Schedule 3

Framework Specification

The Contractor at the request of the Company shall provide under the terms of the Agreement and relevant standards set out in this Schedule 3, the following C.A.T.E.R-EU Ultrasonic Rail Detection Devices and Resources as follows:-

1. Equipment , Labour and Training

a. Operator without Equipment

- 1 Operator A/B Scan 8-hour shift
- 1 B/Scan Operator for towed 20km per shift
- 1 Operator A/B Scan with ancillary tickets in addition to BTA and track trolley to include protection master and/or PWT

b. Operator with Equipment

- 1 B/Scan Operator with SRT
- 1 Man Operating DRT
- 1 B/Scan Operator with towed B/Scan equipment to include cameras minus towing trolley

c. Hire of Equipment Only

- SRT shift rate per day
- Lightweight SRT per day
- DRT (manual) shift rate per day
- Towed DRT B/Scan only
- Towed DRT with cameras and B/Scan (with Vidwave licence)

d. RIPWAVE/Analysis

- Ripwave/Analysis spot charge
- Ripwave/Analysis Contract for six months
- Ripwave/Analysis Contract for twelve months
- Ripwave/Analysis Contract for duration of running i.e. three years

e. Purchase of Equipment Only

- Single Rail Tester
- Dual Rail Tester (manual)

- Towed DRT B/Scan only
- Towed DRT with cameras and B/Scan (with Vidwave licence0

f. Technical Support

- Remote desktop assistance
- On-site Assistance
- On-site IT assistance
- On-site mentoring support

g. Training

- Ascan Level 1 (U1,U5,U8,U15,U16) initial course
- Bscan Level 1
- Bscan LRT familiarisation
- Ripwave analysis training
- Ascan on-site assessment
- Bscan on-site assessment
- On-site refresher training

2. Spares

The contractor shall provide necessary spares to support for the duration of the contract at the unit process set out in Schedule 2.

3. Support

a. The contractor shall carry out all necessary repairs on a ad-hoc basis and an Annual maintenance and calibration of the devices.

b. The timescales for all repairs and Annual Calibration and Maintenance shall be 10 working days.

c. The timescales for booth Warranty and out of warranty Repairs shall be 10 working days.

Transport for London
London Underground

Technical Specification

T0450 Performance Specification for Ultrasonic Rail Flaw Detection Equipment

Issue: A1

Issue date: March 2012
Review date: March 2017

MAYOR OF LONDON

Contents

1 Purpose

1.1 The purpose of this Specification is to define the performance and other technical requirements of ultrasonic rail flaw detection equipment for use on the London Underground network.

2 Scope

2.1 This specification applies to the following equipment options for ultrasonic rail flaw detection:

a) Pedestrian-operated single rail testing;

b) Pedestrian-operated dual rail testing with one operator;

c) Dual rail testing using a motorised trolley.

3 Requirements

3.1 General Requirements

3.1.1 The ultrasonic test equipment shall be capable of carrying out ultrasonic inspection of rails to detect rail defects of the size threshold and to the probability as defined in Network Rail standard NR/SP/TRK/014.

3.2 Operating Environment

3.2.1 The equipment must be able to operate and detect ultrasonic defects in the following configuration and environmental conditions.

3.2.2 Track Configuration and Conditions.

The equipment shall operate in the following track configurations and conditions.

a) Structure gauge – Motorised/self-propelled trolley mounted and pedestrian operated equipment to comply with LU standard 1-156 – Gauging and Clearances;

b) Track gauge from 1422mm to 1468mm;

c) Cant up to 150mm;

d) Minimum curve radius of 60 metres;

e) Rail profiles BS 95RBH (bull head) as shown in BS11, 54E1, 56E1 and 60E1 (flat bottom) as shown in BS EN 13674-1;

f) Rail grades R220, R260, R350HT and R370CrHT as defined in BS EN 13674-1;

g) Rail inclination of 1:20 (plain line) and 1:20 or vertical (junction work);

h) In tunnels (concreted track), sub surface or open track sections (ballasted track);

i) Plain line rails and junctionwork rails (where rail bottom can be detected);

j) In the presence of check rails (in points and crossings and on curves less than 200m radius), 3rd and 4th rail conductor rail systems and station pits;

k) In the presence of a lubrication and friction modifier management regime;

l) The equipment shall be tolerant to worn or lipped rail, as defined in LU standard 1-159 Track – Dimensions and Tolerances.

3.2.3 Environmental Conditions.

The equipment shall operate in the following environmental conditions:

a) Air temperature range:

i. In storage and transit – minus 25°C to plus 65°C;

ii. In measurement mode – minus 10°C to plus 35°C;

b) Weather resistance – must be capable of operating and measuring all weather conditions (desired IP rating of 67);

c) Humidity level – 99%;

d) Low light and bright sunlight.

