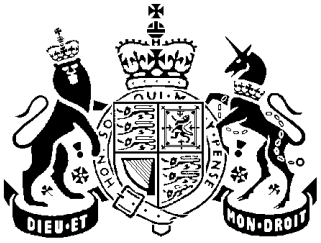

Secretary of State for International Development

- and -

AECOM Ltd

FRAMEWORK AGREEMENT
Contract Number: DIOCB1/073

Relating to Principal Support Providers

Within the Defence Infrastructure Organisation

TASK ORDER

In relation to
PO Number 8166 - Design, installation,associated works and commissioning for the Solar Nigeria Borno Phase 2

Department for International Development
Abercrombie House
Eaglesham Road
East Kilbride
G75 8EA

November 2017

THIS DEED is made the .....28th..... day of November 2017

BETWEEN

(1) Secretary of State for International Development of Abercrombie House, Eaglesham Road, East Kilbride, Glasgow, G75 8EA (the "Employer"); and

(2) AECOM Limited (Company Number 1846493) of/whose registered address is at Saint George's House, 5 Saint George's Road, Wimbledon, London SW19 4DR (the "Consultant").

BACKGROUND

(A) The Secretary of State for Defence ("the AUTHORITY") selected service providers including the Consultant as Principal Support Providers for mult-disciplinary construction design and project management services overseas

(B) The Consultant undertook to provide the same on the terms set out in a framework agreement number **DIOCB1/073 dated 25 July 2017** (the Framework Agreement).

(C) The AUTHORITY has established a number of framework agreements, including the Framework Agreement, in consultation with and for the benefit of public sector bodies. The AUTHORITY has overall responsibility for the management of those framework agreements.

(D) The AUTHORITY and the Consultant agreed that public sector bodies may enter into contracts with the Consultant in the manner provided for in the Framework Agreement.

(E) The Employer is such a public sector body and has been granted rights by the AUTHORITY in accordance with the Contracts (Rights of Third Parties) Act 1999 to enter into a contract under the Framework Agreement pursuant to an order served by the Employer on the Consultant. In the Framework Agreement, the Employer is identified as Employer.

(F) The Employer served a Task Order for services on the Consultant dated 28th November 2017 in relation to the design and site installation of solar panels and associated equipment supplied by the Employer; design and construction of civil and electrical engineering works associated with the installation of the solar panels, all as more particularly described in the Scope annexed to this agreement.

(G) The Consultant accepted the Task Order and hereby duly executes this contract.

IT IS AGREED AS FOLLOWS:

1. Definitions and Interpretation

1.1 The contract means this agreement together with the terms and conditions attached at Schedule 1 to the Framework Agreement as those terms and conditions are supplemented, modified and amended as set out in the Contract Data annexed to and forming part of this agreement.

1.2 "Appendix" means an appendix annexed to this agreement.

1.3 Terms for which no interpretation is provided in this agreement shall have the meaning ordinarily given to them by the legal profession where appropriate but otherwise shall be interpreted in accordance with their dictionary meaning.

2. Entire Agreement

This contract is the entire agreement between the Parties in relation to the services and supersedes all prior representations, arrangements, understandings, agreements, statements, representations or warranties (whether written or oral) relating thereto.

3. Sub-Contracting

The Consultant and the Employer agree that, notwithstanding clause 24 of the *conditions of contract* attached at Schedule 1 to the Framework Agreement, the whole of the service may be subcontracted to the Approved Sub-Consultant.

Signed for and on behalf of the EMPLOYER

By : ……..

Name :……..

Title : Authorised signatory

Date : ……..

Signed for and on behalf of the CONSULTANT

By : ……..

Name :……..

Title : Authorised signatory

Date : ……..

APPENDIX A - CONTRACT DATA

PART ONE – Data provided by the *Employer*

Statements given in all Contracts

1 General

The *conditions of contract* are the conditions attached at **Schedule 1** (including the additional conditions of contract set out in Contract Schedule B) to the Framework Agreement subject to the following modifications, amendments and supplementary provisions agreed by the Parties and specific to this contract:-

- ***In the said conditions of contract attached to Schedule 1 to the Framework Agreement, the following clauses shall not apply and are deleted:***

26G Security Measures	*Delete Not used*
26J Accounting for the Property of the Employer	*Delete Not used*
26N Fair Employment (Northern Ireland) Act 1989	*Delete Not used*
X4 Parent company guarantee	*Delete Not used*
X13 Performance bond	*Delete Not used*
Z13 Official Secrets	*Delete Not used*
Z35 Performance Bond	*Delete Not used*
Z39 Copyright	*Delete Not used*
Z41 Employer's Property	*Delete Not used*
Z42 Security Measures	*Delete Not used*
Z43 Access to MOD Sites	*Delete Not used*
Z44 Criminal Records Bureau	*Delete Not used*
Z45 Contractors on Deployed Operations	*Delete Not used*

The *Employer* is:

Name: Department for International Development (DFID)

Address: Abercrombie House, Eaglesham Road, East Kilbride, Glasgow, G75 **8EA**

The *Adjudicator* is: *TBA*

The *services* are identified in the Scope.

The Scope is in Appendix C

The Site Information is in Appendix B. Each of the eight Affected Properties identified in Appendix B is referred to as an 'Affected Property' and together 'Affected Properties' unless the context otherwise requires.

The Boundaries of the Affected Property are: as *agreed and set out in Appendix B in respect of each site. Accurate sites maps and*

locations of the installed equipment to be confirmed and approved by DFID prior to commencement of works.

The *language of this contract* is English.

The *law of this contract* is the law of England

The *period for reply* is 2 weeks

The *period for retention* is 2 years following Completion or earlier termination.

The *Adjudicator nominating body* is the Technology and Construction Solicitors' Association (TeCSA).

The *tribunal* is arbitration in accordance with Optional condition W1 of Schedule 1 to the framework Agreement.

The following matters will be included in the Risk Register (to be provided by the consultant and updated throughout the project):

- Security risks including terrorism, vandalism, assault and kidnapping threats;
- Construction risks including accidents, damage to persons or property, defective design and geotechnical conditions;
- Contractual risks including delayed dispute resolution, delayed payment and change order negotiation;
- Socio-political risks including customs and import restrictions, strike actions; and
- Risk of Failure of Nigerian insurance company to pay the claims when requested.

2 The Parties' main responsibilities:

The Affected Property is identified in Appendix B as the same may vary from time-to-time, such changes will be introduced through the Change Management Process

The *Employer* provides access to the following persons, places and things

access to	***access date***
Copy of security agreement with Borno State Government in relation to the site security and the security of the goods and Materials in transit from Warehouse to site and on site	No later than ***2 weeks*** prior to the date notified for start on site. The supply of the security agreement is a condition precedent to the Consultant commencing work on site.

