

## Call-Off Contract

**Framework Agreement Number: ITC11446**

**Call-Off Contract Number: 03**

**TfL Contract Reference: ICT12212 Wi-Fi Phase 3 Assurance and Surveys**

**THIS CALL-OFF CONTRACT** is made the 06<sup>th</sup> day of November 2015.

### **BETWEEN:**

- (1) **Transport for London** (“**the Contracting Authority**”); and
- (2) **Installation Technology Limited**, a company registered in England and Wales (Company Registration Number SC147188) whose registered office is at Unit 13, Headley Park Area 10, Headley Road East, Woodley, Reading, RG5 4SW (“**the Service Provider**”).

### **RECITALS:**

- A. The Contracting Authority and the Service Provider have entered into an agreement dated 27<sup>th</sup> February 2015 which sets out the framework for the Service Provider to provide certain Deliverables to the Contracting Authority or the Contracting Authority (“**the Framework Agreement**”).
- B. The Contracting Authority wishes the Service Provider to provide the specific Deliverables described in this Call-Off Contract pursuant to the terms of the Framework Agreement and this Call-Off Contract and the Service Provider has agreed to provide such Deliverables on those terms and conditions set out in the Call-Off Contract.

### **THE PARTIES AGREE THAT:**

#### **1. CALL-OFF CONTRACT**

- 1.1 The terms and conditions of the Framework Agreement shall be incorporated into this Call-Off Contract.
- 1.2 In this Call-Off Contract the words and expressions defined in the Framework Agreement shall, except where inconsistent with the context requires otherwise, have the meanings given in the Framework Agreement. In this Call-Off Contract references to Attachments are, unless otherwise provided, references to attachments of this Call-Off Contract.

#### **2. DELIVERABLES**

- 2.1 The Deliverables to be supplied by the Service Provider pursuant to this Call-Off Contract are set out in Attachment 1.

- 2.2 The Service Provider acknowledges that it has been supplied with sufficient information about this Call-Off Contract and the Deliverables to be provided and that it has made all appropriate and necessary enquiries to enable it to provide the Deliverables under this Call-Off Contract. The Service Provider shall neither be entitled to any additional payment nor excused from any obligation or liability under this Call-Off Contract or the Framework Agreement due to any misinterpretation or misunderstanding by the Service Provider of any fact relating to the Deliverables to be provided. The Service Provider shall promptly bring to the attention of the Call-Off Co-ordinator and Commercial Manager any matter that is not adequately specified or defined in the Call-Off Contract or any other relevant document.
- 2.3 The timetable for any Deliverables to be provided by the Service Provider and the corresponding Milestones (if any) and Key Milestone Dates (if any) and Implementation Plan (if any) are set out in Attachment 1. The Service Provider must provide the Deliverables in respect of this Call-Off Contract in accordance with such timings and the Service Provider must pay liquidated damages in accordance with the Framework Agreement of such an amount as may be specified in Attachment 1. The Service Provider shall be liable for the ongoing costs of providing Deliverables in order to meet a Milestone and Key Milestone Dates. Time shall be of the essence in relation to the Key Milestone Dates where stated in the Implementation Plan.
- 2.4 The Service Provider acknowledges and agrees that as at the commencement date of this Call-Off Contract it does not have an interest in any matter where there is or is reasonably likely to be a conflict of interest with the Deliverables provided to the Contracting Authority under this Call-Off Contract.

### **3. CALL-OFF TERM**

This Call-Off Contract commences on the date of this Call-Off Contract or such other date as may be specified in Attachment 1 and subject to the provisions of the Framework Agreement, shall continue in force unless terminated earlier in whole or in part in accordance with the Framework Agreement.

### **4. CHARGES**

Attachment 2 specifies the Charges payable in respect of the Services provided under this Call-Off Contract i.e.

Fixed and firm Charges for Crossrail Surveys (section 1.5):

██████████

Provisional sums for all other options (section 1.4):

██████████

Such options are entirely at the discretion of the Contracting Authority and will be formally instructed under Attachment 4, providing the following are true:

- a) The Service provider submits a Fixed & Firm price for each element that meets the Contracting Authority's requirements and is valued at less than the associated Provision Sum; and

- b) The Contracting Authority's Project Manager has secured the appropriate budget for each work package, as demonstrated by a signed Budget Approval Form.

Total Contract value is not to exceed [REDACTED] unless duly authorised accordingly e.g. through duly substantiated anomalies from the Provisional Sums, that are approved by the Contracting Authority.

The Charges shall not increase during the duration of this Call-Off Contract unless varied in accordance with the Framework Agreement. The Service Provider shall submit invoices in accordance with the Framework Agreement and the Charges shall be paid in accordance with this Call-Off Contract.

**5. CALL-OFF CO-ORDINATOR /COMMERCIAL MANAGER AND KEY PERSONNEL**

The Contracting Authority's Call-Off Co-ordinator in respect of this Call-Off Contract is named in Attachment 1 and the Service Provider's Key Personnel in respect of this Call-Off Contract are named in Attachment 2.

This Call-Off Contract has been signed by duly authorised representatives of each of the Parties.

**SIGNED**

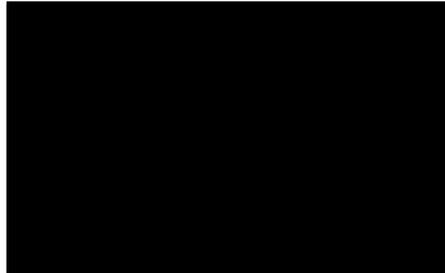
For and on behalf of the [*Contracting Authority*]

Signature:

Name:

Title:

Date:



**SIGNED**

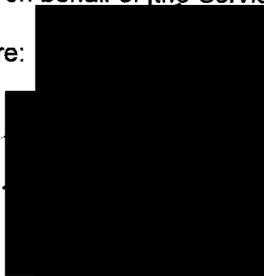
For and on behalf of [*the Service Provider*]

Signature:

Name:

Title:

Date:



## Attachment 1

### 1. Requirements

- 1.1 TfL is looking to appoint a Service Provider for a period of 12 months to provide Assurance and Survey Services for Network Connectivity for OneLondon, WiFi and 3G/4G packet surveys.

Crossrail surveys are required to complete by end November or the Crossrail Stations roll out will be delayed, all other assurance and surveys will be assessed and called-off as and when required for completion by 30 September 2016.

- 1.2 The Service Provider's Assurance & Survey proposal consisting of WiFi, OneLondon Connectivity, 3G/4G and Fibre connectivity will be based on TfL Design, Engineering and IT Standards for both off plan and on site activities.

- 1.3 List of Assurance & Surveys will be required to deliver the full list of documents in para 1.4 for a variety of work over the up-coming 12 months covering:

- CrossRail Off Plan Surveys for WiFi installation on Stations
- CrossRail On Site Surveys for Station WiFi & OneLondon Connectivity
- TfL Station Attached Car Parks WiFi Installation
- TfL Station Attached Bus Station WiFi Installation
- TfL Advertising Contract Network Connectivity for Digital Advertising
- DLR Network Connectivity and WiFi Installation
- 3G/4G Signal Strength & Connectivity at LU locations
- TfL Overground Station OneLondon & WiFi Connectivity
- TfL Overground 3G/4G Signal Strength for on-board connectivity
- West Anglia Station OneLondon & WiFi Connectivity
- West Anglia 3G/4G Signal Strength for on-board connectivity
- LOREL Stations OneLondon & WiFi Connectivity
- LOREL 3G/4G Signal Strength for on-board connectivity
- Nine Elms Extension Stations OneLondon & WiFi Connectivity
- TfL Advertising Contract Network Connectivity for Street Digital Advertising and CCTV
- Emirates Air Line Network Connectivity
- Ad-Hoc OneLondon & WiFi connectivity at TfL locations
- Commercial Development Network & WiFi connectivity for Retail
- Commercial Development ad-hoc Network & WiFi connectivity