3.3 Minimum Technical requirements

3.3.1 Ultrasonic Probe Unit.

The ultrasonic probe unit shall be capable of:

a) As a minimum scanning the head, web and foot of the rail in one pass in the positions in the rail as shown in Figure 1;

b) Testing at a measurement speed of 16km/h for a motorised trolley;

c) Giving a warning to the operator that the there is a loss of coupling or rail bottom;

d) Detecting defects to the size thresholds and probability as defined in NR/SP/TRK/014 both in the direction and against direction of traffic.

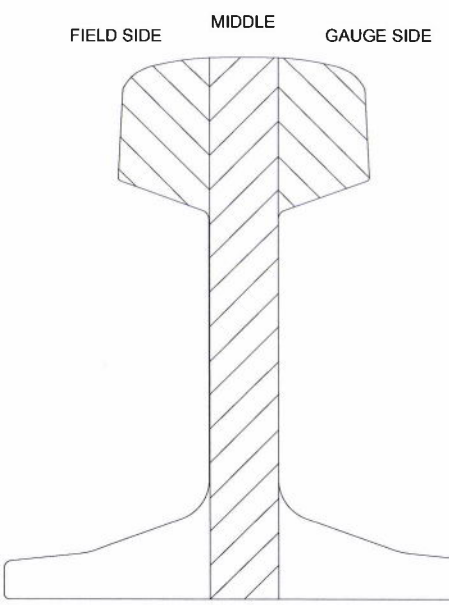

Figure 1 – Defect locatable areas (hatched)

3.3.2 Processing Module.

The processing module shall:

a) Have at least one channel for hand probe testing;

b) Provide A-scan and B-scan modes (as defined in EN 1330-4) and record B scan mode;

c) Be capable of daily operator calibration or be self calibrating;

d) Be able to detect rail profile;

e) Be set up to maximise productivity.

3.3.3 Power Supply.

The power supply for the ultrasonic test equipment shall be capable of:

a) Testing for at least 8 hours before recharging;

b) Being recharged in no more than 12 hours;

c) Being recharged from a 240V power supply.

3.3.4 Display and Recording Unit.

The display and measurement recording unit shall:

a) Display measurement results and defects by location, depth and size in A and B scan modes and display the linear location;

b) Show on a single display the results for dual rail testing;

c) Be suitably sized and lit for use in low light and bright light environments (i.e. tunnels and sunlight);

d) Have no measureable parallax when viewed at an angle of 15 degrees from normal;

e) Be recessed or protected to minimise contact damage;

f) Be unaffected by magnetic fields produced by 800V DC, 4000A at 500mm;

g) Be able to record the measurement;

h) Download the recorded data to a PC;

i) Have sufficient internal memory to record for a 2 successive 8 hour shifts at 16km/h.

3.3.5 Location Detection.

The linear location tracking shall be capable of:

a) Being set manually by the operator at track location plates;

b) Connecting an RFID tag reader;

c) Recording defects by GPS location (in the open section);

d) Being reported in LU location coding system (LCS) and meterage;

e) Measuring to an accuracy of plus or minus 1m per 1000m or better;

f) Recognising a change in direction of travel and adjusting recording accordingly in B-scan mode;

g) Recording in positive and negative kilometrage.

3.3.6 Measurement Distance.

The equipment shall be capable of:

a) 40 km (8 hours at 5km/h) for pedestrian operated equipment;

b) 128 km (8 hours at 16km/h) for motorised trolley equipment.

3.4 Ergonomics and Construction

3.4.1 All equipment.

The equipment shall meet the requirements of LU standards 1-172 Plant, Tools and Equipment – Performance and Design and 1-173 Plant, Tools and Equipment – Inspection and Maintenance.

The equipment shall have minimal set up time and be designed to reduce operator error in setting up and breaking down for maximum productivity. The complete testing unit shall be capable of carrying the ultrasonic probe unit, couplant container and contents, power supply, processing unit, display and recording unit.

All equipment shall be sufficiently robust for daily handling in the LU track environment, including loading and unloading from vehicles and onto the track. The equipment shall have a minimum shock resistance of 10g (11 millisecond half wave).

The equipment shall be portable in the LU environment and capable of being manually transported from street level to underground track level via stairs, escalators and lifts. The mass of the equipment or its component sub assemblies shall be limited to 25kg.

The equipment can be any colour except green or red.

3.4.2 Pedestrian Operated Equipment.

The equipment shall be safe and comfortable for manual use, minimise the risk of slips, trips and falls when being operated, preferably illuminating the worksite and shall isolate vibration from the user, in accordance with the Control of Vibration at Work Regulations 2005.

The equipment shall be capable of being manually pushed and monitored in the presence of the negative conductor rail, station pits and other equipment located in the '4 foot' area of the track.

Equipment with the capacity of testing both rails simultaneously shall be capable of being handled and operated by one operative.

3.4.3 Motorised/Self-propelled Trolley Mounted Equipment.

The operational speeds shall be 16 km/h maximum.

The trolley shall comply with section 12 of LU Rule Book 18. The trolley, or sub-assemblies, shall be no more than 50kg (i.e. manual handling limit of a 2 person lift).