	The Affected Properties	To be agre ed for each Affected Property.

3 Time **The *starting date* is 28TH NOVEMBER 2017**

4 Quality **The qualit y polic y s tatement a nd quality plan are provided within** - *quality policy statement and quality plan are not Required*

The *defects date* in r espect of each Affected Property is 52 weeks after Completion of the whole of the *services* in relation to the Affected Property.

The defects correction period is REDACTED weeks

5 Payment **The *assessment interval*** is REDACTED weeks

The *currency of this contract* is GBP (pounds sterling)

The *interest rate* is REDACTED per annum (not less than 2) above the base rate of the Bank of England.

***For the purposes of clause 50.3*,** PACF is not required and does not apply

***The Bill Paying Branch is* Acco unts Pa yable Sectio n, DFID Financial Management Group (e-invoicing@dfid.gov.uk)**

***The Commercial Officer is* REDACT ED, Procurem ent and Commercial Department, DFID**

8 Indemnity, insurance and liability

The amounts of ins urance and the periods for which the *Consultant* maintains insurance are:

Ref. Nr.	event	cover	period following completion of the whole of the *services* or earlier termination
01	failure of the *Consultant* to use the skill and care normally used by professionals providing services similar to the *services*	£REDACTED in respect of each claim, without limit to the number of claims	REDACTED
02	death or bodily injury to a person (not an employee of the *Consultant*)	£REDACTED in respect of each claim, without limit to	REDCTED

	or loss of or damage to property resulting from an action or failure to take action by the *Consultant*	the number of claims	
03	death or bodily injury to an employee of the *Consultant* arising out of and in the course of their employment in connection with this contract	£REDACTED in respect of each claim, without limit to the number of claims	REDACTED

The *Employer* provides the following insurances: REDACTED

Optional statements

If the *Employer* has decided the completion date for th e w hole of the *services*

- The comple tion date for the whole of the *services* is 30th June 2018

If no programme is identified in part two of the Contract Data

- The *Consultant* is to submit a first programme for accepta nce within 6 weeks of the Contract Date.

If the *Employer* has i dentified work which i s to meet a stated condition by a key date

- The *key dates* and *conditions* to be met are

condition to be met	*key date*
1	.....
2	.....
3	.....

If the *Employer* states any *expenses* and *disbursements*

- The *expenses* and *disbursements* stated by the *Employer* are as defined in Appendix D (The Charges) and p ermitted *expenses* and *disbursements* shall be include d within the *Consultant*'s Fee Proposal

If the *tribunal* is arbitration

- The *arbitration procedure* is in accordance with Schedule 1 to the Framework Agreement.
- The place where arbitration is to be held is London
- The person or organisation who will chose an arbitrator
  - If the Parties cannot agree a choice or
  - If the *arbitration procedure* does not state who selects an arbitrator is

  the Technology and Construction Solicitors' Association (TeCSA).

Option X8

- The *collateral warranty agreements* are appended to this contract in Appendix E

agreement reference	third party
Sub-consultant – *Third parties*	*Borno State Government*

Option X18

- The *end of liability date* is REDACTED years after Completion of the whole of the *services*.

Option Z

The additional conditions of contract are Z1 to Z45 of Contract Schedule B attached to the Framework Agreement as these are supplemented, modified and amendment in paragraph 1 of this Contract Data.

APPENDIX A - CONTRACT DATA

PART TWO – Data provided by the *Consultant*

Statements given in all contracts

The *Consultant* is:

Name: AECOM Limited

Address: Saint George's House, 5 Saint George's Road, Wimbledon, London SW19 4DR

The ***key persons*** are:

(1) REDA CTED

Optional statements

If a programme is to be identified in the Contract Data

- The programme identified in the Contract Data is TBC

If the *Consultant* pro poses to s ubcontract w ork to an y sub-consultant other than the Approved Sub-Consultant, the *Consultant* shall detail below such sub-consultants: *None*

Name and full contact details of Approved Sub-Consultant

REDACTED.

Confirmation of Approved Sub-Consultant's Professio nal Indemnity insurance cover in the amount of £REDACTED

Confirmation of Approved Sub-Con sultant's E mployers/Public Liability insurance cover in the amount of:

Public Liability REDACTED

Confirmation of Approved Sub-Consultant's agreement to enter into a sub-consultant warranty YES/~~NO~~

If the *Consultant* requires additional access

- The *Employer* provides access to th e following persons, pla ces and things

access to	*access date*
The Affected Properties	TBC
.....	....

- The *activity schedule* is *in* Appendix C
- The tendered total of the Prices is as set out in Appendix D

APPENDIX B - Site Locations
REDACTED COORDINATES

BHSP- SITE LOCATION AND GPS COORDINATES

S/No.	LOCATION	ADDRESS	LAT	LONG
1	UBA GH	Uba General Hospital		
2	DAMASAKGH	Uba General Hospital		
3	MONGUNO GH (OPTION A)	Monguno General Hospital		
4	MONGUNO GH (OPTION B)	Monguno General Hospital		
5	DAMBOA GH (OPTION B)	Damboa General Hospital		
6	DAMBOA GH (OPTION A)	Damboa General Hospital		
7	MANDARA GIRAU PRI/SEC SCH	Mandaragirau village, Biu LGA		
8	MANDARA GIRAU PHC	Mandaragirau village, Biu LGA		
9	KONDUGA GH	Konduga General Hospital		
10	NGOUM PRI. SCH.	Ngwom village, Mafa LGA		
11	NGOUM PHC	Ngwom village, Mafa LGA		
12	College of Nursing and Midwifery, Maiduguri	College of Nursing and Midwifery, Damboa Road Maiduguri		

CONTRACT APPENDIX C: THE SCOPE

Services to provide design, installation, associated works and commissioning for the Solar Nigeria Borno Phase 2 expansion project

1. Introduction

The Solar Nigeria Programme (SN), funded by the UK Department for International Development (DFID), is part of DFID's strategy for North East Nigeria which has been developed in coordination with other UK Government departments. This strategy includes a focus on solar systems to supply critical power needs for health facilities, including water pumping requirements.

Borno State is suffering a major IDP crisis and its hospitals and education centres outside of the capital have very limited access to power, reducing the efficacy of health service provision. This intervention aims to provide reliable and renewable power to hospitals in locations serving large numbers of people in need of medical care.