### 1.4 Overall Assurance and Survey Requirements

<b>Description of Overall Requirements</b>	<p>The purpose of this project is to provide Assurance and Survey Services for Network Connectivity for OneLondon, WiFi and 3G/4G packet surveys.</p> <p>Wi-Fi coverage includes all public areas (ticket hall, access areas and platforms excluding tunnels) and operational back office areas within the station. Coverage areas across the site will be agreed during consultations with the project sponsors, stakeholders and depot staff.</p>
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	<p>The Service Provider will be required to:</p> <ul style="list-style-type: none"> <li>• Give consideration to heritage, asbestos, track possession, station access and fire stopping etc.</li> <li>• Carry out a Radio Frequency (RF) pre-installation survey, to produce a heat map for signal coverage with positioning of Access Points (APs) and cabling survey.</li> <li>• Carry out an Intrusive survey with power, data connectivity and containment of cables.</li> </ul>
<b>Key Success Criteria</b>	<ul style="list-style-type: none"> <li>• Receive a sign-off by TfL Testing and Operational Assurance teams.</li> <li>• Provide deliverables including but not limited to; <ul style="list-style-type: none"> <li>○ 3G/4G Packet Technology Survey *</li> <li>○ 3G/4G Performance Test Report *</li> <li>○ High Level Design</li> <li>○ Low Level Design</li> <li>○ Space Allocations (London Underground) *</li> <li>○ Heritage Approval (Westminster City Council) *</li> <li>○ Active WiFi Survey (Producing Coverage Heat Maps) *</li> <li>○ Fire Compartmentation Approval (BB224) *</li> <li>○ Hot Works Approval</li> <li>○ Storage / Movement License Requests</li> <li>○ Building Control (BC-1) &amp; (BC-7/8)</li> <li>○ Building Access Control (WAS / RAS)</li> <li>○ Cut /Drill / Fix Approvals</li> <li>○ Power Load Applications</li> <li>○ SABRE Access Control</li> <li>○ FIRAS (Fire Certification) *</li> </ul> </li> </ul>

### 1.5 Assurance and Surveys Requirements for Crossrail

<b>Description of Crossrail Requirements</b>	<p><b>OFF PLAN</b></p> <p>Surveys will initially be carried out OFF existing plans for each of the 11 Crossrail Stations to identify suitable sites to locate WiFi AP's and determine possible routes for connectivity. Both these will be verified once the intrusive surveys take place and a final positioning has been agreed. The documentation including station maps will be marked up with the AP positions that should provide the optimum service.</p> <p><b>ON SITE (Intrusive)</b></p> <p>The OFF site surveys will be followed up with full intrusive ON SITE surveys once access is permitted in each of the new Crossrail Station locations. The documentation that will be produced for these ON SITE Surveys will contain:</p> <ul style="list-style-type: none"> <li>• High Level Design</li> <li>• Low Level Design</li> </ul>
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	<ul style="list-style-type: none"> <li>• Space Allocations (London Underground)</li> <li>• Heritage Approval (Westminster City Council)</li> <li>• Active WiFi Survey (Producing Coverage Heat Maps)</li> <li>• Fire Compartmentation Approval (BB224)</li> <li>• Hot Works Approval</li> <li>• Storage / Movement License Requests</li> <li>• Building Control (BC-1) &amp; (BC-7/8)</li> <li>• Building Access Control (WAS / RAS)</li> <li>• Cut /Drill / Fix Approvals</li> <li>• Power Load Applications</li> <li>• SABRE Access Control</li> <li>• FIRAS (Fire Certification)</li> </ul> <p>The Service Provider will be required to:</p> <ul style="list-style-type: none"> <li>• Give consideration to heritage, asbestos, track possession, station access and fire stopping etc.</li> <li>• Carry out a Radio Frequency (RF) pre-installation survey, to produce a heat map for signal coverage with positioning of Access Points (APs) and cabling survey.</li> <li>• Carry out an Intrusive survey with power, data connectivity and containment of cables.</li> </ul>
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**1.6 Evaluation Criteria**

Can the Service Provider meet the above terms of reference? **Yes** or **No**

Note a No might result in a fail.

Top Level Criteria	Breakdown of Top Level Criteria	Weighting of Sub Criteria
<b>Requirements (Fit for Purpose) 60%</b>	Quality of Submission	25%
	People: experience and suitability of people / team	25%
	Experience: Production of Site Surveys, Compliance with Standards and Examples	25%
	Capability: ability to execute the task, meet timescales	25%
<b>Commercial Price 40%</b>	Total Price	100%

## 2. Any Special Conditions

The Service Provider should abide by the Contracting Authority Quality, Environmental Safety and Health Standard 1-552 "Contract QUENSH Conditions".

Also see attachment 3 below.

## 3. Acceptance Criteria

Completion of agreed site survey work and provision of Assurance Documentation ("Works") to the satisfaction of Transport for London (TfL).

TfL will verify that all Assurance Documentation meets all of the required TfL standards detailed in para 1.

The TfL Project Manager will review completion of the Works against the scope of work with the Service Provider. The TfL Project Manager agreement to the completion of the site survey work and provision of Assurance Documentation will constitute final acceptance of the Works.

## 4. Timetable

Commencement Date: 06<sup>th</sup> November 2015

TfL wants to have all identified Assurance Surveys completed by 30<sup>th</sup> September 2016.

The schedule of work will be scheduled and agreed with the TfL Project Manager.

**5. The Contracting Authority account details**

Relevant account code and cost centre: [REDACTED] however, Order No. [REDACTED] or other funding allocation codes will be individually provided on each service request.

**6. The Contracting Authority's Call-Off Co-ordinator and Commercial Manager**

Name:

Address:

Email:

[REDACTED],  
[REDACTED],  
[REDACTED]

**7. Additional Insurances (if any) to be held by Service Provider:**

As per Framework agreement ITC11446.

**Attachment 2A**

**Proposal**

**Framework Agreement Reference Number: ITC11446**



**PROPOSAL FOR: Assurance and Site Surveys**

Customer Reference	ITC12212
Proposal Reference	I9367
Proposal Date	08/10/2015
Version	1.0
Author	██████████
Authorised By	██████████

## Experience and Expertise

Installation Technology is one of a very few network infrastructure providers that have worked in every one of the 272 London Underground Stations across the Tube network. In addition to on-going Wi-Fi infrastructure installations within TfL HQ buildings we have also surveyed, designed and deployed Wi-Fi and network infrastructure to every Wi-Fi enabled TfL building across the capital including; Stations, Depots, Sidings, HQ buildings, Bus Stations and Garages, and the Tramlink Depot at Therapia Lane. We are also currently designing and deploying a 5 Station DLR Wi-Fi Pilot that encompasses on-board and Train to Wayside Wi-Fi communications for a Train telemetry and CCTV data transmission pilot.

Installation Technology has also been providing OneLondon connectivity over a fixed wired infrastructure within the LU Operational and TfL Enterprise space for a number of years including multi-site deployments such as Your Connection, Tracknet PC's and Centurion site upgrades.

We have recently completed the 3G/4G surveys within the ticket hall and secure suite areas at every London Underground Station for the CE Project, providing data throughput and coverage reports and recommendations for enablement.

Installation Technology has;

- 25 Years of Cabling and Infrastructure and Wi-Fi design and Installations in TfL Operational areas, Stations, Tunnels, Depots, Sidings, HQ Buildings, Communication Rooms and Exchanges including:
  - Cabling, Wi-Fi and ICT Installations undertaken in every London Underground Station across the network (272 Stations)
  - Infrastructure installations undertaken in every TfL Exchange and Transit Site
  - 4 years experience of providing break-fix for Station and HQ AP's and 4<sup>th</sup> Line support of the TfL Wi-Fi Core
- Dedicated Assurance Team with over 8 years of experience managing:
  - Heritage, Space and Power Loading Applications
  - Fire Compliance & Materials Compliance
  - Operational Assurance
  - Civil Engineering - Common Requirements
- Operational & Health , Safety & Environmental Support, We can provide :
  - CDM 2015 compliant roles; Designer, PD, PC – Construction Phase Plans, Health & Safety Files.
  - Fire Isolations & fire Compliance -(Bb224 , Bb229s)
  - CIRAs membership / Representation
  - Protection Services PWT-EH & Planning- (NEPA)

- OANs, ARFs ,Sabre access- Planning & Bookings
  - Site HSE Planned General Inspection & Senior Management Safety Tours
  - Qualified Review of Risk Assessments & method Statements
  - Access to London Undergrounds Approved Products Register
- 10 Years experience undertaking Power Installations within TfL:
    - NICEIC Qualified electrical design and installation engineers
    - Load Change Application Requirements
    - Low Voltage Electrical Designs and Installations
    - Safe Systems of Work on or near Electrical Equipment
  - ISO 9001-2008 Quality Management System
  - FIRAS Accredited & Certified Fire penetration Sealing technicians
  - Tyco, Systimax and Excel accreditation design and installation engineers
  - 10 Years experience of designing and installing Cisco Networking, Routing and Wireless applications
  - 5 Years AirMagnet and Ekahau RF planning and design experience

All of our engineers, project managers, site managers' and project assurance teams and subcontractors are qualified and approved to work on railway infrastructure.