Alternatively the trolley mounted equipment shall be capable of being fitted to or towed by an LU approved trolley.

3.5 Interference with Operational Railway

The equipment shall conform to current regulations regarding suppression of radio interference and comply to LU standard 1-222 Electromagnetic Compatibility. Compliance with this standard shall be submitted by the supplier and verified during the product approval stage.

3.6 Software and Post Inspection Processing

The software to operate the ultrasonic measuring equipment shall have the ability to:

a) Select measurement channels;

b) Set thresholds and gates;

c) Calibrate instrument;

d) Display A-scan and B-scan modes;

e) Record the measurement results (defect and location);

f) Have operator and administrator login.

The software for the post inspection processing shall have the ability to:

g) Identify and highlight rail defects for follow up verification;

h) Review measurement results;

i) Monitor deterioration and trends using successive runs;

j) Operate in the Microsoft Windows environment (all versions);

k) Have the ability to transfer data into MS Office applications;

l) Produce a defect sheet;

m) Produce a work order for Maximo and Ellipse asset management software.

3.7 Maintenance Requirement

The following support is required:

a) Annual maintenance and certification;

b) Service level agreement for ad hoc repairs;

c) Software support.

3.8 Training

Training and certification shall be provided:

a) For ultrasonic equipment operators to reach the required competence level to operate the equipment;

b) For re-assessing operator competence on a cyclic basis.

All training, mentoring, testing and competence assurance shall be carried out by a provider that has been approved by LU.

3.9 Information

The following information shall be provided by the supplier to LU:

a) Full technical specification for the equipment;

b) Information in support of the testing and approval of the equipment;

c) Maintenance and operation manuals;

d) Training manuals.

Information to be supplied preferably in PDF format.

3.10 Testing and Approval

The supplier shall provide a certificate of conformity that the ultrasonic rail flaw detection equipment conforms to the requirements of this specification.

The technical assessment of the equipment will be carried out by a representative nominated by LU. The technical assessment will consist of:

a) A review of approvals already granted for the equipment and the supporting evidence and information;

b) Technical and field tests on the LU network;

c) A review by TfL IM for compatibility with the existing IM infrastructure;

The supplier shall provide the necessary documentation and equipment for the testing and approval stage.

On successful completion of technical assessment LU will issue an Approved Product Certificate in accordance with the LU APR procedure.

4 Responsibilities

4.1.1 The Head of Track Engineering shall have sole responsibility of this specification.

4.1.2 The LU Procurement Agent shall be responsible for incorporating the requirements of the LU Specification in any contract to which it is relevant.

5 Supporting information

5.1 Background

5.1.1 The intention of this specification is to ensure that LU is supplied with fit for purpose equipment for the ultrasonic inspection of rails using 'B scan' presentation.

5.2 Safety considerations

The potential consequences of not complying with this specification are detailed in LU standard S1158 paragraph 5.2.

6 References

6.1 References

6.1.1 British Standards

Document no.	Title
BS11	Specification for railway rails
BS EN 13674-1	Railway applications – Track – Rail, Part 1: Vignole rails 46kg/m and above
BS EN 12668	Non destructive testing – Characterisation and verification of ultrasonic equipment
BS EN 1330-4	Non-destructive testing. Terminology. Terms used in ultrasonic testing.

6.1.2 Other national standards

Document no.	Title
NR/SP/TRK/014	Rail testing: detection criteria

6.1.3 LU company documents

Document no.	Title
1-159	Track – Dimensions and tolerances
1-172	Plant, Tools and Equipment – Performance and Design
1-173	Plant, Tools and Equipment – Inspection and Maintenance
G1021	Hand Arm Vibration Risk Assessment Guidance
LU Rule Book 18	Engineer's trains, vehicles and trolleys
S1158	Track – Inspection and Maintenance

6.2 Abbreviations

The following abbreviations are created:

a) within London Underground's Glossary of Terms (1-622) (a Category 1 Standard);
b) from published sources that are clearly identified.

Abbreviation	Definition	Source
IM	Information Management	a
LU	London Underground	a
TFL	Transport for London	a

6.3 Definitions

The following topic specific definitions are created:

a) within London Underground's Glossary of Terms (1-622) (a Category 1 Standard);
b) from published sources that are clearly identified.

Term	Definition	Source
Kinematic limit	The maximum space available for kinematic envelopes within the structure profile determined for the route. Note: For existing lines, the kinematic limit is determined by introducing the safety clearance inside the existing structure profile.	a
Structure gauge	The construction limits to be observed when building new railways, bridges. The boundary enclosing the clearances required outside the Kinematic Limit to enable the railway to be operated in safety. This boundary must be enlarged on curved or canted track (or both) to allow for their effects. The Structure Gauge includes provision for staff safety where staff are permitted on the railway whilst trains are running.	a
B scan	Image of the results of an ultrasonic examination showing a cross section of the test object perpendicular to the scanning surface and parallel to a reference direction.	BS EN 1330-4

6.4 Technical content manager

Paragraph number	Technical content manager
All	LU Head of Track Engineering

6.5 Document history

Issue no	Date	Changes	Author
A1	January 2012	As per DRACCT proposal No. 01056 a new Technical Specification for ultrasonic rail flaw detection equipment produced to enable LU to procure the most fit for purpose equipment	Toby Johnson

Schedule 4
Form of Order

To be supplied by individual Purchase Orders which will be linked back to this Outline Agreement and therefore subject to the Terms and Conditions of this Agreement.

