



## Call-Off Contract

**Framework Number: ICT11881 - GIS Applications and Associated Services Framework II**

**Call-Off Contract Number: ICT11881/4\_Lot1 - ICT12504 - GIS Upscale Project**

**THIS CALL-OFF CONTRACT is made 16 September 2016**

### **BETWEEN:**

- (1) **Transport for London ("the Authority"); and**
- (2) **ESRI (UK) Limited, a company registered in England and Wales (Company Registration Number 1288342 whose registered office is at Millennium House, 65 Walton Street, Aylesbury, Buckinghamshire, HP21 7QG ("the Service Provider").**

### **RECITALS:**

A. The Contracting Body and the Service Provider have entered into an agreement dated June 2016 which sets out the framework for the Service Provider to provide certain Deliverables to the Contracting Body or the Contracting Body ("the Framework Agreement").

B. The Contracting Body 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




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

**SIGNED**

For and on behalf of ESRI (UK) Limited

Signature: 


Name: 

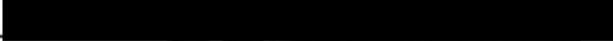
Title: Managing Director

Date: 20 September 2016

**SIGNED**

For and on behalf of Transport for London

Signature: 

Name: 

Title: COMMERCIAL MANAGER

Date: 27-09-16

## **Attachment 2**

### **Service Provider Proposal**

#### **1. Proposed Solution**

The Service Provider should detail how it proposes to deliver the Deliverables set out in Attachment 1, including attaching an Implementation Plan, details of any equipment and materials required and service levels. The Service Provider should respond to all questions and requirements asked/asked for in Attachment 1.

##### ***1.1 Meeting the requirements***

###### **WP1 – Solution Architecture Enablement**

In this Work Package (WP1), Esri UK will create a series of Architecture Documents (the Architecture Documents) that will define the standard patterns to be used to build and support the new GISaaS in Amazon Web Services (AWS).

We have responded individually to each TfL requirement identified as being part of WP1 in "Appendix A - WP1 Response".

Whilst defining the architecture patterns, we will not define the detailed steps required in order to deploy any of those patterns – this will be part of WP2. For WP1 we plan to reference existing standard CloudFormation templates that are available to build the different architecture patterns in AWS. One of the patterns will likely be identical, or very similar, to that deployed for LondonWorks.

We envisage the team for WP1 to include Senior Solution Architect, Solution Architect and Project Manager. Some work may be delegated to subject matter experts as required following workshops.

###### **WP2 – Technical Platform Design and Build**

In this Work Package (WP2) we will assist TfL to create four deployments of GISaaS to support four different user communities i.e. with an idea of which directorate, or project, a deployment might be suitable for.

These four deployments will be based upon the architecture classes defined in the Architecture Documents in WP1, and will implement the four different classes (likely to be bronze, silver, gold and platinum).

As part of deploying these infrastructure classes, we will create detailed documentation to allow future deployments of that architecture class to be carried out efficiently.

We will only build a development environment for each of the four infrastructure classes as per the stated scope. Documentation from the LondonWorks AWS deployment will be leveraged as the basis for at least one of the architecture patterns.



## **WP16 – Playbook Migration**

In this Work Package (WP16), we will work with TfL to plan and migrate the Surface Playbook application, and associated GISaaS services, from on premise to the new GISaaS in AWS. We will create a report comparing the items in the on premise Surface Playbook to the new Surface Playbook in AWS to show that the migration was successful.

The plan will also consider how to minimise impact on any other systems, such as TIMS, that make use of the current on premise GISaaS.

The responsibilities for the migration of Surface Playbook will follow the same pattern as per other implementations that Esri UK has undertaken with TfL, as follows:

Environment	Esri UK	TfL
Development	Design, document and carry out	None
Test	Carry out according to documentation	Shadow and ask questions
Pre-production	Answer queries / provide support	Carry out according to documentation
Production	None	Carry out according to documentation

We will also advise how the on premise GISaaS can be scaled down to support any systems, such as TIMS, that will continue to be deployed on it after Surface Playbook has been migrated to AWS. Implementation of scaling down the on premise GISaaS is outside our scope.

### **1.2 Meeting the timescales**

#### **WP1**

At WP1 project start up, TfL will need to assign a nominated individual as the key project contact. Esri UK will agree with TfL which staff need to be involved in the technical discussions and who at TfL has responsibility to review the documents and sign them off.