#### **Key Team Members: Installation Technology**

██████████  
Has 15 years experience of working within both TfL's Enterprise and Operational environments delivering ICT infrastructure projects, including OneLondon Connectivity to all London Underground Stations and the majority of TfL HQ buildings. For 5 years ██████████ was the Installation Technology programme manager for TfL's Station Wi-Fi deployment. More recently, ██████████ has managed the 3G/4G survey and reporting program for the CE Project at every LU station.

██████████  
Has been delivering infrastructure projects within TfL for 4 years, after spending the previous 15 years in the MoD environment. ██████████ was the Installation Technology Project manager for the high profile and very successful LUCC project. The LUCC project co-located 6 Operational Control Centres to a single location and was the most complex structured cabling design and implementation project TfL have ever undertaken. ██████████ has also managed the deployment of Wi-Fi Infrastructure to every Wi-Fi enabled TfL HQ building including Wi-Fi infrastructure deployment for Tramlink at Therapia Lane Depot, Victoria Coach Station and Hammersmith Bus Station.

██████████  
Has 8 years' experience with railway & construction HSE. He has supported multiple TFL projects along with BAU in that time and was appointed CDMc for coordination of HSE on the multiple site Wi-Fi Upgrade. ██████████ has a good level of knowledge of London Undergrounds standards, QUENSH & procedures and has spent time as an access planner. Both NEBOSH & citb SMSTS qualified, a current technical member of IOSH & an affiliate member of IEMA. He has worked closely with LU / CPDs Zero Harm forum and has assisted within the ATC Safety improvement group to improve track safety.

██████████  
Has 6 years experience in production and delivery of all project assurance documentation for both large-scale projects and smaller scale BAU works. ██████████ has managed the assurance team for the past 3 years and in that time has forged strong relationships with key members of various teams associated with project assurance within LU & TfL eg: Heritage, Building Control, Space Allocation etc. ██████████ has also successfully engaged with the majority of London's borough council Heritage officials during the design phase for many of the stations included in the WiFi roll out project. ██████████ was instrumental in the introduction of bespoke design proposal documents for Heritage planning, pre full Heritage application stage with the Urban Heritage Officer.

HALO Technology, a specialist Wireless Subcontractor will be engaged to undertake the RF survey and design activities.

██████████ (██████████)  
18 years' experience working in the telecommunications industry and public transport sector. 6 years with Vodafone and a further 10 years working on the TFL Operational estate on projects. Worked on multiple large projects for LUL and TfL involving the data networks in both operational and office LAN and WAN including design of both Palestra and Greenwich sites, all phases of Wi-Fi, MPLS migration, 3Com replacement and Cisco refresh. Technical management of the delivery of Wi-Fi to 270+ LUL stations, Head Office Buildings, Depots and Surface Transport locations. ██████████ was the Project Manager for the recently undertaken 3G/4G data surveys at each LU station for the CE Project and was also the lead data analyst through the reporting phase.

██████████ (██████████)  
Head of Wireless Design for ██████████. 18 years' experience working in Global Telecoms providers with 10 years' experience delivering ICT projects on the TFL Operational estate. Worked on all TfL Wi-Fi designs including vendor ratification with Cisco of the TfL Wi-Fi core. Extensive experience of the TfL and LUL data networks, design of Palestra and Greenwich LAN, MPLS migration and network refreshes over the last 10 years.

## 1.0 Requirements

1.1 TfL is looking to appoint a Service Provider for a period of 12 months to provide Assurance and Survey Services for Network Connectivity for OneLondon, WiFi and 3G/4G packet surveys.

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- Ad-Hoc OneLondon & WiFi connectivity at TfL locations TBD
- Commercial Development Network & WiFi connectivity for Retail
- Commercial Development ad-hoc Network & WiFi connectivity TBD

## 1.4 Overall Assurance and Survey Requirements

<p><b>Description of Overall Requirements</b></p>	<p>The purpose of this project is to provide assurance and survey services for network connectivity for OneLondon, WiFi and 3G/4G packet surveys.</p> <p>Wi-Fi coverage includes all public areas (ticket hall, access areas and platforms excluding tunnels) and operational back office areas within the station. Coverage areas across the site will be agreed during consultations with the project sponsors, stakeholders and depot staff.</p> <p>The Service Provider will be required to:</p> <ul style="list-style-type: none"> <li>• Give consideration to heritage, asbestos, track possession, station access and fire stopping etc.</li> <li>• Carry out a Radio Frequency (RF) pre-installation survey, to produce a heat map for signal coverage with positioning of Access Points (APs) and cabling survey.</li> <li>• Carry out an Intrusive survey with power, data connectivity and containment of cables.</li> </ul>
<p><b>Key Success Criteria</b></p>	<ul style="list-style-type: none"> <li>• Receive a sign-off by TfL Testing and Operational Assurance teams.</li> <li>• Provide deliverables including but not limited to;             <ul style="list-style-type: none"> <li>○ Provide deliverables including but not limited to;</li> <li>○ 3G/4G Packet Technology Survey *</li> <li>○ 3G/4G Performance Test Report *</li> <li>○ High Level Design</li> <li>○ Low Level Design</li> <li>○ Space Allocations (London Underground) *</li> <li>○ Heritage Approval (Westminster City Council) *</li> <li>○ Active WiFi Survey (Producing Coverage Heat Maps) *</li> <li>○ Fire Compartmentation Approval (BB224) *</li> <li>○ Hot Works Approval</li> <li>○ Storage / Movement License Requests</li> <li>○ Building Control (BC-1) &amp; (BC-7/8)</li> <li>○ Building Access Control (WAS / RAS)</li> <li>○ Cut /Drill / Fix Approvals</li> <li>○ Power Load Applications</li> <li>○ SABRE Access Control</li> <li>○ FIRAS (Fire Certification) *</li> </ul> </li> </ul> <p><i>Please Note: For activities marked with a *, please see supporting documentation attached with our response.</i></p>

### Resources to be provided by the Service Provider

Resource 1	Project Manager
Resource 2	Access and Operations Planner
Resource 3	Specialist Wireless, RF and 3G/4G Engineer
Resource 4	Assurance Manager
Resource 5	Lead Engineer / SPC (Firas)
Resource 6	Data Cabling Engineer (Station)
Resource 7	Electrical Design Engineer
Resource 8	Health, Safety & Environmental Manager

### Approach

#### 3G / 4G RF Survey and Design:

The RF design maybe bespoke to each location based on size, location (high rise / surface / sub-surface) RF interference, MNO coverage and signal strength, capacity, coverage requirements and redundancy. Many of these factors can be determined by the correct utilisation of the tools selected to survey and plan the RF design. Installation Technology can determine coverage levels and performance of the 4 major Mobile Network Operator's using 3G and 4G data transmission and packet technologies.

Surveys will be carried out using the following equipment:

- [REDACTED]

The deliverables of surveys will be:

- Undertake 3G RF Coverage Surveys for identified locations and document results.
- Undertake 4G RF Coverage Survey for identified locations and document results.
- Perform FTP throughput testing to establish data performance on both packet technologies and document results

Each identified location will be surveyed in 4 ways:

- 4G RF Coverage availability
- 3G RF Coverage availability
- 4G FTP Throughput test
- 3G FTP Throughput test

All tests can be performed over the four main Mobile Network Operator Networks:

- Vodafone UK
- Everything Everywhere Limited (EE)
- Hutchison 3G UK Ltd (Three)
- Telefonica Ltd (O2)

### Virtual WiFi RF Survey and Design – off plan:

We will require the floor plans to be provided of all areas to be covered in CAD, PDF or JPEG format prior to commencing work on each site.