In 2016 and early 2017, DFID, through the Solar Nigeria programme, completed work at three second tier hospitals in Borno where works are due to finish in late-April/early-May 2017. Given the success of this initial phase of work in Borno, DFID Nigeria have received Ministerial approval for a second phase of work to include additional works in medical facilities as well as an extension of work into training institutes and village clusters.

This contract covers the design, works, installation and commissioning for the phase two installations in medical facilities and village clusters only, covering up to 8 locations in total to be made up from the following:

- Up to six hospitals

OR

- Up to five hospitals and the teaching areas of the School of Nursing and the School of Midwifery in Maiduguri

AND

- Two village clusters

In seeking approval for funds to undertake this programme of work, DFID commissioned a suite of designs and indicative costings for solar installations at these medical facilities in December 2016. These designs are based on a modular system that can be scaled up or down to meet the required power need. These costings and designs were prepared by an EPC contractor REDACTED). Updated versions of these designs and costings form the specifications for and cost base of this call down contract. These costings and designs have been further updated in June and July 2017 following analysis and monitoring of existing installations from phase 1.

DFID Nigeria has requested AECOM to contract and manage the engineering, procurement and construction (EPC) contractor, REDACTEDC to engineer, procure and install solar equipment and provide ancillary services in various hospital and village locations in Borno. There will be two contracts for this work as follows:

Contract 1: DFID Goods and Equipment framework. To cover the procurement of all major goods and equipment for the project installation, logistics, goods insurance and warranties as detailed in a separate ToR.

Contract 2: Foreign and Commonwealth Office Framework 'Lot 1 – Architectural & Lead Design Consultancy' ("The Works Contracts") To cover the scope of professional services associated with in-land freight services, warehousing, project management, detailed design, works and quality

assurance of the EPC contractor. The scope and details for this are covered in this document and the related schedules.

Given the current levels of insecurity in the regi on, and the potential for a rapid change in the security and operational environment, provision will be made th rough this contract – to provide contingency planning and fall-back options for project delivery including the mechanism through which these will be agreed with DFID.

2. Objectiv e

To contract, manage and oversee the work of the contractor REDACTED solar in the installation of solar systems and battery power/micro grid storage sy stems as described in 'the specifications' at up to a proposed eight sites. This scope covers In-land freight and delivery of goods to sites, warehousing, project management, detailed design, works, installation, electrical works, commissioning, and quality assurance.

3. Recipient

The primary recipients are hospitals and villages in Borno State to be selected from the list provided by DFID and detailed below ("the Recipient").

The sites will be selected by DFID Nigeria and di scussed and agreed with AECOM and its supply chain. The criteria for site selection are:

- Population size and proximity to internally displaced persons (IDP) camps supporting women and children affected by insurgency
- Resettlement and rehabilitation of the buildings according to state reconstruction planning
- Presence of adequate equipment / facilities in the hospitals
- Advice from the Borno Chief Medical Doct or on planned investments and equipment transfer to sites
- The ability of the Ministry of Health to manage O&M at site
- The ability of the Ministry of Health to secure sites during and after installation
- Security level of the site and security provisions available pre, during and post installation

The necessary and up-to-date contact details of the relevant authorities who will provide access to the hospital sites and locations will be provided by DFID Nigeria or its representatives.

DFID and AECOM will discuss any proposed changes to site locations due to security risks or other factors to ensure all relevant parties agree on the details. Any changes to the sites may result in agreed changes to the delivery of the Services and the Financial Limit as per the agreed financial tolerances noted in Appendix D.

4. Scope of work

AECOM's role under this Contract, together with its supply chain, will include; providing onward logistics of goods from Lagos Port, warehousi ng, project management and oversight, design, engineering and construction for up to eight solar in stallations, micro-grid systems and electrical retrofits including:

4.1 Project management and quality assurance

i. Project management and oversight includi ng development of a workplan for project delivery. This implementation plan shoul d include logistics plans and security arrangements with Borno State Government fo r site access. Noting that commitment to such access and security provision from Bo rno State Government shall be secured by DFID.

ii. Participation in site selection as far as commenting on the practicality and security of sites proposed by DFID and the Borno State Government.

iii. Engagement with government, NGO, humanitarian and security services stakeholders to work to harmonise the security prot ocols, information and arrangements for the project delivery.

iv. Scenario planning for different combinations of health facility and village installations to meet the potential change in security and operational environment (see 4.4 contingency planning).

v. Duty of Care plan for the project, in cluding full team and subcontractor details, contingency planning, modes of transport and accommodation, approach to site security, evacuation procedures and other health and safety matters as required.

vi. At least monthly progress meetings with REDACTED Solar

vii. Monthly progress reports to DFID on a template to be agreed

viii. Financial reporting, forecasting and billing

ix. Due diligence on the supply chain for the works and services including first, second and third tier (where relevant) suppliers.

x. Quality assurance of the plans, designs and costings provided by REDACTED as part of the business case approval and any reversions thereafter.

xi. Provision of reports and documents to DFID to enable final decisions about the technical details and options for the solar installations to be made

xii. Quality assurance of the detailed designs, implementation plans, bills of materials and costings for final installation at the selected sites.

xiii. Quality assurance of the ongoing work of the EPC contractor including regular progress meetings and risk management.

xiv. Sign off of installation at sites as part of the commissioning process.

xv. Development of communications collateral, presentations and case studies as may be reasonably agreed with DFID.

xvi. Reasonable engagement and coordination as appropriate with other Solar Nigeria actors and delivery partners.

xvii. As part of the final project report. devel opment of a lessons learned report at the end of the installation period to cover both technical and non-technical lessons learned that may inform future phases of work in and outside Borno.

4.2 Design, engineering, logistics and construction

i. Negotiation of a suitable contract(s) with Em-One for the installations including negotiation of a fixed price for the delivery of the installation at each site based on certain price tolerances as specified in Appendix D. Indicative specifications below and bills of materials are attached in Appendix D based on initial design work commissioned by DFID and updated in July 2017. Final designs and bills of materials are subject to change following final detailed design work at each site. Where the final design or bill of materials exceeds the tolerance levels outlined in the proposal in the specification (below), AECOM will seek approval from DFID before progressing with further work

ii. Management and oversight of the work of the contractor Em-One who will design systems and carry out all construction and engineering works against plans to be agreed and approved by AECOM and DFID.

iii. Review and update, as appropriate, to the Em-One security protocols with regards to the in-land logistics, warehousing, site works and management during works.

iv. Performance management of Em-One over the life time of the installation period through appropriate contracting and reporting mechanisms.

4.2.1 Logistics

AECOM and its supply chain will provide suitable logistics provisions to transport goods from the port of entry (Lagos Port) to a warehousing facility and onwards delivery to the sites for installation.