We will then agree a joint delivery plan to ensure appropriate TfL and Esri UK resources are available at the right time to support the work package. Each deliverable will be time-boxed to ensure that full coverage of the requirements is delivered within the time available.

We will arrange meetings at mutually agreed times to discuss and elaborate the requirements detailed in WP1. In these meetings, we will facilitate discussions to draft and elaborate the Architecture Documents. We will provide early drafts of the documents to TfL for comment whilst we are working on further detail of the document. We will stay in close and regular communication with TfL on both the technical content and progress.

Once all meetings and drafts are complete, we will provide a V1.0 for comment. TfL will have five working days to review the document and provide comments before we present a final V2.0 document for sign off.

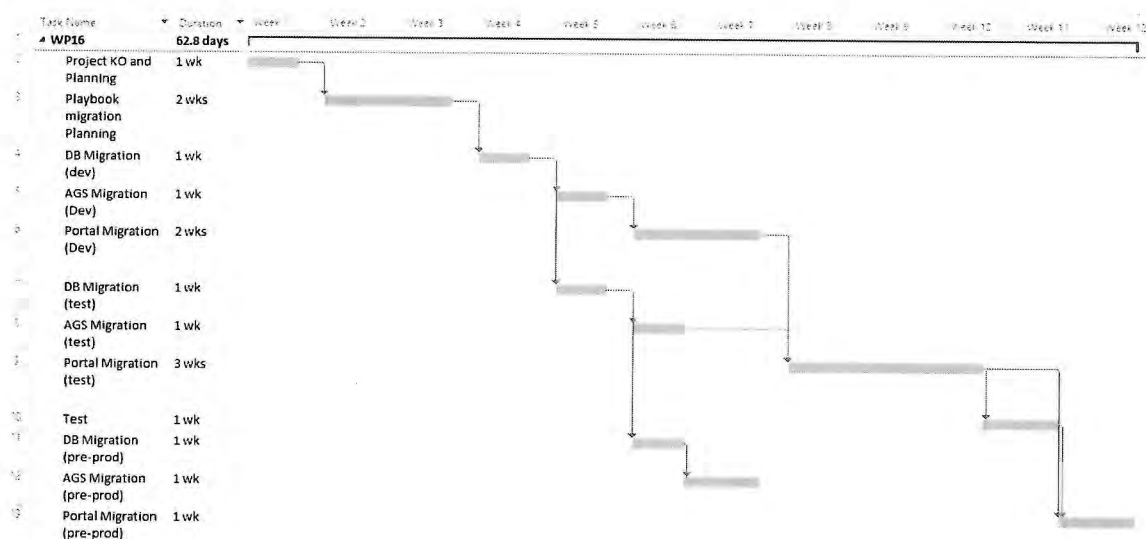
WP1 will give Esri UK and TfL a clearer picture of the scope and effort for the other work packages. At a high level, we will initiate each work package with a Kick-Off meeting to elaborate any requirements, discuss key dependencies and risks, and baseline the work package plan. If required, we will produce formal estimates for each work package after initiation activities.

Based on our current indicative estimates, we suggest that the following durations are suitable for each work package.

Work Package	Estimated Total Duration for Esri UK Tasks
WP2 (priority 2)	5 weeks
WP2 (priority 4)	3 weeks
WP3 (priority 2)	2 weeks
WP4 (priority 2)	4 weeks
WP5 (priority 4)	3 weeks
WP16 (priority 2)	12 weeks

We offer the following observations on the way the work packages interact:

- To deliver WP16 by the end of December 2016 is ambitious, especially as a start date is not identified. We have provided below an indicative high level plan of the work we believe is required by Esri UK as part of this work package. Note this is NOT a full project plan and TfL must plan out the deliverables from other parties including TfL Online and IM GIS.



- The appropriate AWS infrastructure class will need to be delivered first, but is part of WP2, Priority 2.



	a different user community (bronze and platinum) <ul style="list-style-type: none"> <li>• One Deployment Guide for each deployment</li> </ul>
WP3	<ul style="list-style-type: none"> <li>• One document on how to publish Open Data</li> </ul>
WP4	<ul style="list-style-type: none"> <li>• One document on Monitoring Tools and System Reporting</li> </ul>
WP5	<ul style="list-style-type: none"> <li>• One document on recommended Master Data Management Tool options and processes.</li> </ul>
WP16	<ul style="list-style-type: none"> <li>• One deployment of Surface Playbook in AWS (Development Environment)</li> <li>• One deployment Guide for the deployment</li> <li>• One deployment of Surface Playbook in AWS (Test Environment)</li> <li>• Knowledge Transfer during test deployment (shadowing)</li> <li>• Technical guidance/support, based on provided documentation, during pre-production deployment</li> </ul>