Schedule 5
Contract Variation Procedure

1 The cost of any Variation Order shall be agreed between the parties taking account of the reasons why the Variation Order was required.

2 The Company may propose a variation by completing Part A of the Variation Proposal and supplying three (3) copies of it to the Supplier. Within five (5) Working Days of receipt, or such other time as may be agreed by the Company, the Supplier shall complete Part B of the Variation Proposal and shall supply two (2) copies of the Variation Proposal to the Company. The Company shall be entitled, at any time within thirty (30) days of receipt, to instruct and authorise the Supplier to proceed with the variation on the terms so set out by each party by completing and signing Part C of one copy of the Variation Proposal (which, following such signature, will be referred to as a "**Variation Order**") and supplying such Variation Order to the Supplier. The relevant part(s) of the relevant Contract shall thereupon be varied accordingly.

3 The Supplier may propose a variation, after requesting the issue by the Company of a Variation Proposal variation number, by completing Parts A and B of a Variation Proposal and supplying two (2) copies of it to the Company. The Company shall be entitled, at any time within thirty (30) days of receipt, to instruct the Supplier to proceed with the variation on the terms so set out by the Supplier by completing and signing Part C of one copy of the Variation Proposal (which, following such signature, will be referred to as a "**Variation Order**") and supplying such Variation Order to the Supplier. The relevant part(s) of the relevant Contract shall thereupon be varied accordingly.

4 The Supplier may indicate in a Variation Proposal that the price is an estimated price but, if it does so, it shall supply a firm price to the Company in writing at least seven (7) days before the expiry of the time within which the Company is entitled to instruct the Supplier to proceed with the variation.

5 The price indicated by the Supplier must be the full price and shall cover all costs associated with the variation. If appropriate a range of prices may be shown corresponding to the quantity of Goods to be supplied and extent of the Services to be carried out.

6 In an emergency, both parties shall use their reasonable endeavours to expedite the actions permitted or required under the Contract Variation Procedure.

7 The Company will not accept any retrospective claims for additional work caused by a variation which has not been approved by the Company in accordance with the Contract Variation Procedure before the commencement of such additional work.

8 All authorised additional work resulting from any Variation Proposal shall be priced in accordance with any applicable rates set out in Schedule 2.

9 The Supplier shall at all times act reasonably and shall price each Variation Proposal at the least possible additional cost to the Company that it is reasonably and economically practicable for the Supplier to offer and which has the least possible impact on the terms of the Agreement and the relevant Contract, including, but not limited to the Specification and the Order Programme.

10 Strict adherence to the procedure described in this Schedule 5 shall be a condition precedent to any addition to the price for the Goods and Services. If the Supplier does not adhere to each paragraph in this Schedule 5 then the Supplier shall not be entitled to any addition to the price notwithstanding that the Supplier may have supplied additional or varied Goods and/or Services.

Appendix 1

Form of Variation Proposal/Variation Order

To:	From:

Contract Reference Number:
Order Number:
Variation Number:
Variation Title:

PART A (TO BE COMPLETED BY THE ORIGINATOR OF THE VARIATION ORDER)	
Description of change:	
Reason for changes and impact (if any) on Contract:	
Variation Proposal Authorised by:	**Proposal Date:**

PART B (TO BE COMPLETED BY THE SUPPLIER)	
Price Breakdown Note: If a further breakdown is needed please append details as a separate sheet.	
Expected Order Delivery Date and/or Order Completion Date:	
Supplier's Representative: **Print Name:** ..... **Signature:** ..... **Date:**	
Completed document to be returned to the Company's Representative	

PART C (TO BE COMPLETED BY THE COMPANY'S REPRESENTATIVE)
Comment on Parts A and B:
Variation Authorisation **Company's Representative:** **Print Name:** ..... **Signature:** ..... **Date:** .....

Schedule 6

QUENSH

F0780 A18 Contract Menu

This Contract Menu must be used in conjunction with Category 1 Standard S1552 "Contract QUENSH Conditions''

Contract Menu

Contract No:	TfL 01170
Contract Name	Supply of C.A.T.E.R-EU "B" Scan Resource and Equipment
Client:	London Underground Limited
Supplier:	C.A.T.E.R–EU

Principal Contractor: **Yes** ❑ **No** ✓

Guidance

The menu is a tool which is used by the Client to identify conditions that apply to specific contracts and communicate these conditions to the Supplier.