4.2.2 Design and Engineering

AECOM and its supply chain will be responsible for reviewing the initial designs provided and providing a detailed engineering design for each of the systems at each chosen site. This work will take place following detailed design visits after site selection and will include:

- Solar system design, providing detailed single line diagram, wiring diagram and other design drawings for the custom designed general hospitals including the solar system and any electrical retrofitting work
- Undertake detailed site survey and geotechnical tests to confirm soil conditions for foundation design.
- Design the foundations for the rack support structure and equipment shelter.
- Carry out detailed design and analysis of the rack support structure.
- Design the electrical wiring and fittings installation for the hospitals focused on Electrical Retrofit and energy efficiency upgrade as required but to the maximum levels as stated in the tolerance and assumptions.
- Following detailed engineering and design work, final designs and bills of materials will be submitted for review and approval.

4.2.3 Construction

i. AECOM and its supply chain will be responsible for all site construction activities in accordance with the agreed technical specifications, which include site clearing, site earth works, reinforcement works, concrete works, site cleaning and finishing and any

other constructions works necessary for t he complete installation and commissioning of the solar systems.

ii. Construction works at site will be in accordance with agreed designs and plans and will be limited to the necessary preparations of t he site for installation and the tidying and securing of the sites with palisade fencing. Tidying of the site will relate to the removal of any rubbish, tools and excess materials to leave the site in a safe, working and acceptable condition.

iii. The scope of works does not cover land scaping or any other works not directly connected to the installation of the solar power system.

iv. Demolition at sites is not expected as site visits have demonstrated adequate space for the required solar plants. Should demolit ion or any other works be required for successful preparation of the site, this will be detailed in the detailed designs and agreed with DFID and the relevant Hospital Authority.

4.2.4 Installation

i. Solar System and micro-grids: The solar system components shall be installed using industry approved standards agreed by AECOM and DFID at the outset of the programme, and as per the agreed technical specifications and designs. Any deviation from designs or specifications deemed nec essary due to site conditions must be reported to DFID in advance of work taking place. Testing and commissioning to ensure the system meets requirem ent will be the full responsibility of AECOM and its supply chain.

ii. Electrical Upgrade and retrofi t: Electrical upgrade and retrofit of the installed fittings in the general hospitals, carrying out electrical re-wiring where required as per the designs agreed in 4.2.1. The contractor shall carry out testing to ensure the installations are correct as per the agreed designs prior to integration with the solar system.

The attached technical specifications provide a full guide on the technical details of the project, noting that detailed designs for each site are the first output of this contract.

4.2.5 Ancillary Works

AECOM and its sub-contractor shall carry out 'elect rical retrofit and upgrade works' in the hospitals and other sites to a standard agreed in the pre-works documents to be provided to DFID for approval.

4.3 Contingency planning

It may be necessary to substitute installati on sites, depending on the security and operational environment during inception, design or at any stage in the programme due to the fluid security situation in Borno.

AECOM and its supply chain will develop a set of fall back contingency plans to enable the project to be delivered within a number of different scenarios. Th is planning must be formally included in workplans submitted to DFID including a full risk assessment to be provided within 6 weeks of the commencement of the project.

AECOM must submit draft work plans which addre ss the following scenarios, while keeping within the original project budget ceiling and the overall solar systems outlined in this contract.

1. Current plans, as outlined above

2. Changes to alternative hospital sites of the same size

3. Changes to alternative sites of a different size

4. Options for delivering the full project at alternat ive sites within Borno, if security deteriorates significantly.

5. 'Worst case scenario' plan, whereby the project can no longer be delivered in Borno and equipment needs to be secured and the team evacuated to a safe location.

In the event of additional cost being incurred on the overall contract envelope, which results from either a change in location or a change in the security env ironment or an amended scope of work, DFID Nigeria will be notified at the earliest possible opportunity and work will not pr oceed without the written approval from DFID Nigeria.

AECOM will ensure that any additional costings will use financial scales and rates consistent with the original contract.

5. Outputs / Deliverables

The following will be required from AECOM and its supply chain:

5.1 Project management (Further detailed at 12)

i. Project work plan

ii. Including draft Duty of Care plan – and procurement plan and timeline, including contingency/scenario planning, risk assessment and mitigation plan

iii. Security protocols

iv. Detailed costings and bill of materials for each site to be provided following design activities

v. Reports on quality assurance on designs and the implications

vi. Monthly situation meetings and update reports in a format to be agreed with DFID Nigeria

vii. Arrangement of suitable wa rehousing for equipment in advance of delivery to site(s), an extension of warehousing should be available if required by DFID.

5.2 Technical designs and plans

Solar system Designs and plans:

i. Single line drawing for each of the hospital solar systems.

ii. Wiring diagram for the general hospitals

iii. Manufacturer technical specification for each of the proposed equipment.

iv. Detailed work schedule for execution.

v. Test reports on critical equipment such as solar panels, inverters, and batteries.

vi. Sets of 'as-built' drawings.

vii. A schedule of commissioning test to be completed on commissioning.

Civil works plans:

i. Site survey reports on site conditions.

ii. Reports on test carried out on construction materials.

iii. Detailed foundation designs and drawings.

iv. Detailed site construction work schedule.

v. Site Layouts showing the solar systems in the chosen site location.

vi. Complete sets of construction drawings for site implementation.

vii. Sets of site construction quality checks report.

viii. Sets of as-built drawings after construction.

Electrical Upgrade and retrofit plans:

i. Electrical schematics of the general hospitals.

ii. Preparation of the load tables for each of the general hospitals

6. DFID commitments

DFID representatives will assist in brokering agr eements for Borno State Government to ensure their support and engagement throughout the course of the pr oject. DFID will supply a copy of their signed agreement with Borno State Government regarding the provision of security and site access before work starts on site. This will include:

- Final site selections on a timely basis (within One week of contract signature) in conjunction with the Borno State Government, AECOM and its s upply chain. If any party deems a site to be unsuitable from a security or duty of care perspective that site will be reconsidered.

- Permissions for site access and works

- Security support pre, during and post installation involving communication, situational awareness and security manpower provision when equipment is moved to site and thereafter

- Adequate budget and timely funding for state-related activities and personnel

- Provision of adequate personnel responsible for the receipt of the systems at handover

- Provision of adequate infrastructure and support to allow the effective delivery of the project including but not limited to: fencing, road grading, switching off power, removal of gates or moving overhead cables

- Provision of information regarding current and projected power usage

- Responsibility for community outreach to ens ure potential beneficiaries and communities are aware of the solar powered facilities and the benefits.