#### 1.4 Assumptions

We have assumed that:

For WP1:

- TfL approval to proceed will be provided by close of business on Friday 9<sup>th</sup> September 2016.
- TfL will provide staff as required to attend meetings. If meetings are arranged and TfL staff are subsequently unable to attend then additional meetings will not be arranged.
- All review feedback will be provided through tracked changes and comments in the Word document

For WP2:

- AWS (Europe) will be a suitable environment for these deployments, specifically that there are no security requirements that require data to be hosted in the UK.

For WP3:

- TfL will ensure all data is appropriately licensed.

Commercial

- The costs included within this proposal are Professional Service resource costs only

WP4				
WP5a				
WP16				

The costs above are based on a day-rate of [REDACTED]  
All Indicative Costs are for budgetary purposes only and subject to further elaboration.

All time is charged on a time and materials basis. Invoicing will be monthly in arrears. All costs are exclusive of VAT which will be charged at the prevailing rate. Travel Expenses are included in day rates.

The services are applicable to the agreed discounted Esri Professional Services day rates that are based upon volume orders. Depending upon how TfL intends to procure each work package, volume discounts will be applied following the elaboration of each work package to determine the discounted rate.

Should TfL decide to take advantage by bulk ordering days to cover all work packages from the outset, then more significant discounted rates will apply:

Consultancy Services Grade	Base Rate (£) Inc Expenses	Volume orders			
		0-50	51-100	101-200	200+
Project Manager					
QA Engineer					
Solution Architect					
Senior Consultant					
GIS Consultant					
Product Specialist					
Training Consultant					
	discount	0.00%	5.00%	10.00%	12.50%

#### WP1 Breakdown by Deliverable

Activity	Number of Days
Workshops	8.0
Create report 1 - Review and suggest infrastructure classes including database technology options	3
Create report 2 - Security architecture	5.0
Create report 3 - Solution architecture patterns	2.0



## Solution Architect

### Background

is an experienced Solution Architect and GIS Consultant, specialising in enterprise-wide GIS implementations. He joined Sysdeo (UK) in 1995 and was involved in several large GIS projects. Esri UK acquired Sysdeo UK in 2000 and Rob became a Solution Architect in 2004, and has since been responsible for the technical delivery of many GIS solutions across a broad range of industry sectors.

Prior to Esri UK, he worked for Gwent County Council where he developed a number of in-house GIS systems for Planning, Structures, Street Works and Accidents.

#### Key Skills:

**Solution Architects:** Key responsibilities are strategic consultancy and the design and delivery of solution architectures for a broad range of customers. This role covers a variety of technologies including web services, cloud, RDBMS and enterprise development platforms.

**Technical Assurance:** Provision of consultancy in all areas of GIS including technical architecture, analysis and design. Comfortable discussing all aspects of IT with enterprise architects.

**Team Leader:** Practised in establishing and clarifying customer requirements and providing technical leadership to a team of developers.

**Consultancy:** Proven ability to work with customers to solve business problems using GIS to requirements, timescales and budgets.

**Esri products:** Deep understanding and best practice implementation of all areas of ArcGIS products (Server, Desktop, GeoDatabase, Mobile, Web Services, Portal and ArcGIS Online).

**Special Interests include:** Web GIS technologies, architecture/infrastructure, enterprise monitoring and performance/scalability.

### Recent Key Experience

#### Transport for London (TfL)

has been heavily involved in a number of projects for TfL in the past few years.

**GIS as a Service (GISaaS)** – Rob provided critical architecture advice and assurance to TfL as part of a project to deploy an enterprise GIS capability initially for the Surface Transport Directorate.

**Surface Playbook** – Rob was instrumental in the initial stages of the project to help TfL make the best decision in terms of the right technology to deliver the project on time. He went on to help a joint team from Esri UK and TfL deliver a very successful implementation.

**LondonWorks** – Rob has provided the architectural vision for how the legacy LondonWorks application could be replaced using Esri technology. He has worked with TfL enterprise architects as well as 3rd party developers and solution architects to define and deliver 2 phases of a minimum viable product (MVP) so far.

**Enterprise Architecture** – Rob recently completed an enterprise GIS review for TfL discussing the limitations of their current implementation and offering advice on how the solution could be adapted and scaled in the future including expanding into the cloud.

