Design and Supervision Firm

I. Background

1. The Asian Development Bank is currently assisting the Government of Tonga with a potential project called Integrated Aged Care in Tonga. The proposed project aims to improve the well-being of older people in Tonga through a range of appropriate, safe, and high-quality integrated care services for older people and support to caregivers. The project will build on the current government-funded homecare program in Tonga and further expand it to respond to older people's desire to remain in their homes and community.

2. The project outputs include (i) community-based aged care centers established, (ii) aged care services and programs implemented, and (iii) caregiver support and measures to promote equitable care responsibility implemented. The project will be aligned with the following impact: healthy aging among the older people improved. The project will result in the following outcome: integrated aged care system improved and expanded. ADB is proposed to provide $11.50 million grant from ADB's Special Funds resources and $0.60 million grant from the Climate Change Fund (CCF), while the government will provide counterpart funds amounting to $1.08 million.

3. A Design and Supervision Consulting firm will be engaged to assist with the detailed design of aged care centers and supervision of its construction under output 1. Four community-based aged care centers: one main center in Tofoa (the central area of Tongatapu) and three smaller network centers, one each in the districts of East and West Tonga and Vava'u will be established. These centers will offer supervised day care for older people, short-term respite care for caregivers, and other community-based services such as wellness promotion programs. The main center will also serve as the national hub for aged care services and programs. It will coordinate and oversee network centers, community resources, and activities for older Tongans, establish an integrated management information system for aged care, and provide climate-resilience services to enhance older people's adaptive capacity. The centers will be climate- and disaster-resilient and will respond to the differing needs of older men and women and their caregivers. Inclusive design for older people with disabilities will be undertaken in consultation with older people, caregivers, and the communities to ensure (i) their access to and use of the facilities, and (ii) their physical safety and security.

4. **Implementation arrangements.** The Ministry of Finance (MOF) will be the executing agency and the Ministry of Internal Affairs (MIA) will be the implementing agency. Procurement will be done in accordance with ADB Procurement Policy (2017, as amended from time to time) and the Procurement Regulations for ADB Borrowers (2017, as amended from time to time).

II. Objectives:

5. General
   Design & Supervision services to undertake the architectural & engineering design and construction management & supervision for the construction of the aged care facilities (the "facilities").

   5.1. Key Activities
   a) Conduct site assessment, topographic survey and geotechnical investigations to a level necessary to design (and construct) the facilities.
   b) Develop concept and preliminary designs for sign-off by government on the basic

layout and designs. Once complete, undertake detailed design of the facilities sufficient to issue a construction set of drawings.

c) While ensuring compliance with chosen design standards, undertake the design cognizant of the technical capacity of local contractors and availability of materials in Tonga to the extent possible. The buildability and maintenance of the aged care facilities shall be of paramount importance in developing the project designs.

d) Ensure that the final construction documents are approved and signed off by appropriate authorities (Building Board and Environment Authority) including structural certification for implementation and construction.

e) Oversee the construction and supervise the overall construction to ensure compliance with design document and specifications; and completion as per pre-agreed construction timeline and contracted value with achievement of periodical construction milestones.

f) Perform any design alterations arising from the construction of the facilities on site. Upon completion, provide a full set of as-built drawings to government.

6. Services and Activities:

The Consultant/s shall perform its services in two stages of activities, Stage 1 – Architectural & Engineering Design and Stage 2 – Construction Management & Supervision.

6.1. Stage 1 – Architectural & Engineering Design

6.1.1. List of Facilities

Preparation of construction plans / drawings, specifications, environment management plan, bill of quantities, and detailed estimates, construction and payment schedule of the following facilities:

Facility	Description	Remarks
1	Three aged care facilities, each estimated at 400 sq. m.	Estimated to support 80-100 older people for drop-in services
2	One aged care facility estimated at 800 sq. m.	Estimated to support 180-200 older people for drop-in services

6.1.2. Services and Activities

6.1.2.1. Review of available information

a) Review project design documents, local policy, available reports, data and information pertaining to the project and its environment and social safeguards. Include any available as-built drawings, development plans, and service and survey maps, if available.

