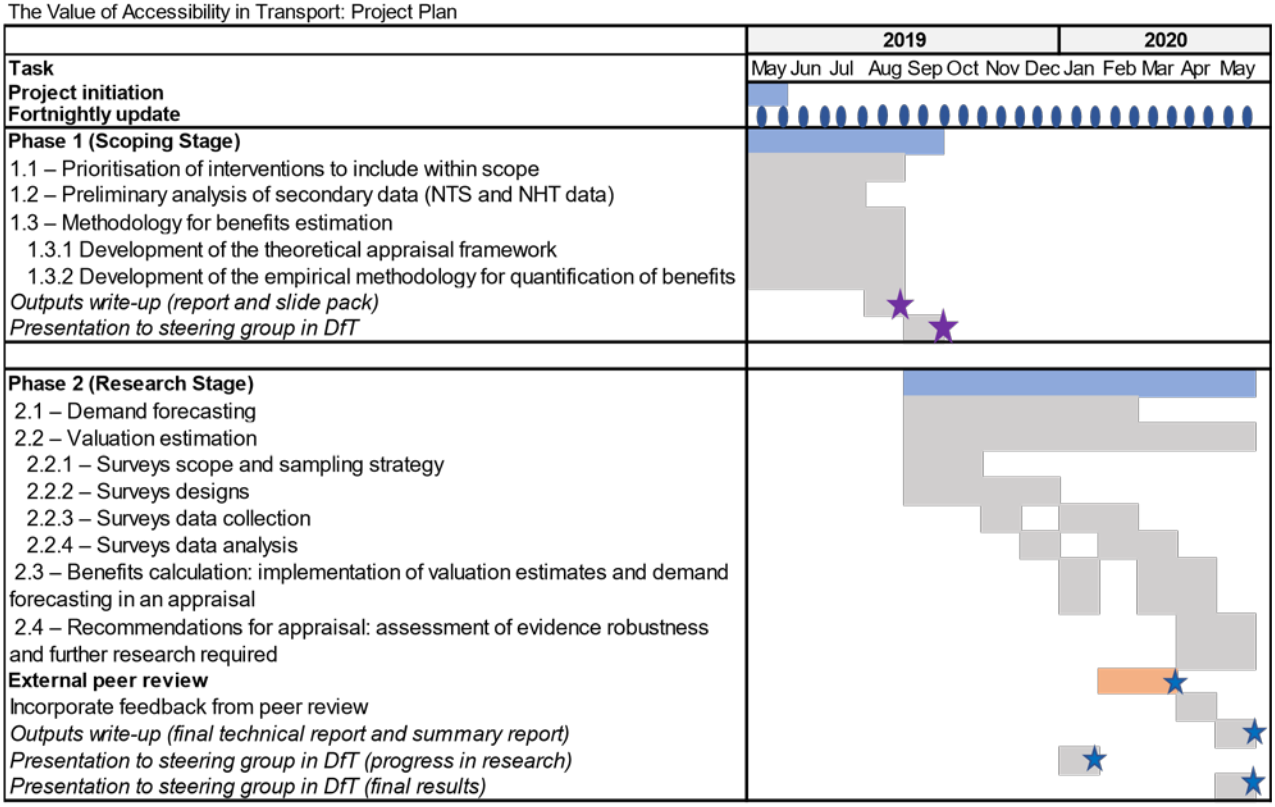
The second stage will implement the methodology developed in Phase 1 and will start immediately after Phase 2 if the Customer and TS decide to proceed with it.

The Supplier proposes that to deliver this phase, primary research in the form of survey work will be required. Further secondary research might also be necessary if the scoping work of Phase 1 recommended it as a fruitful approach – this has not been costed in the Supplier's initial proposition of Stage 2 as they opted for more well-established approach using primary data to valuing benefits. Other key tasks include developing a demand forecasting methodology to assess impacts on demand and valuing benefits using the outputs from Phase 1. The Supplier proposes, to test their values and demand impacts estimated, they shall implement their values in a case study. Their final report will include recommendations for further research, to be developed at the end of the project.

Phase 2 is expected to last 32 weeks, including peer review and reporting. As explained in the methodology in Q5, some tasks will run in parallel to be able to meet the required timescales of the project. Specifically, demand forecasting and valuation estimation will run in parallel. The Supplier proposes the peer review to be undertaken towards the end of the project during the months of February and March. The Supplier proposed project plan assumes that the survey data collection and analysis, two tasks fundamental for the success of this project, will be undertaken in two waves in order for us to test our approach early on and be able to refine the survey work based on feedback from the first wave.

At the end of Phase 2, the Supplier shall deliver a final technical report and a summary report, as well as a presentation to the Customer's Steering Group. The proposed plan allows for one round of comments from the client before final outputs and reports will be issued. A high-level monthly proposed project plan is presented below, which shall be agreed with the Customer upon inception of the Project:

The Value of Accessibility in Transport: Project Plan



[redacted], as the Project Manager, will be responsible for planning and managing this process working with [redacted], the lead researcher, and [redacted], the overall Project Director for the technical team at ITS, under [redacted] supervision. The Quality Assurance plan, to be developed by [redacted] at the start of the project, will include both internal and external quality assurance, as the DfT and TS are expected to separately commission a peer review. The Supplier shall develop this plan after the inception meeting, after obtaining further clarity on the expected peer review process from DfT and TS.