#### Greater London Authority (GLA)

recently helped deliver, at very short notice, a high profile web mapping application and supporting GIS services for the Mayor of London's office, allowing London Boroughs, utility companies, and others to see what significant developments each other are planning in London up to the year 2050 in order to allow coordination of these large schemes across the capital.

#### Local Government GIS Reviews

has completed a number of GIS reviews for local authorities around the country, focussing on their current GIS technologies and versions and what would be needed to migrate them to a consistent corporate GIS system. Many authorities run on older versions of software with many interdependencies and Rob was able to pilot through this and deliver a clear way forward for those authorities.

#### Network Rail

worked on projects for Network Rail as a Solution Architect for Esri GIS as far back as 2002, and has built up an excellent relationship with Network Rail over this time so that he is now a trusted advisor to them.

has recently involved in the Intelligent Infrastructure Monitoring (IIM) project and was responsible for delivering a new GIS component integrated within an existing forms-based real-time asset monitoring application. The system monitors assets and raises alerts and events based on certain configured criteria, with the new map view seen as enlightening decision makers.

#### Historic England (formerly English Heritage):

has been the main Esri UK Solution Architect responsible for advising English Heritage over the past 7 years. Over that time there have been a number of varied projects including the casework management system (CanCase), Unified Designation System (UDS) and publicGIS. More recently Rob has provided architecture advice to Historic England about moving their GIS estate into the Azure cloud.

#### National Grid:

provided Solution Architect support in the final stages of the Gas Distribution Front Office (GDFO) project, specifically around the work streams for Web, Data and Technical Architecture, working closely with the work stream leads and overseeing the quality assurance aspects of those work streams.

#### Transport Direct (2003 – 2014):

Rob worked alongside the Transport Direct consortium partners (mainly DfT, ATOS Origin and WS Atkins) since the inception of the Transport Direct portal back in 2003. His focus and advice were respected within the consortium.

### Qualifications

### Professional Experience

#### Present

Esri UK Ltd

Solution Architect

### Background

is part of the Esri UK Professional Services Centre Government practice. With over 15 years experience in GIS consultancy, system design and development, he brings a wide array of skills and experience to all stages of the project cycle. Chris has proven ability to work with clients to provide effective solutions, utilising excellent client liaison, design and specification authoring and development skills. He believes strongly in building a sense of team between the end customer and Esri UK to ensure that everyone is working towards common goals and the best possible solution.

#### Key Skills:

**Solution Architects:** Providing strategic and technical leadership for projects, including design, estimate & delivery. Ensuring the project reflects his technical design and estimates during the construction / delivery phases of projects. Within Esri UK, he provides technical mentoring to technical lead team members.

**Technical Assurance:** Provision of consultancy in all areas of GIS including technical architecture, analysis, patterns, design and development.

**Team Leader:** Practised in establishing and clarifying customer requirements and providing technical leadership to a team of developers.

**Consultancy:** Proven ability to analyse problems to meet clients' requirements, timescales and budgets.

**Esri products:** Deep understanding and best practice implementation of ArcGIS for Server based solutions and the Esri product stack. Experience with the Esri Web APIs and ArcGIS Online solutions.

### Recent Key Experience

is an experienced Solution Architect who has recently been involved in the effective delivery of GIS solutions to some of Esri UK's largest Government Customers. This has involved both working directly with the customer and through system integrators.

#### Special interests include:

Real time, Web Services and Service Oriented Architecture, business analysis and just plain solving people's problems

#### Recent major projects include:

**UK Hydrographic Office:** is the Technical Lead and Architect on the UKHO Future Maritime Geospatial Capability project. The UKHO RMCG is a Research and Development project aimed at exploring how spatial data, in particular live data feeds, may be exploited by the UKHO and partners.

The core of the project is the processing high volumes of near real time shipping data from terrestrial and satellite sources, provided by Esri partner exactEarth.

The project makes use of ArcGIS GeoEvent Processor for processing incoming data and incident detection. It also exploits capability provided by ArcGIS for Server, GeoProcessing, ArcGIS for Desktop and the ArcGIS Web APIs.

The project involves a wide range of subjects, including vessel tracking, shipping lanes, hurricanes, navigational warnings, choke point analysis, product management and piracy.

includes architecture of the system, managing the Esri UK project team and acting as technical liaison with the customer. He is actively involved in helping develop the customers Use Cases and planning next steps for the project.