How to complete the menu

1) The Client evaluates the scope of work and enters 'Y' or 'N' in the 'Identified by the Client' column of the menu against each condition selected as applicable or not applicable to the Contract. In the 'Other documents / comments' column the Client can make references to other documents which are supplementary information which is available although not contained within the QUENSH manual but should be considered by the Supplier when they review the conditions. Copies of any additional documents identified in the menu shall be made available to the Supplier. All documents referenced in the Menu shall be current issue, unless otherwise advised. This column can also be used to communicate information (comments) to the Supplier which may be of use to the Supplier when reviewing the conditions.
2) The Client fills in 'Client menu (Invitation to Tender)' section on the last page of the menu and issues the menu as part of the ITT.
    a) The Supplier receives the ITT, evaluates the scope of work and, as a requirement of the tendering process, inserts 'Y' or 'N' in the 'Identified by the Supplier' column of the menu against each condition selected as being applicable. These selections may be different from those identified by the Client. Where the Supplier's selection differs from the Client's selection, a clear explanation of the reason for these differences shall be given by the Supplier. A reference to these explanations shall be put in the 'Reference to explanation' column on the menu.
    b) The Supplier representative signs and dates the 'Supplier menu (Tender)' on the last page of the menu and submits it with the tender, for consideration by the Client.
    c) Differences in the Client and Supplier menu selections will be discussed and resolved with the Client at subsequent tender review meetings. The agreed final version of the menu selections shall form a mandatory part of the Contract and shall be complied with by all Suppliers and their sub-contractors.
    d) The menu shall be subject to project version and document control.

Queries on the menu

Any queries in relation to the Contract QUENSH Conditions selected on the menu are to be referred to the Client representative, see contact details/address on last page of the menu.

Contract menu

Requirements in QUENSH

Applicable requirements identified by Client				Applicable requirements identified by Supplier	
Section	**Topic**	**Other documents / Comments**	**Y / N**	**Y / N**	**Notes**
4	Agreement of the applicable QUENSH contract conditions				
5	Supplier's selection of sub-contractors		N	N	
6	Identification of Safety Critical Activities		Y	Y	
7	Works Environmental Management		Y	Y	
8	Emergency Plan		Y	Y	
9	Method Statements		Y	Y	
10	Health, Safety and Environment File		Y	Y	
11	Pre-start LU health, safety and environment meeting		Y	Y	
12	Supplier's site induction		Y	Y	
13	Site Person in Charge		N	N	
14	**Staff requirements**				
14.1	**Behaviours**				
14.1.1	Alcohol and drugs		Y	Y	
14.2	**Control of hours worked**				
14.2.1	Working Time Regulations		Y	Y	
14.2.2	Fatigue		Y	Y	
14.3	**Knowledge**				
14.3.1	English language		Y	Y	
14.3.2	Access Card and Worksite Briefing		Y	Y	
14.3.3	Visitors to sites		Y	Y	
14.4	**General competence**				
14.4.1	Evidencing competence of safety critical staff		N	N	
14.4.2	Identification of safety critical staff		N	N	
14.4.3	Competent external safety critical personnel		Y	Y	
14.4.4	Training		Y	Y	
14.4.5	Asset specific competence		Y	Y	

Applicable requirements identified by Client				Applicable requirements identified by Supplier	
Section	**Topic**	**Other documents / Comments**	**Y / N**	**Y / N**	**Notes**
14.5	**Medical requirements**		Y	Y	
14.6	**Identification of Suppliers staff**		Y	Y	
14.7	**Clothing**		Y	Y	
15	**Permits and licences**				
15.1	LU specific permits and licences		Y	Y	
15.2	Permits, licences and certificates for Supplier's staff		Y	Y	
16	**The Principles of Access**				
16.1	Introduction		N	N	
16.2	Access to Stations		Y	Y	
16.3	Access to Track		Y	Y	
16.4	Access to depots		Y	Y	
17	**Applying for Planned Access**				
17.1	Introduction		N	N	
18	Applying for General Access		N	N	
18.1	Constraints that apply to Generic Access		N	N	
19	Access for fault repair		N	N	
20	Operational Assurance		N	N	
21	**Closures and possessions**				
21.1	Requirements for closures		Y	Y	
21.2	Requirements for possessions		Y	Y	
22	**Controls at point of access**				
22.1	Publication of works		Y	Y	
22.2	Checks at point of access		Y	Y	
22.3	Signing-on with the Station Supervisor		Y	Y	
22.4	**Track specific requirements**				
22.4.1	Person providing protection		N	N	
22.4.2	Possessions		N	N	
23	Removal of supplier's personnel from LU Premises		Y	Y	
24	Incidents		Y	Y	
25	Notification of regulatory concern or action		Y	Y	