b) Review any current and relevant documentation (building, fire and zoning, planning & geographical), structural adequacy relevant to seismic zones, volcanic ashfall and cyclone areas of Tonga, health facility / infrastructure

standards or guidelines and the accessibility regulations for disabled person, other applicable codes of practice and safety, climate change etc.

c) Review local context for environmentally sustainable, fit-for-purpose, affordable, simple construction and engineering with respect to sustainable low maintenance design and specification for building materials, natural ventilation and lighting, sustainable energy consumption in remote areas, appropriate alternative energy sources, water harvesting, treatment and runoff management, waste management systems and other environmental / climate change resilient factors relevant in Tonga; and Tongan Building Code 2007.

d) Review relevant international practices and Australian / New Zealand Building Codes for similar aged care facilities to address growing needs and wherever applicable.

e) Consult with PMU and local authorities including user groups for their expectation per the project design and needs.

6.1.2.2. Site Facilities Validation Visit

a) Assess, investigate and map out nominated areas, environment, services and site conditions including access ways, pathways and tracks.

b) Investigate and assess all existing and possible services, infrastructure and civil works both above, ground level and underground.

c) Carry out topographic survey and pick-up all services (power lines, sewer, water, spot levels) boundaries, easements, buildings locations, roads and drainage.

d) Carry out geotechnical investigations to a level necessary to undertake the detailed design, prepare a construction set of drawings, and provide sufficient information to bidders on the ground conditions at the various sites.

e) Complete environment assessments to the levels required by applicable law and the requirements of the ADB project.

6.1.2.3. Presentation of Review and Analysis

a) Document findings of the investigation and assessment, including documents reviewed and site assessment trips.

b) Preparation of concept design layouts (up to three options) with standard functional areas and their relationships but possibly options for different site orientation considering geographical location or site condition; and highlight overall development planning for consultation including preliminary selection of construction materials and completion finishings. This includes consideration of previous project reports considering flood risks and so ensuring building location is at acceptably low risk.

c) Ascertain preliminary cost estimates and construction timeline for proposed concept design layout for different region / each site.

6.1.2.4. Preliminary Design

a) Upon approval by government, prepare the preliminary architectural designs including estimated construction cost for discussion and approval.
b) Prepare scope of works, material and finishes schedules as part of architectural concept design phase.
c) Review the buildability and operational maintenance of the chosen design in the context of the technical capacity of local Tongan contractors and local material availability. Ensure to the extent feasible, where options exist, that the design form taken into account both of the above constraints.
d) Prepare the environment management plan based on preliminary design; and seek environment permit (wherever required) from relevant authority (through PMU).

6.1.2.5. Detailed Design & Documentation Phase - Preparation of Construction Design Drawings, Specifications, Bill of Quantities and Detailed Estimates

a) Develop the approved preliminary design into a complete set of construction drawings and technical specifications (architectural, structural, electrical, hydraulics, mechanical, and fire services) with certification by respective engineers, including quality assurance and testing requirement checkpoints.
b) Ensure the design leads to construction processes/materials that are aligned to Tongan standards or international standards (as selected at the commencement of the design phase) on energy efficiency and green buildings[1]
c) Prepare detailed cost estimates, bill of quantities, design specifications, materials lists etc.
d) Prepare estimation of GHG emissions for building construction and during utilization.
e) Prepare construction schedule and propose a payment schedule.
f) Lodge drawings and documentation to the appropriate local authorities for building approval.
g) Ensure detail design documentation and specification addresses all construction scope and clarity for completion of construction without any cost variation.

6.1.2.6. Securing Statutory Approval

a) Address any questions / clarification requirements by Building Board or any regulatory authority on design documents; and secure permit for

[1] This is in order to be aligned to the Tonga Low Emission Development Strategy 2021- 2050.

construction. Any costs associated with statutory permit be reimbursed by Project.