A visit for one engineer to site will be necessary to annotate the plans with the materials present in the construction of the building to produce approximate attenuation values to be used in the software modelling. This visit will be a 'pen and paper' exercise on site and will not involve any equipment.

Once the base data has been gathered the floor plans will be converted for use within the modelling software and the walls introduced to the plan using the approximate attenuation values based on materials.

Virtual access points will be positioned on the maps to achieve the requirements based on the original Virgin Media Public WiFi agreed requirements outlined below.

1. Signal strength at least -75.0 dBm
2. Signal-to-noise ratio at least 10.0 db
3. Data rate at least 12 Mbps
4. Number of access points at least 1 when signal strength at least -85.0 dBm
5. Ping round trip time at most 300.0 ms
6. Packet loss at most 10.0 %

Power levels will be set to allow for a degree of resiliency in the event of an AP failure. The final solution uses the Cisco Radio Resource Manager (RRM), which automatically sets power levels and channel numbers.

Once all AP's have been placed and sufficient coverage is achieved a full report will be issued.

Please note at this stage, AP locations and coverage heat maps within the report are notional and should be confirmed by way of a full on site survey.

### On site WiFi RF Survey and Design:

The RF design is bespoke to each location based on size, architecture, RF interference, capacity, coverage requirements and redundancy. Many of these factors can be determined by the correct utilisation of the tools selected to survey and plan the RF design. Installation Technology may use the following tools in the production of our RF designs:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

**The survey will be carried out using the following equipment:**

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

The survey data will be collected in both the 2.4GHz and 5GHz frequency bands.

**Infrastructure Survey and design:**

Once RF surveys are complete (WiFi / 3G/4G) and the design has been prepared, Installation Technology personnel will carry out an intrusive site-survey (against the RF design) in order to determine and evaluate the levels of existing infrastructure, its capacity and its viability to be used in conjunction with the proposed installation.

The survey team will record the following relevant information and take supporting photographs that will be included in the final design document:

- The locations of existing network equipment cabinets, the unused space they offer and the spare ways on their existing PDU's
- Existing containment routes, their unused capacity and their proximity to proposed WiFi / Small Cell locations
- Potential locations for new network equipment cabinets, where proposed WiFi / Small Cell locations are in excess of the 90m threshold from the nearest existing cabinet
- End to end cable routes where new fibre-optic links will be required to support new network equipment cabinets
- The locations of existing electrical distribution boards (that will be required to energise new network equipment cabinets) and the unused spare-ways they offer.
- All areas and instances where new CMS is required to support new cabinetry, new back-bone fibre-optic cabling and new Category 5e cabling.
- Identification of new routes and sizing of new CMS where it is required
- Identification of new LAN Switch locations

Once the infrastructure survey has been completed and the survey-notes have been written-up, a formal pre-installation design document that covers all aspects of the deployment will be prepared.

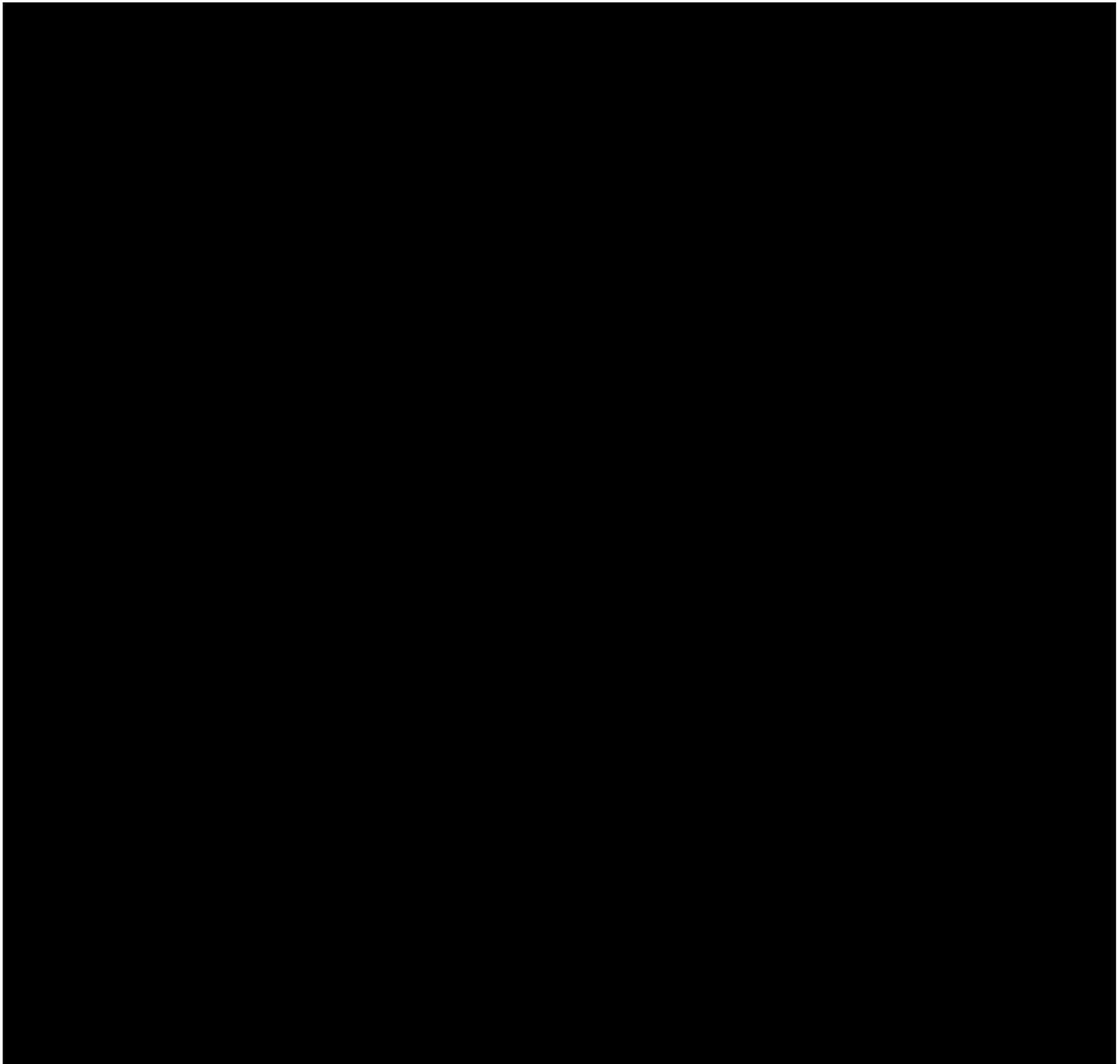
**Please Note:** If required to provide OneLondon connectivity only over a fixed wired infrastructure, Installation Technology would conduct an intrusive survey much in the same way as outlined above in the WiFi infrastructure survey. In this case, the client's defined locations for the new fixed wired connectivity would provide us with the scope for the survey, rather than a Pre RF survey report.

**Assurance and Planning:**

Installation Technology employs a comprehensive assurance process for surveys, designs and installations.

We have worked closely with LUL HSE to refine our RAMS document template, which is now the accepted standard for LUL, TfL and DLR locations. Installations are managed in accordance with our Health & Safety policy. A number of factors determine our approach for surveys and installations with regard to TfL's policies and standards; these can differ depending on the location and environment.