**Transport for London:** is the Esri UK Technical Lead and Web Developer on the TfL SITS Proof of Concept work. This is a multi-phase PoC project to assess the use of various data sources in near-real time to identify issues on the London road network.

The programme involves multiple organisations. Chris' role is to support the data processing teams with a GIS capability, including spatial data, spatial environments, services and applications.

The programme leverages ArcGIS for Server, WebApp Builder for ArcGIS, ArcGIS API for JavaScript and Amazon Web Services.

**Environment Agency:** is the lead architect and developer on the public facing What's In Your Backyard web application. The system has been in place since 2005 and continues to be adapted to meet the needs of the Environment Agency business users, as the primary means of exposing spatial data to the public.

has been involved in several key phases of the project, including a major overhaul of the application in 2007-8 and an Infrastructure Upgrade in 2019-20. In between these major releases, Esri UK continues to respond to the ever changing needs of the business as new data comes on line and new functional requirements are generated by this.

A key part of the WtBY programme is providing timely support and advice to the team in the EA responsible for maintaining the system. This role as a trusted technical advisor continues to grow throughout the EA, including a seat on the Environment Agency Technical Advice Group. This technical relationship also extends to Cap Gemini, the System Integrators responsible for IT at the Environment Agency.





## 2. Experience

### ***Example 1 – datahub.esriuk.com***

For the last five years, Esri UK has provided a set of mapping and address web services for our customers to use within their own GIS systems. These services act as a common point of access to geospatial information from Ordnance Survey which is used by approximately 200 different customers.

In common with TfL's requirements, we run these services using Esri software, hosted in Amazon Web Services (AWS). The system is elastic, scaling over multiple machines as load changes. Most functionality in TfL's requirements is also included in the datahub.esriuk.com service, namely:

- Authoring and publication of maps and features
- Management of geospatial information content, structure and metadata
- Web based and thick client data governance and management tools, providing the ability to manage data of multiple tenants via a single point
- Provision of data through open-standards Application Programming Interfaces (APIs) for use by other applications and tools not necessarily provided by Esri.

The services store and manage geospatial information with the following security classifications:

- Secure access to Public Sector Mapping Agreement data
- Anonymous access to Ordnance Survey Open Data.

We provided all the software for this solution, as well as all services required including:

- Solution Architecture Enablement, including all AWS cloud and security architecture, allowing a scalable solution
- Technical Platform Design and Build, including development builds and deployment scripts and testing.
- Ops Support Tools Design and Build, allowing us to manage this service, monitoring and reporting against a contractual service level agreement.
- Specialist Data Management Tools Design and Build, which allows us to easily manage the frequent Ordnance Survey data updates which must be applied to the service

### ***Example 2 – Office of National Statistics Geoportal***

<http://geoportal.statistics.gov.uk/>

In August 2016, Esri UK successfully ran a project with the Office of National Statistics to migrate its open data portal called Geoportal on to an Amazon Web Services (AWS) environment managed by Esri UK running on Esri software. This is used in conjunction with ArcGIS Online, Esri's software as a service, as an on-line mapping capability supporting sharing of geospatial information across ONS, its partners and supply chain, and members of the public.

It delivers the following functionality:



## APPENDIX A – WP1 Response

Ref	Requirement	Priority	Response
5.6.3	Provision of standardised authorisation architecture patterns and reusable solution components to support authorisation of all end user access to geospatial information managed by the platform. Note that user roles and authorisations will need to be managed as part of service Technical Support activities;	1	The Architecture Documents will define the relevant architecture patterns for authorisation and who is responsible for maintaining the users and roles that are managed.
5.6.13	Security model(s) underpinning the GISaaS implementation (including end user and data custodian and administrator staff access to data) will be documented	1	The Architecture Documents will define how the GIS system (services, data, and administration) is secured to allow access only from authorised users.
5.6.16	Advise on solution approaches typically used for management of government geospatial information with multiple security classifications (e.g. HMG Unclassified, Official, Official-Sensitive and Secret);	1	The Architecture Documents will define how different classifications of information can be managed within the platform.
5.6.17	Identify solution architecture options capable of addressing management of geospatial information with HMG security classifications Official-Sensitive and Secret, should such information be identified.	1	The Architecture Documents will define appropriate solution options for managing official-sensitive and secret information.
5.6.18	Should management of geospatial information with security classification TfL confidential require significant changes to the technical solution for management of information with classification TfL Restricted, incremental cost of such changes will be identified separately	1	The Architecture Documents will define any additional infrastructure or software required to manage confidential and restricted information.
5.8.2	Technical platform supplier is expected to review the proposed infrastructure classes as per Appendix A, and recommend changes aligning these with capabilities of the preferred cloud hosting environment, recommended database platform (as per Appendix B), solution architecture patterns and examples of operational best practice. Amended definitions of	1	The Architecture Documents will define a set of infrastructure classes based upon those suggested in Appendix A of TfL's requirements, the capabilities of the cloud hosting platform (AWS) and the standard architecture patterns available for ArcGIS. They will take into account spatial database capabilities in AWS, and provide estimated costs for each infrastructure class.