- Provision of a facility where the spares can be stored as required

- DFID – including representatives from health, North East and security – to attend a monthly situation update meeting, coveri ng progress and any security and operational issues affecting the project.

- DFID shall be responsible for providing suit able goods as procured according to the designs provided and supplying such goods at Lagos Port to a facility dictated by REDACTED provided under 'Contract 1'

7. Coordination

Clear communication channels and/or approval pr ocesses will be established between AECOM, its supply chain and DFID. A communication matrix is attached as Annex 2 to this Appendix C

8. Reporting

Monthly progress reporting is required.

A final report will be submitted to DFID by AECOM providing details of the deliverables achieved during the programme period.

The report will be submitted to the DFID Programme Manager

9. Timeframe

AECOM will be contracted for the period 28th November 2017 to 30th June 2018 inclusive.

10. Duty of Care (DoC)

AECOM are responsible for the safety and well-being of their personnel (as defined in the Framework Agreement) including third parties affected by t heir activities under this Call-down Contract, and appropriate security arrangements. They will also be responsible for the provision of suitable security arrangements for their domestic and business property.

AECOM is responsible for ensuring appropriate safe ty and security briefings for all their personnel working under the Call-down Contract and ensuri ng that their personnel register and receive appropriate briefing. Travel advice is also available on the FCO website and the supplier must ensure they (and their personnel) are up to date with the latest position.

AECOM is fully responsible for Duty of Care in line with the details provided above and the initial risk assessment matrix developed by DFID as detailed in Annex 3 to this Appendix C. AECOM confirms that:

- They fully accept responsibility for Security and Duty of Care.
- They understand the potential risks and have the knowledge and experience to develop an effective risk plan.
- They have the capability to manage their Duty of Care responsibilities throughout the life of the contract.

Sites for installation of the goods must be suitable, secure and adequate for the installation of the goods and all necessary, reasonable safety measures should be taken by the sites to safeguard the health and safety of people and goods before work commences.

AECOM or its subcontractors will inspect the sites at the before and during installation and will take steps to ensure these sites are suitable for work to take place. Should the site be deemed unsafe by AECOM or its subcontractors, AECOM or its subcontractors will notify DFID and reserve the right not to enter the site. AECOM or its subcontractors will be not responsible in the event that there are time delays, changes or charges required in order to satisfy these safety requirements in line with the tolerances to pricing agreed in Appendix D.

11. Specifications

Specification summary

The inland logistics of equipment from the Port of Lagos to the final sites to be installed as solar power generation systems at eight sites in Borno State, Nigeria. Details of the system sizes and related specifications of the systems being purchased are provided in the tables below.

Final sites are still to be selected and final designs confirmed as part of the scope of the contract, therefore this specification includes some flexibility that can only be finalised once detailed designs are complete for the systems in each site. The specifications, logistics and installation are presented on a fixed priced basis for the size of system for each installation type as detailed in Table 1 below

Table 1: Sites and system sizes covered by this contract

Site	Size of system
Hospital site 1	H2: 102.4KW
Hospital site 2	H2: 102.4KW
Hospital site 3	H2: 102.4KW
Hospital site 4	H1: 76.8KW
Hospital site 5	H1: 76.8KW
School of Nursing and Midwifery teaching areas	SoNMW: 122.8KW
Village cluster 1	Village day School: 15.36KW Primary Health Clinic PHC1 size: 20.48 KW Solar Bore Hole 1: 4.8 KW Solar Bore Hole 2: 4.8 KW
Village cluster 2	Village day School: 15.36KW Primary Health Clinic PHC1 size: 20.48 KW Solar Bore Hole 1: 4.8 KW Solar Bore Hole 2: 4.8 KW

Notes on Table 1:

[1] Final sites still to be selected and will be confirmed in writing by DFID although indicative shortlist is as follows: Damasak – H2, Monguno – H2, Damboa – H2, Uba – H1, Konduga – H1, School of Nursing and Midwifery, Mandaragirau village in Iu LGA and Ngwom village in Mafa LGA.

[2] Detailed specifications for each system are provided below. If sites require different sized systems than detailed above after detailed design work then prices will change.

Table 2: List of potential hospital sites and their system sizes

For detailed specifications, see Table 3 below

Hospital Name	Standard system size applicable
Konduga General Hospital	H1
Monguno General Hospital	H2
Gubio General Hospital	H1
Damasak General Hospital	H2
Mafa General Hospital	H1
Ngwom Health Care Centre	PHC1
Gajiram General Hospital	NA [1]
Chibok General Hospital	H1+ [2]
Bama General Hospital	H3
Baga General Hospital	H1
Damboa General Hospital	H2
Gwoza General Hospital	H2
Ngala General Hospital	H2
Uba General Hospital	H1

Notes on Table 2:
[1] A new hospital is currently being built by Borno State Government. This may be an H2 or H3 system as yet unknown.
[2] Additional load is coming from a primary health clinic operating in the same compound. As such an H2 system would be preferable to cover both operations.

Table 3: Technical system specifications for General Hospitals: H1, H2 and H3 sizes

This call down covers equipment supply for: Three (03) H2-size systems and Two (02) H1-size systems as per the below system specifications.

		H1	H2	H3
1	Solar PV installed capacity 76.80KW		102.4KW	204.80KW
2	Suitable Battery Inverter	1	1	1
3	Battery Capacity	170 kWh	420 kWh	840 kWh
4	Diesel Generator Rated Power	60KW	80KW	130KW
5	AC Distribution System	1000 meters (Max)	1000 meters (Max)	1500 meters (Max)
6	Suitable PV Mounting System	1	1	1
7	Cloud based data monitoring system	1 1		1

Table 4: Technical system specification for School of Nursing and Midwifery teaching areas

This contract covers equipment supply for One (01) system for the School of Nursing and Midwifery teaching areas as per the below system specifications:

		School of Nursing and Midwifery
1	Solar PV installed capacity	122.8KW
2	Suitable Battery Inverter	1
3	Battery Capacity	420 kWh
4	Diesel Generator Rated Power	80KW
5	AC Distribution System	500 meters (Max)
6	Suitable PV Mounting System	1
7	Cloud based data monitoring system	1

Tables 5a and 5b: Technical system specification for village clusters
This contract covers equipment supply for Two (02) village clusters each to include: Two (02) solar bore holes, One (01) primary health clinic (PHC1 size) and One (01) village day school (SCH1 size) as per the below system specifications:

Table 5a: Specifications for village day school and primary health clinics

Each village cluster will have One (01) Primary health clinic (PH1) and One (01) village day school (SCH1). Other larger primary health clinic sizes (PHC2 and PHC3) are included for reference purposes only.