The flowchart below details how our assurance and approvals process is managed end-to-end:



## Installation Technology Assurance Activities

Critical planning, delivery activities and associated standards/policies:

- LUL 1-355 Listed Buildings and other structures of design or historical importance
- Space Allocation to agree hardware locations, CMS & cable routes.  
Complying with:
  - LUL 1-472 & LUL 1-371 allocation of space on operational property
  - LUL 1-356 Sightlines and Visual Clutter considerations
- LUL G-136 Control of Works in LUL premises. Inform Building Control Group of the breadth and scope of the project. Submit BC1's for each location and BC7/8 once works complete and signed off.
- BB224 submissions – Planned breaches of fire rated walls.
- 1-130 Management of Hazardous Materials – Inspection of asbestos report.
- LUL S1222 EMC compatibility testing.
- LUL 1-050 Civils Cut/Drill/Fix compliance.
- BB229/213 Fire isolation applications to temporarily disable detectors during works.
- LUL 1-092 / 1-093 Attachment 9/8 Movement of Materials licence on escalators.
- Storage Licence

Key stakeholders:

TfL Interface	Activity - Standards & Policies
Access Control, Sabre bookings, Staff Training / Accreditation	G1008 LUL Combined Access System
TfL IM Change Management / Remedy	Change Management
IS Security Framework / CMDDB / Remedy	Asset Management
LUL-Design & Heritage Manager & London Borough Councils	Listed Buildings and Heritage standards - LUL 1-355 Listed Buildings and other structures of design or historical importance
Space Allocation Team, GSM's/DSM's & OTM's	LUL 1-472/LUL 1-371 allocation of space on operational property and LUL 1-356 Sightlines and Visual Clutter considerations
Building Control Manager, Stations Engineering LUL	Building Control Group - Inform Building Control of the breadth and scope of the project. Submit BC1's for each location within the programme, this complies with LUL G136 Control of Works in LUL premises. BC7/8 achieved once works complete and signed off.
TfL TDA forum and LUL CPD	S1938 - Cabling Management Systems - Trunking & Conduit Installation Standards
LFEPAs	BB224 submissions –Breaches of fire rated walls, applied for approval in compliance with BB224
Premises Asset Engineer	Asbestos Identification – Inspection of asbestos report, 1-130 Management of Hazardous Materials
LUL CPD	EMC assurance – Testing to ensure compliance with LUL Category 1 standard S1222.
LUL CPD	G-085 - Fire safety of Materials
Buildings & Structures	Cut, Drill and Fix - Compliance with LUL 1-050 Civil Engineering including TLL-ENG-S3476 CAT2 Standard
LUL FRC (Fault Reporting Centre)	BB229/213 (Apply for Fume Isolation) – Applied for fire isolations where works such as drilling may have caused the smoke detectors to alarm. Commonly found in SCR's, & CER's
Interface-Lifts and Escalators Team (Griffith House)	Movement of Materials (MoM) – L&E obtain a MoM licence (Falling under LUL 1-092 / 1-093 Attachment 9/8)
Local station staff, GSM's and DSM's	Storage Licence

## Planning:

Surveys undertaken to identify:

- Existing Network cabling and power routes
- Proposed locations of AP's/Small Cells
- Capacity and suitability of existing CMS
- New infrastructure required
- Capacity of existing network

Our assurance team then produce the following:

- Red Line Drawings
- Applications for:
  - Space
  - Power Load
  - Heritage (if required) and subsequent approval process
- Self assurance for BB224, fire compartmentation process
- Fire Assurance for penetrations and re-statement of the fire barrier with fire stop materials
- Fire-stop register documentation as part of as-built pack
- Agree changes and revise design if objections are raised by the Heritage team, including colour-matching containment to existing station colour theme.

Prior to the implementation phase, production of the RAMS covering:

- Asbestos
- Confined Spaces
- Personal Protective Equipment
- Equipment /Tools/Plant
- COSHH
- Site Welfare
- Hospital Details
- Electrical Permit
- Isolation request to GSMs/DSMs (BB229).
- Risks:
  - Manual Handling - Carrying/Lifting Materials
  - Electricity
  - Cable Runs / Pulling
  - All site works & Vehicles
  - Using Hand Tools
  - Unidentified Asbestos In work area
  - Aggression & Violence

- Noise abatement

Completed RAMS are reviewed by our Operations and HSE managers.

We also employ a rigorous internal inspection and audit process, ensuring we achieve and maintain the high standards required by the various assurance groups mentioned above during the installation phases. This includes regular site audits to check compliance with:

- Health and Safety policies and procedures
- Project assurance documentation
- Approval conditions
- Storage Licences correctly displayed
- Installation Technology QA inspections, audits and reports
- Fire Register evidenced and complete
- LUL inspections and unplanned Audits

## Risks

The following risks have been identified during the production of this quotation:

Risk Title	Station Listed Status (Heritage)				
Risk Owner	TfL Defined at Survey Stage				
Description	Heritage and local listing are stakeholders with reference to the aesthetic integration of the Wi-Fi equipment into listed stations. They have veto on the placement or look of a new item being deployed into a listed station				
Impact	Unlikely to affect survey stage and optimal AP location mapping however Heritage disputes, re-designs and resubmissions during installation stages can lead to installation delays and additional cost				
Impact Rating	Low (During survey Stage)				
Probability	Somewhat unlikely (During survey stage)				
Mitigation	Heritage can be mitigated to an acceptable level by highlighting any Heritage or local listing involvement as early as possible during deployment initiation stage.				

Risk Title	Access Approval to Overground and Network Rail			
Risk Owner	Installation Technology			
Description	Access bookings process for Overground and NWR properties is governed by Network Rail and is not the same system or contact as TfL			
Impact	Likely to affect survey stage			
Impact Rating	Medium (During survey Stage)			
Probability	likely (During survey stage)			
Mitigation	Early Identification of process and authority and engagement with TfL, Overground and NWR representatives.			

Risk Title	Asbestos			
Risk Owner	London Underground			
Description	Discovery and removal of previously unidentified Asbestos			
Impact	Delays while Asbestos is identified, removed or contained			
Impact Rating	Medium (During survey Stage)			
Probability	Unlikely (During survey stage)			
Mitigation	Reviewing the Asbestos register for the specific site will quickly show if there is identified Asbestos in the proposed routes. In addition the intrusive survey is being undertaken early in the project process and this will help identify any Asbestos issues before the actual installation dates are scheduled allowing time for remediation activities			

Risk Title	Construction site environment - Crossrail			
Risk Owner	Installation Technology			
Description	Sites still under construction, multiple contractors on site, limited space			
Impact	Potential for areas to be closed off for other works during our surveys.			
Impact Rating	Medium (During survey Stage)			
Probability	Unlikely (During survey stage)			
Mitigation	Access planning and liaison with the main contractor prior to attending site. Submission of schedule and plan of areas we are required to survey.			

## Assumptions

The following assumptions have been made during the writing of this proposal:

- We will be allowed to conduct any required survey within an London Underground Station using our valid, generic survey Sabre numbers in both traffic and engineering hours
- We will be allowed to conduct any required survey within a Head Office building (TfL) in traffic hours. A WAS (Permit to Work) will be required for out of hours surveys within this environment. Installation Technology understands the WAS process and will make the necessary application.
- The incumbent TfL Network Services Provider (Fujitsu) will produce the LLD for the active network components identified as part of this requirement
- Space applications will be produced and submitted as part of the project installation stage
- Heritage Applications will be produced and submitted as part of the project installation stage
- Power requirement will be identified as part of the initial survey stage
- Power load applications will be produced and submitted as part of the project installation stage
- The existing VM Public WiFi requirements are correct for this project. No additional services such as voice, location tracking, or streaming video are required.
- The TfL design principles for Wi-Fi deployment do not currently cover technical or functional specifications for: Apple mobile devices and the Mobile Device programme, Fit for the Future requirements or any additional services such as Voice, RTLS or Video.

The output from this exercise will be used at a later date to scope and cost the deployment stages of Wi-Fi Infrastructure to provide Public and TfL Staff access at each location.



## 1.5 Scope of Works - CrossRail

### OFF PLAN

Surveys will initially be carried out OFF existing plans for each of the 11 Crossrail Stations to identify suitable sites to locate WiFi AP's and determine possible routes for connectivity. Both these will be verified once the intrusive surveys take place and a final positioning has been agreed. The documentation including station maps will be marked up with the AP positions that should provide the optimum service.

### Approach: Virtual WiFi RF Survey and Design – off plan:

We will require the floor plans to be provided of all areas to be covered in CAD, PDF or JPEG format prior to commencing work on each site.

As the construction of each new Crossrail station will be of similar materials a site visit for one engineer to one station will be necessary to annotate the plans with the materials used in the construction areas to produce approximate attenuation values to be used in the software modelling. This visit will be a 'pen and paper' exercise on site and will not involve any equipment.

Once the base data has been gathered the floor plans will be converted for use within the modelling software and the walls introduced to the plan using the approximate attenuation values based on materials.