Applicable requirements identified by Client				Applicable requirements identified by Supplier	
Section	**Topic**	**Other documents / Comments**	**Y / N**	**Y / N**	**Notes**
26	Confidential Incident Reporting and Analysis System (CIRAS)		Y	Y	
27	**Monitoring**				
27.1	LU inspections		Y	Y	
27.2	Monitoring the supply chain		Y	Y	
27.3	Health, safety and environmental surveillance by the supplier's personnel		Y	Y	
27.4	Work location inspection and audit		Y	Y	
27.5	Timescales for rectifying non-compliances		Y	Y	
28	Radio transmitters and transceivers		Y	Y	
29	Mobile phones		Y	Y	
30	Knives		Y	Y	
31	Site health, safety and environment committee		Y	Y	
32	Site housekeeping and security		Y	Y	
33	Accidental damage, obstruction or interference with assets		Y	Y	
34	Delivery of materials		Y	Y	
35	**Conveyance of loads**				
35.1	Conveyance of loads on lifts and escalators		Y	Y	
35.2	Conveyance of hazardous materials and substances		N	N	
36	Asbestos (non asbestos removal projects)		N	N	
37	Working in or near lifts and escalators		N	N	
38	Work on or adjacent to utilities and High Voltage cables (buried services)		Y	Y	
39	Working on or about the track		Y	Y	
40	Access to electrical sub-stations, working equipment, relay and other secure rooms		N	N	
41	Entering areas with gaseous fire suppression systems		N	N	
42	**Fire prevention**				
42.1	General requirements		Y	Y	
42.2	Temporary fire points		N	N	
42.3	Timber		N	N	
42.4	Composites		N	N	

Applicable requirements identified by Client				Applicable requirements identified by Supplier	
Section	**Topic**	**Other documents / Comments**	**Y / N**	**Y / N**	**Notes**
42.5	Sheeting materials		N	N	
42.6	**Gas cylinders**				
42.6.1	Use of gas cylinders in below ground locations		N	N	
42.6.2	Storage of gas cylinders (above ground)		N	N	
42.7	**Flammable and highly flammable materials**				
42.7.1	Use of flammable and highly flammable materials below ground		N	N	
42.7.2	Storage of flammable and highly flammable materials below ground		N	N	
43	**Hot work and fire hazards**				
43.1	Hot work		N	N	
43.2	Reasonable notice of works		N	N	
43.3	**Precautions**				
43.3.1	Buildings and assets		Y	Y	
43.3.2	Gas cylinders		N	N	
43.3.3	Gas detection		N	N	
44	**Storage**				
44.1	General requirements for storage		Y	Y	
44.2	Trackside storage		Y	Y	
44.3	Hazardous materials and substances		N	N	
44.4	Allocation of space on operational property		N	N	
45	Plant and equipment		Y	Y	
46	Clearance approvals		N	N	
47	Access equipment		N	N	
48	Temporary works		N	N	
49	Temporary fences and hoardings		N	N	
50	**Temporary lighting and power supplies**				
50.1	General requirements		N	N	
50.2	Lighting in tunnels and shafts		N	N	
51	Screening of lights and positioning		N	N	
52	**Environmental requirements**				
52.1	General environmental requirements		Y	Y	

Applicable requirements identified by Client				Applicable requirements identified by Supplier	
Section	**Topic**	**Other documents / Comments**	**Y / N**	**Y / N**	**Notes**
52.2	Environmental nuisance		Y	Y	
52.3	Water		N	N	
52.4	Waste management		N	N	
52.5	Noise and vibration		N	N	
52.6	Archaeology, historical interest and listed buildings		N	N	
52.7	Wildlife and Habitats		N	N	
52.8	Resource Use		N	N	
52.9	Pest control		N	N	
52.10	Land and water pollution prevention		N	N	
53	**Quality requirements**				
53.1	Records		Y	Y	
53.2	Retention period		Y	Y	
53.3	Availability of records for inspection		Y	Y	
53.4	Statistical process control, audit and inspection procedures		Y	Y	
53.5	General quality requirements		Y	Y	
53.6	Quality Plan		Y	Y	
53.7	Testing and inspection		Y	Y	
53.8	Certification of conformity		Y	Y	
53.9	Quarantine		Y	Y	
53.10	Traceability		Y	Y	
53.11	Maintenance and servicing		Y	Y	
53.12	Design		N	N	
53.13	Computer aided design		N	N	
53.14	Asset commissioning and handover		N	N	

Other requirements / comments

Client/Supplier approval

Client Menu (Invitation to Tender)

Prepared by: Stuart Cooper Signatu

Approved by (the Client's representative): Stuart Cooper Signatu

Title: Ultrasonic Delivery Manager

Address:

Phone No:

Email:

Revision of this menu: _____

Supplier Menu (Tender)

Approved by (the Supplier's): TERENCE CLARKE Signature:

Title:

Address:

Phone No:

Email:

Revision of this menu: _____

Contract Menu (Final Approval of Menu)

Evidence shall be recorded of any amendments to the Client's menu which were agreed in establishing the Contract Menu.