		PHC0/SCH1	PHC1	PHC2	PHC3
1	Solar PV installed capacity 15.36KW		20.48KW	30.72KW	46.08KW
2	Suitable Battery Inverter	1	1	1	1
3	Battery Capacity	86.49KWh	111.22 KWh	172.99 KWh	259.49 KWh
4	AC Distribution System	100 meters (Max)	100 meters (Max)	100 meters (Max)	100 meters (Max)
5	Suitable PV Mounting System	1	1	1	1
6	Cloud based data monitoring system	1 1		1	1
7	Enclosure housing 20/10 feet ISO insulated and modified shipping container with cooling and ventilation	1 1		1	1

Table 5b: Specifications for One (01) solar bore hole

Each village cluster will have two solar bore holes so the coverage of this contract is for Four (04) solar bore holes in total.

Water Borehole		
1	Solar PV installed capacity	4.80KWp
2	Solar Borehole controller	1
3	Suitable PV Mounting System	1
4	Enclosure (controller)	1
5	Submersible Pump	1

Table 6: Indicative technical specifications for major solar system components for General Hospitals and School of Nursing and Midwifery

System Component	Details
PV Generator	315Watt PV modules Warranty: 25 years performance warranty, 10 years product warranty Manufacturer: Canadian Solar
Battery Invertor	SMA Sunny Tripower 25000TL (STP 25000TL-30) Warranty: 5 years factory warranty Manufacturer: SMA
Battery Storage	Tesla Powerpack at the required modular size for each system as specified above including self-contained thermal management system, communications and monitoring, mechanical and electrical safety features in a NEMA 3R (IP35) enclosure Battery Management System via Powerpack Controller Management Warranty: 10 years. Manufacturer: Tesla
Diesel generator	60 KVA - 130 KVA depending on system size Diesel fuel Automatic or Manual start Warranty:2 years Manufacturer: Cummins
Data Monitoring System	SMA Cluster Controller (CLCON-S-10) Device for monitoring and controlling SMA inverters in decentralized large-scale PV power plants with Speedwire network Warranty: 5 years Manufacturer: SMA Sunny Cloud Portal, data plan, GPRS/GNM Modem for Remote Assess
Electrical Balance of System	Complete Electrical Balance of System (BOS), including: Wiring system and connectors Fuses and breakers Energy meters Load limiting devices AC distribution panel Earthing systems Ground fault protection Surge protection devices

Solar Mounting Structures	As per final designs Warranty: 5-10 years warranty for different components Manufacturer: Schletter
Palisade fencing	Palisade Fencing 2.0 M high, with Double Leaf Gates 6m wide x 2m high and Single Leaf Gates 1m wide x 2m high PALES: 2.5mm W, 1.95m. overall, 17 per 2.75m. panel, with triple pointed tops. POSTS: 100x55x6.72kg/m RSJ, 2.725m, overall without baseplates and complete with loose fishplates HORIZONTALS 2 No. 50x50x6 RSA. FIXINGS: M12 cup square bolts with permacone type nuts. SUPPORT LEGS: 40x8 RSF 2 per standard panel. PALE FIXINGS 8mm galvanised T - head bolt with Permacone nuts. FINISH: Galvanised - BS EN ISO1461

Table 7: Indicative technical specifications for major solar system components for village clusters

System Component	Details
PV Generator	315Watt PV modules Warranty: 25 years performance warranty, 10 years product warranty Manufacturer: Canadian Solar
Battery Invertor	Conext™ MPPT 80 600 Solar Charge Controller Warranty: 5 years Manufacturer: Schneider
Battery Storage	Lead acid OPZV VRLA 2V , 48V Batteries battery connectors & cables and battery racks Warranty: 2 years Manufacturer: Hoppecke
Container/ Battery enclosure	20 feet/10 feet ISO Containers Warranty: 5 years
Data Monitoring System	Conext combox with Conext Insight PV Monitoring Software/Web Portal for hybrid PV monitoring 2 years warranty Manufacturer: Schnieder Cloud Portal, data plan, GPRS/GNM Modem for Remote Assess
Electrical Balance of System	Complete Electrical Balance of System (BOS), including: Wiring system and connectors AC and DC Overvoltage protection Fuses and breakers for isolation and protections Energy meters Load limiting devices AC distribution panel Earthing systems Ground fault protection (RCD) Surge protection devices
Solar Mounting Structures	As per final designs Warranty: 5-10 years warranty for different components Manufacturer: Schletter

Solar Borehole Controller	Warranty: 2 years Manufacturer: Lorentz / Groundfus
Water pump	4 feet high efficiency ECDRIVE brushless DC motor EN 1.4301/AISI 304 cast stainless steel stator housing solid stainless steel rotor 600 to 3,300rpm-depending on pump end Multi-stage centrifugal-premium materials, EN 1.4301/AISI304 stainless steel Warranty: 2 years Manufacturer: Lorentz

Full and detailed bills of materials for each site and packing lists will be provided after the design stage.

The above specifications in tables 6 and 7 are indicative. Should final designs or availability of certain brands mean than certain components need to change, items can be substituted for other equivalent items of the same quality in line with delivering the system specifications in tables 2, 3, 4, 5a and 5b.

12. Solar Nigeria Borno – Project management and site supervision

1. Introduction

The project management of Solar Nigeria, Borno and the oversight of the EPC contractor activities across eight sites has been designed in line with AECOM's own internal quality assurance and management processes as one of the world's largest engineering and design consultancies. It is intended to satisfactorily manage DFID's risk around delivering such works in a cost-effective way whilst drawing on both our in-house expertise at managing solar installations globally and the existing AECOM operations for DFID's Goods and Equipment contract to drive efficiencies.

Our approach has been designed with the focus on our key areas of expertise for EPC contract management: administrative project management and procurement, technical project management, site monitoring and quality assurance.

To provide this service, AECOM is drawing on its own internal solar project expertise as well as partnering with Nuvo Consulting to provide technical project oversight in-country. Nuvo Consulting is an Africa-based consultancy specialising in the oversight and management of energy projects across the continent. The team comes from a range of professional disciplines and have significant experience in overseeing solar installations in challenging locations across Africa with particular experience in Nigeria as well as inhouse EPC capability.

2. Project oversight approach for the installation phase

2.1. Project Management

2.1.1. Technical project management

Oversight activity will focus on technical project management in Nigeria with work performed in both Abuja and Borno State. The team will be drawn from experienced engineers and technical project managers with strong links to solar programmes in Nigeria and the rest of Africa. This team will provide all the necessary day to day in-country management, co-ordination, stakeholder engagement and reporting that may be required.