Virtual access points will be positioned on the maps to achieve the requirements based on the original Virgin Media Public WiFi agreed requirements outlined below.

1. Signal strength at least -75.0 dBm
2. Signal-to-noise ratio at least 10.0 db
3. Data rate at least 12 Mbps
4. Number of access points at least 1 when signal strength at least -85.0 dBm
5. Ping round trip time at most 300.0 ms
6. Packet loss at most 10.0 %

Power levels will be set to allow for a degree of resiliency in the event of an AP failure. The final solution uses the Cisco Radio Resource Manager (RRM), which automatically sets power levels and channel numbers.

Once all AP's have been placed and sufficient coverage is achieved a full report will be issued. Please note at this stage, AP locations and coverage heat maps within the report are notional and should be confirmed by way of a full on site survey.

### ON SITE (Intrusive)

The OFF site surveys will be followed up with full intrusive ON SITE surveys once access is permitted in each of the new Crossrail Station locations. The documentation that will be produced for these ON SITE Surveys will contain:

- High Level Design
- Low Level Design
- Space Applications (London Underground)
- Heritage Applications
- Active WiFi Survey (Heat Maps)
- Fire Compartmentation Approval (BB224)
- Hot Works Permit / Approval
- Storage & Movement Licence Requests
- Building Control (BC-1) & (BC-7/8)
- Building Access Control (WAS / RAS)
- Cut / Drill / Fix
- Power Load Applications
- Sabre Access Control
- FIRAS (Fire Certification)

### Approach: On site WiFi RF Survey and Design:

The RF design is bespoke to each location based on size, architecture, RF interference, capacity, coverage requirements and redundancy. Many of these factors can be determined by the correct utilisation of the tools selected to survey and plan the RF design. Installation Technology may use the following tools in the production of our RF designs:

- [REDACTED]

### The survey will be carried out using the following equipment:

- [REDACTED]
- [REDACTED]
- [REDACTED]

- [REDACTED]

The survey data will be collected in both the 2.4GHz and 5GHz frequency bands.

### **3G / 4G RF Survey and Design:**

The RF design maybe bespoke to each location based on size, location (high rise / surface / sub-surface) RF interference, MNO coverage and signal strength, capacity, coverage requirements and redundancy. Many of these factors can be determined by the correct utilisation of the tools selected to survey and plan the RF design. Installation Technology can determine coverage levels and performance of the 4 major Mobile Network Operator's using 3G and 4G data transmission and packet technologies.

Surveys will be carried out using the following equipment:

- [REDACTED]

The deliverables of surveys will be:

- Undertake 3G RF Coverage Surveys for identified locations and document results.
- Undertake 4G RF Coverage Survey for identified locations and document results.
- Perform FTP throughput testing to establish data performance on both packet technologies and document results

Each identified location will be surveyed in 4 ways:

- 4G RF Coverage availability
- 3G RF Coverage availability
- 4G FTP Throughput test
- 3G FTP Throughput test

All tests can be performed over the four main Mobile Network Operator Networks:

- Vodafone UK
- Everything Everywhere Limited (EE)
- Hutchison 3G UK Ltd (Three)
- Telefonica Ltd (O2)

## Infrastructure Survey and design:

Once RF surveys are complete (WiFi / 3G/4G) and the design has been prepared, Installation Technology personnel will carry out an intrusive site-survey (against the RF design) in order to determine and evaluate the levels of existing infrastructure, its capacity and its viability to be used in conjunction with the proposed installation.

The survey team will record the following relevant information and take supporting photographs that will be included in the final design document:

- The locations of existing network equipment cabinets, the unused space they offer and the spare ways on their existing PDU's
- Existing containment routes, their unused capacity and their proximity to proposed WiFi / Small Cell locations
- Potential locations for new network equipment cabinets, where proposed WiFi / Small Cell locations are in excess of the 90m threshold from the nearest existing cabinet
- End to end cable routes where new fibre-optic links will be required to support new network equipment cabinets
- The locations of existing electrical distribution boards (that will be required to energise new network equipment cabinets) and the unused spare-ways they offer.
- All areas and instances where new CMS is required to support new cabinetry, new back-bone fibre-optic cabling and new Category 5e cabling.
- Identification of new routes and sizing of new CMS where it is required
- Identification of new LAN Switch locations

Once the infrastructure survey has been completed and the survey-notes have been written-up, a formal pre-installation design document that covers all aspects of the deployment will be prepared.

**Please Note:** If required to provide OneLondon connectivity only over a fixed wired infrastructure, Installation Technology would conduct an intrusive survey much in the same way as outlined above in the WiFi infrastructure survey. In this case, the client's defined locations for the new fixed wired connectivity would provide us with the scope for the survey, rather than a Pre RF survey report.

The survey works associated with this project will be undertaken under a mix of traffic (08:00 - 18:00) and engineering (01:30 - 04:30) hour shifts.

Installation Technology also understand that to allow the completion of the overall design documentation there will be a need to engage with the incumbent Network Services Provider (Fujitsu) to allow their production of the HLD and LLD for active network components delivered as part of this requirement. We have allowed time for Installation Technology to undertake this engagement.

## Installation Technology Assurance Activities

Critical planning, delivery activities and associated standards/policies:

- LUL 1-355 Listed Buildings and other structures of design or historical importance
- Space Allocation to agree hardware locations, CMS & cable routes.  
Complying with:
  - LUL 1-472 & LUL 1-371 allocation of space on operational property
  - LUL 1-356 Sightlines and Visual Clutter considerations
- LUL G-136 Control of Works in LUL premises. Inform Building Control Group of the breadth and scope of the project. Submit BC1's for each location and BC7/8 once works complete and signed off.
- BB224 submissions – Planned breaches of fire rated walls.
- 1-130 Management of Hazardous Materials – Inspection of asbestos report.
- LUL S1222 EMC compatibility testing.
- LUL 1-050 Civils Cut/Drill/Fix compliance.
- BB229/213 Fire isolation applications to temporarily disable detectors during works.
- LUL 1-092 / 1-093 Attachment 9/8 Movement of Materials licence on escalators.
- Storage Licence

### Planning:

Surveys undertaken to identify:

- Existing Network cabling and power routes
- Proposed locations of AP's/Small Cells
- Capacity and suitability of existing CMS
- New infrastructure required
- Capacity of existing network

Our assurance team then produce the following:

- Red Line Drawings
- Applications for:
  - Space
  - Power Load
  - Heritage (if required) and subsequent approval process
- Self assurance for BB224, fire compartmentation process
- Fire Assurance for penetrations and re-instatement of the fire barrier with fire stop materials
- Fire-stop register documentation as part of as-built pack

- Agree changes and revise design if objections are raised by the Heritage team, including colour-matching containment to existing station colour theme.

Prior to the implementation phase, production of the RAMS covering:

- Asbestos
- Confined Spaces
- Personal Protective Equipment
- Equipment /Tools/Plant
- COSHH
- Site Welfare
- Hospital Details
- Electrical Permit
- Isolation request to GSMs/DSMs (BB229).
- Risks:
  - Manual Handling - Carrying/Lifting Materials
  - Electricity
  - Cable Runs / Pulling
  - All site works & Vehicles
  - Using Hand Tools
  - Unidentified Asbestos In work area
  - Aggression & Violence
  - Noise abatement

Completed RAMS are reviewed by our Operations and HSE managers.