The quality assurance processes for this research will cover both data analysis as well as reporting, and will comply with the Department's analytical assurance framework.

The key components of this framework that will guide the Supplier's Quality Assurance Plan include:

- clear responsibilities in who leads a piece of critical analysis
- appropriate and proportionate quality assurance activities
- identifying independent reviewers – factoring in the role of the peer reviewer
- how reviews are reported and evidenced

The Supplier proposes that this process will focus on checking and signing off the following six elements of this research:

- Prioritisation of interventions to include within the scope of the research
- Secondary data analysis
- Methodology for benefits estimation
- Survey design and analysis (including valuation)
- Demand forecasting
- Values implementation

The Supplier is familiar with the Customer's modelling practices and shall apply these to any spreadsheet provided to the Customer.

All checks and reviews will be clearly documented to provide an audit trail of how outputs have been produced, reviewed and modified. Where the checking concerns a spreadsheet model, a model audit report will be produced using the Supplier's model audit report standard template. This template is a standard form used in Arup to document and guide the checking of models. As the Project Director,

[redacted] will sign off all outputs to be provided to the Customer, including data, spreadsheets and reports.

Questionnaire 6 – Quality: Project management and service delivery
Question 6.2 – The Supplier's awareness of the key project risks for this Contract

The key delivery team for this project have identified potential risks that might affect the delivery of services during the preparation of this proposal. These risks include the complexities and sensitivities associated with valuing accessibility benefits, including how to conduct survey work in a respectful and sensitive way in compliance with ethical guidelines, and the challenge of completing an ambitious project on time where most tasks critically depend on the previous one (e.g. data collection depends on survey scoping work and survey design) to be completed on time, thus implying risks of knock-on effects. Capturing these risks in a comprehensive manner will be key to minimise risks on the project.

The risks identified at this stage form the basis of the initial risks register shown on the next pages. Each risk has mitigation actions identified that will be implemented during the project. The Supplier shall discuss these risks with the Customer at the inception meeting and add any additional risks if required.

As the Project Manager and using this risk register as a starting point, Adriana will regularly update the risk register throughout the project, and, if any issues arise, communicate these immediately to the Project Director to discuss a mitigation strategy that can be agreed in consultation with the Customer.

Ref	Risk	Likelihood	Potential Impact	Proximity	Mitigation	Owner	Mitigated Likelihood	Mitigated Impact
R1	Stakeholders – High demands on senior DfT staff may delay reviews and approval of documents	Medium	Medium	Project start until development of final deliverables	Close liaison with the Project Sponsor and internal stakeholders, realistic programming of document development	Project Manager / Project Sponsor	Low	Low
R2	There is risk that specific specialist input is unavailable or is diverted away from this work package causing deliverables to be late or of poor quality.	Low	High	Project start until development of final report	The project plan is well understood and has been produced in consultation with all the researchers. The Project Manager will be responsible for understanding the specific requirements of the delivery of the work and managing the resource availability. Both ITS and Arup are able to draw on additional resources if required.	Project Manager	Medium	Low
R3	There is a risk that delays in decision making cause programme slip and cost overrun with delays to	Medium	High	Project start until development of final report	The Supplier shall assist with making decisions if required and will provide information in a timely, clear and consistent way	Project Manager	Low	Medium

Ref	Risk	Likelihood	Potential Impact	Proximity	Mitigation	Owner	Mitigated Likelihood	Mitigated Impact
	provision of products affecting other linked initiatives.				to avoid ambiguity in their outputs. As part of bi-weekly teleconferences / updates, the Supplier shall remind the Project Sponsor if there are outstanding actions for the Customer to progress. The Supplier shall keep an action list running to support these conversations and promote timely progress of actions			
R4	There is a risk that the scope of the work is adapted as the project progresses due to emerging issues, especially during the data gathering and literature review activity, resulting in time delays and cost overruns. In the extreme the original project objectives	Low	High	Project start until development of final report	A change control process will be adopted whereby early warnings are issued to the Project Manager when changes become evident. The list of activities will provide a baseline for scope definition. A bi-weekly progress meeting will be held by telcon and will include key team members to keep the Project Manager	Project Manager	Low	Medium

	may be not provided.				informed of progress and any issues			

Ref	Risk	Likelihood	Potential Impact	Proximity	Mitigation	Owner	Mitigated Likelihood	Mitigated Impact
R5	There is a risk that key information / data required for the analysis is not available	Low	High	Project start until development of final report	The Supplier shall liaise with industry contacts to understand what additional sources of data may be available to inform the research. There is always an option to revert to the previous method.	Project Manager	Medium	Medium
R6	There is a risk of spreadsheet / analysis errors.	Low	High	Analysis stage	A robust quality assurance process will be put in place. Best practice modelling will be followed to set out the analysis in a transparent way that reduces errors	Project Manager	Low	Medium

R7	Compliance with ethical guidance in undertaking research with people with impairments	Low	High	Survey stage	The Supplier shall allocate a substantial amount of resources to survey design and piloting. The Supplier shall undertake an Ethical review jointly with Arup and ITS to ensure informed consent from each participant is obtained. Surveys will be conducted in two waves – this allows early testing and rectifications.	Research lead	Low	Low

Part 2: Contract Terms

Please see CCSN19A15 Attachment 5 Contract Terms