## Attachment 3

### Special Conditions for Call-Off Contract

#### **General Exclusions and Limitations of Liability**

(i) The Service Provider's Liability Cap in Schedule 1 shall be: "Subject to clauses 23.1 and 23.2 the Service Provider's maximum liability under this Agreement will not exceed: in relation to loss of or damage to tangible property, £10 million in aggregate; in relation to all other loss or damage, an amount equal to 125% of the aggregate of all amounts paid and/or payable (to the extent any sums remain outstanding or are subject to a purchase order) by or on behalf of the Authority to the Service Provider under the Call-Off Contract"; (ii) in relation to losses in clause 23.2.4, such shall be governed by the Service Provider's Liability Cap; and (iii) notwithstanding clause 23.5, the Authority does not limit its liability in respect to breach of Intellectual Property Rights.

#### **No Intellectual Property Rights shall be created**

In the event that Intellectual Property Rights are created by the Service Provider, then for the purposes of the Call-Off Contract and contrary to clause 22.1, the Service Provider shall retain ownership of such Intellectual Property Rights, and shall licence such to the Authority as follows: (i) if Software is created, such shall be licensed to the Authority pursuant to Schedule 2 (Service Provider's Software Licence Agreement); (ii) if any other Intellectual Property Rights are created, such shall be licensed to the Authority on a perpetual, non-exclusive, non-transferable basis, for the Authority's internal business use only.

#### **Clarification of applicable Service Provider Software, Third Party Software licences.**

Esri software licenced under the Esri ELA: such Third Party Software and products are proprietary to Environmental Systems Research Institute, Inc. ("Esri"), and may include software, web services, data and documentation, shall be governed solely and exclusively by the Esri Enterprise License Agreement between The Authority and the Service Provider with an effective date of 01 May 2014.

Esri UK software licenced under the Esri UK ELA (if applicable): such Service Provider Software is proprietary to the Service Provider and shall be governed solely and exclusively by the Esri UK Enterprise License Agreement between The Authority and the Service Provider with an effective date of 01 May 2014.

Any other terms in the Agreement (including Annex 1 to Call-Off Contract) which purport to apply to such software, products or online services (as applicable), shall not apply.

**Source Code, Escrow and Verification Services** are not applicable and shall not apply.

**Support and Maintenance Services:** support and maintenance shall be provided solely in accordance with and subject to the Service Provider's 'Standard Support Policy' ("Support Policy"). The Support Policy is available at <http://www.esriuk.com/Legal/terms-and-conditions>.

The Service Provider shall not be under any obligation to perform **back-ups of Software and / or Data**. The Authority shall ensure that it makes sufficient back-ups of Software and Data. Service Provider shall not be required to undertake or be liable for any form of remedial action for lost Software or Data, save where such arises through the Service Provider's negligence.





## Change Control Note

**Change Request No:** 01

**Agreement No:** ICT11881/4\_Lot1 - ICT12504 - GIS Upscale Project

**Dated:** 27 Sept 2016

**Title of Amendment:** Revised Pricing Schedule

**Originator:** [REDACTED]

**Authority Contact:** [REDACTED]

The following change is requested to the Agreement identified above.

### Change Request

#### Description of Change:

The agreed discounted rates will apply to this project by the raising of one PO for all the Work packages (WP).

The pricing schedule has been recalculated based on the discounted day-rate of £968 (maximum). The submitted rates have been amended to reflect the new cost calculation. The actual day rate charged will be based on the appropriate consultant used at the time of event.

#### Discounted Rate Pricing table:

Consultancy Services Grade	Base Rate (£) Inc Expenses	Volume orders	
		101-200 = 10% Discount	200+ = 12.50% Discount
Project Manager		[REDACTED]	
QA Engineer			
Solution Architect			
Senior Consultant			
GIS Consultant			
Product Specialist			
Training Consultant			