We also employ a rigorous internal inspection and audit process, ensuring we achieve and maintain the high standards required by the various assurance groups mentioned above during the installation phases. This includes regular site audits to check compliance with:

- Health and Safety policies and procedures
- Project assurance documentation
- Approval conditions
- Storage Licences correctly displayed
- Installation Technology QA inspections, audits and reports
- Fire Register evidenced and complete
- LUL inspections and unplanned Audits

## 1.5 Resource & Charges

Resources	Description	No. Of Days / Units	Daily Rate (ex VAT. Including expenses)	Total
<b>Off Plan Virtual Survey Design</b>	Re-formatting of station / construction plans to integrate into the Wireless survey software tool, virtual WiFi survey, hardware placement and optimisation	█	█	█
<b>Resource 1</b> <b>To Manage Project, liaison during the design phase</b>	<b>Project Manager</b> Key Competencies: Prince 2 Accredited, LU CAT 1 and TAG standards knowledge, LUCAS Card / Sentinel, knowledge of LU working practices and procedures	█	█	█
<b>Resource 2</b> <b>To Make Access Arrangements</b>	<b>Access &amp; Operations Planner</b> Key Competencies: Knowledge of OAN and Sabre access booking processes, strong relationships with GSM's and DSM's, experience with LU working practices	█	█	█
<b>Resource 3</b> <b>Survey data analysis, Crossrail liaison, meetings, planning</b>	<b>Specialist Wireless, RF &amp; 3G/4G Engineer</b> Key Competencies: LUCAS Card / Sentinel, CCNA, BSc Electro Mechanical Engineering, QAF54, █	█	█	█
<b>On Site Pre RF Survey and Reporting</b>	Provision of 2 x Wireless engineers to attend each site with the Wireless survey equipment and tooling. Analyse the data and provide a comprehensive report including current status and all recommendations.	█	█	█
<b>Resource 4</b> <b>To Complete Intrusive Infrastructure Survey, Survey Report, HLD</b>	<b>SPIC / Project Engineer (FIRAS)</b> Key Competencies: LUCAS Card / Sentinel, ERA / QAF54, L&E, ACM, SPC/ Lead engineer certification, FIRAS accredited / LU fire stopping procedures and products	█	£ █	█
<b>Resource 5</b> <b>To Complete Power Survey and Prepare Report</b>	<b>Electrical Design Engineer (Station)</b> Key Competencies: LUCAS Card / Sentinel, ERA / QAF54, L&E, ACM, Electrical Certification, Design of standards and regulation compliant HV and LV electrical services, from requirements through to LLD, commissioning and final handover, Ability to prepare LU Load-Apps, Level 3 safe Isolation Trained. LUCAS-Safe Isolation Level 3-Machine Room Trained-Equipment Room Awareness. Knowledge of Electrical LU CAT Standards. ACM aware.	█	£ █	█
<b>Electrical Design</b>	Preparation of final Installation Design Document including any required isolation plans.	█	█	█
<b>Resource 6</b> <b>To produce Space Applications, HLD's, BB224, Landlords Consent Notification, Building Control documentation, EMC Testing, Fire &amp; Materials Compliance</b>	<b>Assurance Manager:</b> Key Competencies and skills: Production of Space Application and design documentation, BB224 & Heritage submissions, including Building Control, Licences & Permits (Movement of Materials, Storage, Hot Works, Confined Space) Extensive knowledge of the LU / Enterprise space, including strong relationships with key members of various teams (Space Allocation, Heritage, Building Control etc) Knowledge of LU CAT and TAG Standards, APR and awareness of BS standards	█	█	█
<b>Total</b>				£ █

## Attachments and Supporting Documentation

Attachment Number	Description
1	3G/4G Packet Technology Survey
2	3G/4G Performance Test Report
3	Space Application & Design Document, including network HLD
4	Heritage Approval Document
5	Post Installation WiFi Survey Report (Active WiFi)
6	6a) Authorising Notice from Firas 6b) Company Certificate 6c) Certificate of Conformity at Piccadilly Circus
7	BB224 & WIFRA, Authority to Use – Clapham North
8	Health & Safety Policy Statement-Installation Technology-2015-HSE
9	Installation Technology- HSE Organisation & Policy
10	Investigation Report - Cockfosters
11	RAMS Example
12	Construction Phase Plan
13	Waste Management Certificate
14	HSE Annual Performance
15	Planned General Inspection Register
16	Site Safety Inspection Report – Kings Cross

## Attachment 2B

### Pricing Schedules

The following Pricing Schedules define the Contracting Authority's agreed funding the respective work packages and schedules rates:

1. Firstly, a schedule of rates that make up the following:
  - a. Fixed & Firm price for the Crossrail Off-Plan and Intrusive Surveys i.e. [REDACTED]
  - b. Provisional sum priced options not to exceed [REDACTED]
  - c. A total Contract value of [REDACTED]
  
2. Secondly, a schedule setting out the individual provisional sum priced options, not to exceed [REDACTED] i.e.
  - a. Crossrail Wi-Fi Stations (11) [REDACTED]
  - b. TfL Wi-Fi Stations (11) [REDACTED]
  - c. TfL Station Car Parks [REDACTED]
  - d. TfL Bus Stations [REDACTED]
  - e. TfL Overground [REDACTED]
  - f. TfL DLR Stations [REDACTED]
  - g. TfL Emirates [REDACTED]
  - h. TfL Retail [REDACTED]
  - i. Emergency Services [REDACTED]
  - j. TfL ATMS (TDS) Stations (8) [REDACTED]

Resources	Description	No. Of Days / Units	Framework Rate	Total Value
Off Plan Virtual Survey Design				
Resource 1	Project Manager			
Total			Off-Plan Surveys ...	
Resource 1	Project Manager			
Resource 2	Access & Operations Planner			
Resource 3	Specialist Wireless, RF & 3G/4G Engineer			
On Site Pre RF Survey and Reporting				
Resource 4	SPIC / Project Engineer (FIRAS)			
Resource 5	Electrical Design Engineer (Station)			
Electrical Design	Electrical Design Engineer (Station)			
Resource 6	Assurance Manager:			
Total			Intrusive Surveys ...	

Fixed & Firm award (Section 1.5) ...

Provisional Sum Options (Section 1.4) based on these scheduled rates ...

Total Award Value ...

\* see overleaf.



**Attachment 3**  
**QUENSH Conditions**

# F0780 Contract Menu

This Contract Menu must be used in conjunction with Category 1 Standard [S1552](#) "Contract QUENSH Conditions"

Issue No.: A16

Issue date: November 2014  
Review date: November 2019

MAYOR OF LONDON



# Contract Menu

**Contract No:** [ITC 11446](#)

**Contract Name** [RFP12212 – Assurance and Site Surveys](#)

**Client:** \_\_\_\_\_

**Supplier:** [Installation Technology](#)

**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.
  - (1) 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.
  - (2) 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.
  - (3) 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.
  - (4) 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				Identified by Supplier	
Section	Topic	Other documents / Comments	Y / N	Agreed? Y / N	Reference to explanation
4	Agreement of the applicable QUENSH contract conditions				
5	Supplier's selection of sub-contractors		Y	<a href="#">Y</a>	
6	Identification of Safety Critical Activities	No Safety Critical works are involved	N	<a href="#">Y</a>	
7	Works Environmental Management	There will be no environmental impacts for the surveys	N	<a href="#">Y</a>	
8	Emergency Plan	The emergency plan should complement the local evacuation procedures	Y	<a href="#">Y</a>	
9	Method Statements		Y	<a href="#">Y</a>	
10	Health, Safety and Environment File		Y	<a href="#">Y</a>	
11	Pre-start health, safety and environment meeting		N	<a href="#">N</a>	<a href="#">Site related HSE, risk and environmental elements are discussed before attending site</a>
12	Supplier's site induction		Y	<a href="#">Y</a>	
13	Site Person in Charge		Y	<a href="#">Y</a>	
<b>14</b>	<b>Staff requirements</b>				
<b>14.1</b>	<b>Behaviours</b>				
14.1.1	Alcohol and drugs		Y	<a href="#">Y</a>	
14.1.2	Control of hours worked		Y	<a href="#">Y</a>	
<b>14.2</b>	<b>Knowledge</b>				
14.2.1	English language		Y	<a href="#">Y</a>	
14.2.2	Access Card and Worksite Briefing		Y	<a href="#">Y</a>	