This team will consist of:

- A full-time in-country local, technical project manager to manage stakeholder engagement, direct client engagement, reporting and any other project management activities in-country as needed.

- Limited time from a technical team leader (international) with extensive experience of delivering complex solar installations in Africa and Nigeria. This person can provide high level technical advice and support for technical stakeholder meetings and decision points either in Abuja or Borno.

2.1.2. Administrative project management

All fees and expenses associated with administrative project management including financial and procurement support as well as ongoing project administration support for various technical teams is covered from within the procurement fee.

The vast majority of this support will be performed from the UK by an experienced project manager with experience in managing complex DFID infrastructure projects. This individual comes from within the AECOM International Development team. This individual will be closely supported by experienced finance, commercial and procurement managers from the DPSA team who have been working on the programme to date.

This team will be responsible for:

- Project scheduling and coordination
- Contract management
- Financial forecasting and billing
- Risk management
- Procurement advice and support

The project manager will schedule the monthly progress meetings as well as facilitating the kick-off meeting in Nigeria and any other meetings associated with key milestones.

2.2. Site monitoring

Whilst the majority of complex quality assurance can be managed remotely, management of an EPC contactor does require site review and site access. The NEC contracting model requires a contract agent who is an engineer qualified to review works to enable payment milestones. Without regular presence on the ground, these sign-offs would not be manageable.

A critical role for this team is to be able to be present on the sites to monitor progress and identify any delivery or quality issues early. At the end of the installations it will be this team who oversee the commissioning process and in collaboration with AECOM's in-house independent QA team, will issue the relevant certificates that denote site acceptance and handover. These will include: Preliminary Acceptance Certificates (with a companion defects list to be addressed by the EPC contractor) and Takeover Certificates.

Site monitoring will consist of the following:

- One local electrical engineer to spend 3 days every two weeks visiting and reporting on progress on site as well as any risks and issues identified with any works. This engineer will work closely with the AECOM Solar team providing thee quality assurance (see Section 2.3 below).

- A site supervisor (international) who will make infrequent visits to the sites to oversee progress and will most importantly be involved in site commissioning and sign-off.

The number of site monitoring visits and associated trips to Borno State costed in this proposal are assuming an 8-month site activity schedule, allowing for some slippage. If site works pause or stop for any reason such as security concerns or delays to equipment, the schedule for site monitoring will be adapted accordingly. If the maximum number of visits budgeted is exceeded additional visits will need to be costed from the contingency in discussions with DFID.

Number of visits to site	Visits per month	Number of months	Maximum site visits	Days per trip	Total days subsistence
Technical Team Leader					
Technical PM					
Site Supervisor					
Local Engineer					
Total					

Table 1: Site monitoring visits summary REDACTED

2.3. Independent quality assurance

To quality assure the Borno projects, an experienced multidisciplinary solar team from AECOM's solar practice has been brought together. This includes experts in solar project management, solar engineering, mechanical engineering, electrical engineering, a battery specialist, geotechnical and civil works engineers. Primary responsibilities include delivering quality assurance (QA) of the projects comprising design and installation.

The independent QA team covers three main periods of the project execution: contracting stage, pre-construction works and installation.

- At the contracting stage, AECOM solar will support in the elaboration of the sections/schedules required to define technical parameters and performance outputs expected from REDACTED's project delivery. The team will also support REDACTED in the preparation of site health and safety plans and review other project planning documentation.

- During pre-construction a multidisciplinary design review will be conducted on REDACTED's proposed detailed solutions for each of the project sites to assure quality on the projects detailed design and their compliance with technical contractual requirements. In parallel, we will review REDACTED's working methodologies/quality plan for the project delivery against industry standards, this is likely to include works/logistics plan, completion checklists templates, test plans and processes.

- The installation stage will require strong communication between the solar team and REDACTED. The team will work in tandem with the local engineer who is monitoring the execution of works being done on site. In addition to this, frequent reporting showing photographic evidence of

work undertaken will be provided by REDACTED together with REDACTED construction quality documents filled in at each construction stage. At the end of the construction a snag list will be prepared by AECOM with items which will have to be addressed by REDACTED on the following months and REDACTED will provide the as-built drawings and O&M manual for AECOM to review and comment.

In addition to the tasks mentioned above, the team will carry out internal project document control, provide technical input into monthly progress reports and support on financial decisions and risk management to support milestone payments under an NEC contract.

The Quality Assurance team are based in the UK and will not travel to Nigeria during the work. Quality assurance can easily be done remotely. This approach is intended to manage unnecessary security risks as well as reduce project expenses.

2.4. Short-term technical assistance

Small allocations have been made for short term technical assistance in other areas as may be required by the programme. This covers:

- Limited communications support for any press releases or other communications required from AECOM during the programme implementation.
- Conflict and security advisor for part time security liaison and advice throughout the installation phase.

3. Team governance

The AECOM project manager (see section 2.1.2) will provide coordination of the whole programme and will be an escalation point for DFID Nigeria and any other actors. The AECOM project manager will also coordinate the project and issue monthly reports, invoices and any other administrative matters.

The project will be managed in Nigeria by the technical project management team in particular the full time technical project manager who will be the main point of contact for stakeholders.

The sub-contractor (REDACTED) will report to the technical project management team. These reports and any designs or other technical items will be shared with the independent QA team for detailed review and feedback. Inputs of the technical advisors will be managed by the technical project manager.

Figure 1 below outlines the proposed organisation chart.

REDACTED

Figure 1: Organisation chart for Solar Nigeria programme management and site supervision

4. Engagement and coordination with the existing Solar Nigeria programme

AECOM understands that there is a longer term contract for wider management of the Solar Nigeria programme which covers:

- Log frame reporting including monitoring and management of development outcomes
- Conflict analysis
- Gender sensitivity analysis
- Political economy analysis
- High level stakeholder engagement
- Ongoing management of existing sites from phase 1
- Management of the website and other Solar Nigeria communications

The AECOM team will work alongside and in support of the broader Solar Nigeria programme however specific inputs for the activities above have not been included.

5. Deliv erables

The programme management team will provide the relevant deliverables as outlined in the terms of reference:

- Project plan including draft Duty of Care plan, procurement plan and timeline, including contingency/scenario planning, risk assessment and mitigation plan – due no later than six weeks from contract signature
- Project security protocols
- Detailed costings and bill of materials for each site to be provided with project plan
- Monthly summary report of project progress on a template to be agreed to include a monthly financial forecast update
- Lessons learned report on a template to be agreed
- Final project report on a template to be agreed
- Detailed final designs and plans for each site – due in line with the agreed project plan.
- Sets of as-built drawings
- Final installation report for each site
- Takeover/Payment certificates for each site

Weekly reports, photographs and records of project progress whilst on site will be available but at this time are not proposed to be sent to DFID. Instead these will be gathered into the monthly summary report.