Client's representative approval: R Thomas Sign

Supplier's representative acceptance: TERENCE CLARKE Sign

Schedule 7
Deed of Novation

THIS DEED is made day of 201[ ]

BETWEEN:

LONDON UNDERGROUND LIMITED a company registered in England and Wales under number 01900907 and having its registered office at Windsor House, 42-50 Victoria Street, London SW1 0TL (the "**Company**"); and

[ ] a company registered in [England and Wales] under number [ ] and having its registered office at [ ] (the "**Supplier**"); and

[ ] a company registered in [England and Wales] under number [ ] and having its registered office at [ ] (the "**New Company**").

WHEREAS:

(A) The Company has a framework agreement dated [ ] and referenced [insert contract number] with the Supplier pursuant to which contracts may be entered into for the provision of [describe in brief the scope of supply] (together the "**Contract**").

(B) The Company wishes to transfer [part of] its benefit and burden under the Contract to the New Company.

(C) The Supplier and the New Company have agreed to such transfer upon the terms and conditions of this Deed.

IT IS AGREED AS FOLLOWS:

1. In this Deed:

1.2 "**Transfer Date**" means [ ].

2. With effect from the Transfer Date:

2.2 the New Company undertakes to perform the obligations of the Company under the Contract and be bound by its terms in every way as if the New Company is and had been named at all times as a party to the Contract in lieu of the Company;

2.3 the Supplier releases and discharges the Company from all demands and claims whatsoever in respect of the Contract and accepts the liability of the New Company in relation to the Contract in lieu of the liability of the Company and agrees to be bound by the

terms of the Contract in every way as if the New Company were and had been a party to the Contract at all times in lieu of the Company;

2.3 for the avoidance of doubt, it is hereby expressly agreed that:

2.3.1 any and all rights, claims, counter-claims, demands and other remedies of the Supplier against the Company accrued under or in connection with the Contract prior to the date hereof shall be exercisable and enforceable by the Supplier against the New Company; and

2.3.2 any and all rights, claims, counter-claims, demands and other remedies of the Company against the Supplier accrued under or in connection with the Contract prior to the date hereof shall be exercisable by the New Company against the Supplier.

2.4 the Company transfers its rights and obligations under the Contract to the New Company.

3. A person who is not a party to this Deed may not enforce any of its terms by virtue of the Contracts (Rights of Third Parties) Act 1999.

Schedule 8
Programme

1. Assuming a Commencement Date of 9th December 2019 the Programme shall be:

   1.1. Contract review meetings chaired by the Contract Manager shall be held when required by the Contract Manager (or the Supplier). These meetings will be held at intervals to be agreed. The Contract Manager shall arrange the meetings and produce minutes that shall be published within 10 working days of the meetings.

   1.2. Contract progress meetings shall review the following:

      (a) Accuracy of previous meetings;

      (b) Supplier's service delivery performance;

      (c) Supplier's sub-contracts/invoices;

      (d) The Company's reforecast schedule of requirements; and

      (e) Other matters from time to time determined to be necessary by the Contract Manager.

2. The Completion Date will be 8th December 2021,

   2.1. The Company may at its sole discretion extend the duration of the Contract by a further one (1) year plus an additional one (1) year period on the same Terms and Conditions.

   2.2. The Company shall notify the Supplier in writing whether or not it is considering the first optional year extension by no later than thirty months after the Contract Start Date.

   2.3. The Company shall notify the Supplier in writing whether or not it is considering the second optional year extension by no later than six months after the commencement of the first optional year.

   2.4. Each extension period is subject to approval and is at the discretion of the Company, they are under no obligation to undertake any of the extension options.

Schedule 9

Not Used

Schedule 10

Supplier Performance

Service Delivery Indicators

Ref:	SDI Description	Green	Amber	Red
1.1	**Acknowledgement of Contact:** All requests to be acknowledged within 12 hours of receipt	Greater than or equal to 95%	85% - 95%	Less than 85%
1.2	**Data Analysis:** Data to be analysed and results transmitted to LU within 8 hours receipt.	Greater than or equal to 95%	85% - 95%	Less than 85%
1.3	**Delivery of Goods:** Delivery of Goods in accordance with lead times as stated in Schedule 3.	Greater than or equal to 95%	85% - 95%	Less than 85%

Escalation Process

In the event of unsatisfactory standards, including but not limited to, failure to reach the targets set by the Service Delivery Indicators above, faults open beyond the rectification time and any other deficiencies in performance, the calculation process shall be invoked by the Company in their absolute discretion.

The purpose of the escalation process is to provide a structured framework within which the Parties can address unsatisfactory performance standards against timescales and deliverable targets. For the purpose of this process notified levels of poor performance will be termed ‘Non-Conformances’.

This procedure operates within four levels; the lowest level Non-Conformance being Level 1, should Non-Conformance escalate they will receive an appropriate level of management from the Company and the Supplier. Level 3 gives final review and opportunity to remedial actions to solve the issues before Non-Conformance reaches Level 4, which will entitle the Company to terminate in accordance with Clause 20 of the Terms & Conditions of Contract.