Applicable requirements identified by Client				Identified by Supplier	
Section	Topic	Other documents / Comments	Y / N	Agreed? Y / N	Reference to explanation
14.2.3	Visitors to sites		Y	<a href="#">Y</a>	
<b>14.3</b>	<b>General competence</b>				
14.3.1	Evidencing competence of safety critical staff	No Safety Critical works are involved	N	<a href="#">Y</a>	
14.3.2	Identification of safety critical staff	No Safety Critical works are involved	N	<a href="#">Y</a>	
14.3.3	Competent external safety critical personnel	No Safety Critical works are involved	N	<a href="#">Y</a>	
14.3.4	Training		Y	<a href="#">Y</a>	
14.3.5	Asset specific competence		Y	<a href="#">Y</a>	
14.4	Medical requirements		Y	<a href="#">Y</a>	
14.5	Identification of Suppliers staff		Y	<a href="#">Y</a>	
14.6	Clothing		Y	<a href="#">Y</a>	
<b>15</b>	<b>Permits and licences</b>				
15.1	LU specific permits and licences	Access maybe required to secure rooms	Y	<a href="#">Y</a>	
15.2	Permits, licences and certificates for Supplier's staff		Y	<a href="#">Y</a>	
<b>16</b>	<b>The Principles of Access</b>				
16.1	Introduction		Y	<a href="#">Y</a>	
16.2	Access to Stations		Y	<a href="#">Y</a>	
16.3	Access to Track		N	<a href="#">N</a>	<a href="#">Track access may be required during surveys</a>
16.4	Access to depots		N	<a href="#">N</a>	<a href="#">Track access may be required during depots</a>
<b>17</b>	<b>Applying for Planned Access</b>				
17.1	Introduction		Y	<a href="#">Y</a>	
18	Applying for Generic Access		Y	<a href="#">Y</a>	
18.1	Constraints that apply to Generic Access		Y	<a href="#">Y</a>	
19	Access for fault repair		N	<a href="#">Y</a>	



Applicable requirements identified by Client				Identified by Supplier	
Section	Topic	Other documents / Comments	Y / N	Agreed? Y / N	Reference to explanation
20	Operational Assurance	Some surveys are going to be intrusive so have the potential to impact on station operations	Y	Y	
<b>21</b>	<b>Closures and possessions</b>				
21.1	Requirements for closures		N	Y	
21.2	Requirements for possessions		N	N	
<b>22</b>	<b>Controls at point of access</b>				<a href="#">We may require a possession or coordinate with an existing possession</a>
22.1	Publication of works		Y	Y	
22.2	Checks at point of access		Y	Y	
22.3	Signing-on with the Station Supervisor - The Station Visitors Record Sheet and Person in Charge Evacuation Register (PICER)		Y	Y	
<b>22.4</b>	<b>Track specific requirements</b>				
22.4.1	Protection Master		N	N	<a href="#">Protection Master may be required when surveying on platforms</a>
22.4.2	Possessions (Possession Master, Technical Officer, Cable Lineman, Signal Operator, etc.)		N	Y	
23	Removal of supplier's personnel from LU Premises		Y	Y	
24	Incidents		Y	Y	
25	Notification of regulatory concern or action		Y	Y	
26	Confidential Incident Reporting and Analysis System (CIRAS)		Y	Y	
<b>27</b>	<b>Monitoring</b>				
27.1	LU inspections		Y	Y	
27.2	Monitoring the supply chain		Y	Y	
27.3	Health, safety and environmental audits, inspection and tours by the Supplier's personnel		Y	Y	



Applicable requirements identified by Client				Identified by Supplier	
Section	Topic	Other documents / Comments	Y / N	Agreed? Y / N	Reference to explanation
27.4	Work location inspection and audit		Y	<a href="#">Y</a>	
27.5	Timescales for rectifying non-compliances		N	<a href="#">Y</a>	
28	Radio transmitters and transceivers		Y	<a href="#">Y</a>	
29	Mobile phones		Y	<a href="#">Y</a>	
30	Knives		Y	<a href="#">Y</a>	
31	Site health, safety and environment committee		N	<a href="#">N</a>	<a href="#">We do monitor all HSE elements, discussed in our weekly progress and highlight meetings</a>
32	Site housekeeping and security		Y	<a href="#">Y</a>	
33	Accidental damage, obstruction or interference with assets		Y	<a href="#">Y</a>	
34	Delivery of materials	For intrusive works access equipment will be required	Y	<a href="#">Y</a>	
<b>35</b>	<b>Conveyance of loads</b>				
35.1	Conveyance of loads on lifts and escalators		Y	<a href="#">Y</a>	
35.2	Conveyance of hazardous materials and substances		N	<a href="#">Y</a>	
36	Asbestos (non asbestos removal projects)		Y	<a href="#">Y</a>	
37	Working in or near lifts and escalators		Y	<a href="#">Y</a>	
38	Work on or adjacent to utilities and High Voltage cables (buried services)		N	<a href="#">Y</a>	
39	Working on or about the track		N	<a href="#">Y</a>	
40	Access to electrical sub-stations, working equipment, relay and other secure rooms		Y	<a href="#">Y</a>	
41	Entering areas with gaseous fire suppression systems			<a href="#">Y</a>	
<b>42</b>	<b>Fire prevention</b>				
42.1	General requirements		Y	<a href="#">Y</a>	
42.2	Temporary fire points	Survey works only	N	<a href="#">Y</a>	
42.3	Timber	No timber will be used	N	<a href="#">Y</a>	
42.4	Composites	No composites will be used	N	<a href="#">Y</a>	



Applicable requirements identified by Client				Identified by Supplier	
Section	Topic	Other documents / Comments	Y / N	Agreed? Y / N	Reference to explanation
42.5	Sheeting materials	No sheeting materials are required	N	Y	
<b>42.6</b>	<b>Gas cylinders</b>				
42.6.1	Use of gas cylinders in below ground locations		N	Y	
42.6.2	Storage of gas cylinders (above ground)		N	Y	
<b>42.7</b>	<b>Flammable and highly flammable materials</b>				
42.7.1	Use of flammable and highly flammable materials below ground		N	Y	
42.7.2	Storage of flammable and highly flammable materials below ground		N	Y	
<b>43</b>	<b>Hot work and fire hazards</b>				
43.1	Hot work		N	Y	
43.2	Reasonable notice of works		N	Y	
<b>43.3</b>	<b>Precautions</b>				
43.3.1	Buildings, assets etc.		Y	Y	
43.3.2	Gas cylinders		N	Y	
43.3.3	Gas detection		N	Y	
<b>44</b>	<b>Storage</b>				
44.1	General requirements for storage		Y	Y	
44.2	Trackside storage		N	Y	
44.3	Hazardous materials and substances		N	Y	
44.4	Allocation of space on operational property		N	Y	
45	Plant and equipment		N	Y	
46	Clearance approvals		N	Y	
47	Access equipment		Y	Y	
48	Temporary works		N	Y	
49	Temporary fences and hoardings		N	Y	
<b>50</b>	<b>Temporary lighting and power supplies</b>				
50.1	General requirements		N	Y	
50.2	Lighting in tunnels and shafts		N	Y	
51	Screening of lights and positioning		N	Y	
<b>52</b>	<b>Environmental requirements</b>				



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

**Other requirements / comments**



**These works are visual and intrusive surveys only, no installation of temporary or fixed plant/equipment is required. No materials shall be required on site other than access equipment and small tools.**



## Client/Supplier approval

### Client Menu (Invitation to Tender)

Prepared by: \_\_\_\_\_ Signature: \_\_\_\_\_

Approved by  
(the Client's  
representative): \_\_\_\_\_ Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No: \_\_\_\_\_

Email: \_\_\_\_\_

Revision of this menu: \_\_\_\_\_

### Supplier Menu (Tender)

Approved by  
(the Supplier's): \_\_\_\_\_ Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No: \_\_\_\_\_

Email: \_\_\_\_\_

Revision of this menu: 1

### 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: \_\_\_\_\_ Signature: \_\_\_\_\_

Supplier's  
representative  
acceptance: \_\_\_\_\_ Signature: \_\_\_\_\_



**Attachment 4**

**Authorisation of provisional sums**

**Applicable work package:**

**Provisional sum included in Contract:**

**Subsequent fixed and firm price agreed with TfL:**

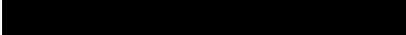
**Confirmation of the appropriate signed budget approval form:**

**SIGNED**

For and on behalf of the [*Contracting Authority*]

Signature: 

Name: 

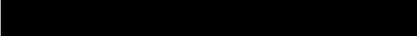
Title: 

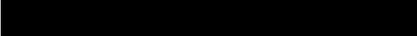
Date: 

**SIGNED**

For and on behalf of [*the Service Provider*]

Signature: 

Name: 

Title: 

Date: 