6. Location of team members

Table x below details the base location and work delivery location for each of the project roles. The key rationale behind this approach is as follows:

- The Borno programme is the first of a number of Solar Nigeria projects. However, for AECOM this is the first we have been involved in. We have tried to keep the team as lean as possible by building off existing infrastructure and resources in the business for part time inputs rather than costing in large scale relocations and/or full-time recruitment.

- Efficiencies are further created by doing as much of the work from base locations as possible to avoid unnecessary expenses and security risks.

Role	**FTE REDACTED**	**Base location REDACTED**	**Work delivered location REDACTED**
AECOM project management (administrative)			
AECOM finance and procurement			
Technical team leader			
Technical project manager			
Technical administrative support			
Supervising engineer			
Electrical Engineer			
Quality assurance team			
Security advisor			
Communications support			
EPC contractor			

Table 2: List of core team members and their delivery location

As the Solar Nigeria programme grows in scope, the team structure may change for further phases where efficiencies are able to be made and more full-time dedicated resources in Nigeria can be provided.

7. Financial model for project oversight

The financial model for delivering programme oversight is split between resources and roles that are provided for under the procurement fee and those that are separately costed and billed per day in line with the agreed daily rates under the Goods and Equipment Framework contract.

7.1. Budget

The budget to cover the total project is as summarised in Table 3 below. Fees are detailed in Table 4 and expenses in Table 6.

Item	Total cost (GBP)
Total	£3,624,105.86

Table 3: Total budget costs for contract

TABLE REDACTED

Table 4: Fees detail for project oversight

7.2. Technical project management and site supervision REDACTED

Additional technical assistance and oversight have been costed in line with the rate card agreed in the 'Goods and Equipment Framework' Contract.

Consultancy bands	Short/Long term	Fee rate band	Fee rate band
		International consultants	Local/national consultants
Principal Consultant	Short term		
	Long term		
Senior Consultant	Short term		
	Long term		
Consultant	Short term		
	Long term		
Assistant Consultant	Short term		
	Long term		

Table 5: Agreed Goods and Equipment Framework fee rates

7.3. Expenses REDACTED

The following table details the expenses and rationale.

LI	Expense Type	Unit	Quantity	Estimated Cost per unit (GBP)	Total Cost (GBP)	Rationale
1	International air travel JNB - ABV	Return flight				
2	Local Flights ABV - MAI	Return flight				
3	Hotel Accommodation	Night				
4	Subsistence	Day				
5	Car hire Abuja/ Maiduguri/ Borno	Day				
6	Security including secure transport in Borno with Pilgrims					
Total expenses						

Table 6: Expenses breakdown

7.4. Budget assumptions REDACTED

- The above budget assumes a 12-month project, with site visits and monitoring required for 8 months, allowing for delays and any other issues which may require more time.
- The budgets included above and will be regularly tracked for usage.
- Activities in Section 4 of this document are not included in this budget.
- Expenses amounts have been included for budgeting but will be billed on actual costs incurred supported by receipts.

7.5. Payment plan for project oversight

- Costs for project oversight will be billed on a time and materials basis one month in arrears of work having taken place.
- Invoices will be submitted monthly supported by timesheets for staff inputs and receipts for expenses.

Annex 1 CVs of key staff members

REDACTED

ANNEX 2
Communication matrix
REDACTED

Position	Name	Email address
DFID Program Manager		
DFID Procurement Officer		
AECOM Procurement Manager		
AECOM Team Leader		
Programme manager		

Annex 3
Duty of Care Country Assessment
REDACTED

CONTRACT APPENDIX D
THE PRICES

BREAKDOWN REDACTED

Milestone Schedule

		Evidence
0	Project Management and Site Supervision	Timesheets and receipts
1	Detailed design agreed with Employer	
1	Site Assessment	Report
2	Preliminary Drawings (Design to allow order of components)	Drawings
3	Construction Drawing (Detailed design for construction)	Drawings
4	Inspection and Test Plan (individual components and full system operation and control)	Documents
5	Health, Safety and Environmental documentation. (Risk assessments, Method Statements etc.)	Documents
2	**Civil Works Completion**	
1	General Site clearing & Levelling	Photos, report, inspection
2	Enclosure/Pad Foundation	Photos, report, inspection
3	Mounting System Foundation	Photos, report, inspection
4	Palisade Fence Foundation	Photos, report, inspection
5	Drainage and water channelling	Photos, report, inspection
6	Access roads, trenches, earthing	Photos, report, inspection
3	**Delivery to Site**	
1	Factory Acceptance Test reports for components	Report
2	PV panels	Packing list, inspection
3	Solar Mounting System	Packing list, inspection
4	PV Inverter & BOS, and AC/DC & communication Cable	Packing list, inspection
5	Battery & Energy Storage	Packing list, inspection
6	Tesla Power Packs, Battery Inverter and Microgrid Control System	Packing list, inspection
7	Earthing & Surge Protection	Packing list, inspection
8	Electrical Balance of System	Packing list, inspection
9	SCADA	Packing list, inspection
10	Generator & Accessories	Packing list, inspection

11	Goods in Transit Insurance coverage	Copy of Insurance document
4	**Mechanical & Electrical Works**	
1	Mounting System Installation (Canopies, Ground mount and roof top)	Photos, report, inspection
2	Palisade Fence and Gate installation	Photos, report, inspection
3	Electrical Retrofitting of hospital electrical system	Photos, report, inspection
4	AC Distribution Line Erection & Wiring	Photos, report, inspection
5	Electrical Retrofit & AC distribution line testing	Photos, report, inspection
6	PV Panels Installation	Photos, report, inspection
7	PV Inverter & BOS Installation	Photos, report, inspection
8	AC/DC and Communications cabling	Photos, report, inspection
9	Battery & Energy Storage	Photos, report, inspection
10	Tesla Power Packs, Battery Inverter and Microgrid Control System	Photos, report, inspection
11	Electrical Balance of System	Photos, report, inspection
12	Earthing & Surge Protection Installation	Photos, report, inspection
13	Generator Installation & Commissioning	
5	**System Testing & Commissioning**	
1	Final Testing & Commissioning	Testing reports
2	Handover Documentation (Including As-built drawings, manuals, etc.)	Documentation
3	Traini ng	Training certificates
4	Snagging list closed down	Photos, report, inspection
5	Final Acceptance	Photos, report, inspection

CONTRACT APPENDIX E
WARRANTIES (Defects Liability Period)

REDACTED