In the event that a performance issue is not resolve between the Company and the Supplier then the Non-Conformance may be raised formally to a Level 1 or Level 2 Non-Conformance, depending upon the severity of the performance failure. It is possible for a number of Level 1 and/or Level 2 issues to be in hand at any one time.

Summary of Escalation Process

TRIGGER	LEVEL	ACTION	BY	RESULT
Failure to rectify identified non-conformance issued as part of SDIs.	Level 1	Improvement plan with precise end date required. On-going review dates specified.	Supplier	Satisfactory – Stop Unsatisfactory – Level 2
Level 1 re-occurrence	Level 2	Improvement plan with precise end date required, On-going review dates specified	Supplier	Satisfactory – Stop Unsatisfactory – Level 3

Level 2 re-occurrence	Level 3	Final review. Final opportunity for remedial action. Precise end date required.	Supplier	Satisfactory – Stop Unsatisfactory – Level 4
Level 3 re-occurrence	Level 4	POSSIBLE TERMINATION		

Issue shall be resolved locally on a day-to-day basis to the mutual satisfaction of all Parties and shall not be raised to Level 1 without prior endeavours to resolve. At this stage of the process, the Supplier may be required to supply a Root Cause Analysis and a Recovery Plan.

Level 1

The Level 1 Non-Conformance will be recorded by the Company and a notice submitted to the Supplier. The Supplier shall in response (such response to be within 10 business days of service of the notice by the Company) prepare and submit to the Company, a Level 1 Non-Conformance Report. Such report will contain:

- Confirmation of the date and details for Level 1 Non-Conformance
- The steps to be taken by the Supplier to ensure there is no repetition of such Level 1 Non-Conformance ("the Level 1 Required Action")
- The time within which such Level 1 Required Action is to be completed (which shall be a reasonable period and no longer than the "Level 1 Rectification Period".

The Supplier and the Company will use all reasonable endeavours to agree the Level 1 Rectification Period and the Level 1 Required Action. If the agreed Level Required Action is carried within the agreed Level 1 Rectification Period then the Non-Conformance will be classed as closed.

Level 2

If the Company determines that a Non-Conformance should be treated as a Level 2 Non-Conformance; or the Supplier fails to provide the Company with a Level 1 Non-Conformance Report within 10 Business Days; or the Supplier fails to rectify the Level 1 Non-Conformance with the Level 1 Rectification Period, then this shall be a "Level 2 Non-Conformance" and the Company will submit a notice to the Supplier.

The Supplier shall in response (such response to be within 10 business days of service of notice by the Company) prepare and submit to the Company a Level 2 Non-Conformance Report. Such report will contain:

1. The date and details of the Level 2 Non-Conformance
2. The Level 2 Required Action.
3. The Level 2 Rectification Period.

The Supplier and the Company will use all reasonable endeavours to agree the Level 2 Rectification Period and the Level 2 Required Action.

If the Level 2 Required Action is taken within the agreed Level 2 Rectification Period then the Non-Conformance will be considered resolved. However a record of the Non-Conformance will be made and Level 2 trends monitored.

Level 3

If the Company determines that the Non-Conformance should be treated as a Level 3 Non-Conformance; or the Supplier fails to provide the Company with a Level 2 Non-Conformance Report within 10 business days; or the Supplier fails to rectify the Level 2 Non-Conformance within the Level 2 Rectification Period, then this shall be a “Level 3 non-Conformance” and the Company will submit a notice to the Supplier.

The Supplier will provide the Company a “Level 3 Non-Conformance Report”, setting out the steps which the Supplier has taken, or will take, to ensure no further Non-Conformances of this type shall arise (the “Level 3 Required Action”); and the period (being no greater than 2 months from the time of occurrence of the Level 3 Non-Conformance for the Supplier to put in place steps to ensure that no further Non-Conformance of the same type occur (the “Level 3 Rectification Period”).

Level 4

The Supplier fails to provide the Company by the agreed deadline, a Level Non-Conformance Report; or the Supplier fails to undertake the Level 3 Required Action within the Level 3 Rectification Period; or the Supplier fails to rectify the Level 3 Non-Conformance within the Level 3 Rectification Period.

Schedule 11

Contract Management

1. The name and address of the LU Nominee Contract Manager will be:

Name: Stuart Cooper

Tel:

Mobile:

Address:

Email:

The Name and address of London Underground Commercial Manager:

Name: Ifeoma Odetunde

Tel: **Address**:

Email:

2. The name and address of the Key personnel representing the Supplier with whom the Company will deal with in respect of the Contract are as follows:

Name	Address	Area of Responsibility
Terence Clarke	C.A.T.E.R – EU	Managing Director

EXECUTION PAGE:

This Agreement has been s ed by for and on behalf of the parties on the day and year written above.

Signed by

for and on

)

London Underground Limited) [Name and position of authorised signatory]

Signed by TERENCE CLARKE

[SUPPLIER]) [Name and position of authorised signatory] CATER-EU LTD