6.1.2.7. Facilitate Procurement of Construction Contractor

a) Assist PMU in preparing bidding document, including the creation of evaluation criteria and contract management plansupport the delivery of pre-bid meetings, assist in responding to bidders' questions and attend site visits, if requested. Support bid evaluation stage and provide inputs to preparation of bid evaluation report.

b) Assist PMU in finalizing the type of contract document i.e. lump sum contract or ad-measurement contract based on geographical context, competency of potential contractor; and facilitate completion of construction without any cost variation.

6.2. Stage 2 – Construction Management & Supervision

6.2.1. Services and activities:
The Consultant shall provide the following minimum services in two (2) phases (Construction and Post Construction Phase):

6.2.1.1. Construction Phase

The Consultant shall perform following tasks and functions during this phase:

a) Prepare & submit inception report; and induction to construction contractor at site.

b) Review, update and recommend to PMU approval of contractor's construction schedule, contractor's site specific environment and health and safety management plan and payment schedule.

c) Ensure periodic construction management & supervision in monitoring the progress of the works, the work accomplished, the quality of workmanship, and compliance to contract terms and conditions with respect to labour law, environment, health and safety.

d) Monitor quality assurance and control; monitor the tests and the activities carried out by the construction contractor as per the quality assurance and testing requirement checkpoints in the technical specification and report PMU in all aspects of the construction periodically – every month.

e) Conduct and preside over a periodic (bi-weekly) site construction meetings as required to clarify interpretations of designs, plans, specifications, and to resolve issues on site conditions that may pose potential construction problems and affect construction schedule.

f) Review contractor's contract management progress report (based on contract management plan)

g) Check shop drawings, wherever required and support as-built drawings provided by the construction contractor and recommend appropriate

action.

h) Closely assess risks and monitor the construction contractor's compliance with the safety, health and environmental aspects including mitigation measures throughout the duration of the project construction.

i) Prepare and submit periodic (weekly or monthly) update reports on the progress of the construction with challenges / delays / instances of non-compliance to works specifications / contract, grievances from local communities / workers, foreseeable risks, and possible options for solutions and exception reports as may be required by the Project.

j) Assess construction progress as per bill of quantity and construction milestone agreed in construction schedule; and ensure construction completes as per the approved contract value.

k) Ensure timely completion of the project.

l) Evaluate all contractor's payment claims of work accomplished and recommend appropriate action; but without any variation to contract value wherever no changes to design document / specification.

m) Review, validate and endorse to PMU for comments and evaluation any variation or changes in the quantities or units costs of the works for approval prior to implementation by the construction contractor.

n) Review and validate requests for time extensions, if required; and ensure performance security is valid / extended accordingly.

o) In coordination with PMU, conduct pre-final inspection / punch listing of, and prepare reports on the known defects and coordinate with the construction contractor for rectification.

p) Facilitate for connections of main supplies – power / water / sewerage etc and coordinate with local authorities for needful documentation / certification of construction compliances.

q) Facilitate purchasing of equipment / furniture, etc. and furnishing.

r) Coordinate the conduct and validate testing and commissioning of the building services, equipment and other systems prior to handover of the project to PMU / local government. Also, conduct post-occupancy assessment of facilities and adapt learnings by updating / revising construction drawing / materials in subsequent construction.

s) Support and participate in joint review monitoring / missions, and other relevant missions including for monitoring, evaluation, research, and formative analysis as required.

t) Facilitate the commissioning of building with training to user groups on all service facilities power / water / security and preparedness for emergency evacuation as per functional flow of the building.

u) Where necessary, and without prejudice to the contractor's sole responsibility for the completion of construction in accordance with the contract, provide advice and guidance to the engaged construction contractors, where necessary, to support their compliance with the contract requirements.

v) Provide periodic training to counterpart staff on construction management and supervision including environment and social safeguards.

w) Provide relevant information and support PMU with periodic monitoring and evaluation of Project by local authority.

x) Contribute to and support PMU culture of gender mainstreaming and social inclusion.

y) Contribute on development / updates of policy / guidelines and standard operating practices for aged care centers.

z) Support PMU / local government in advocacy by contributing lessons / updates on periodical newsletters / brochures for groundbreaking / handover etc.

6.2.1.2. Post-Construction Phase

The Consultant shall perform the following:

a) Closing out of construction contract involving the following:

- Check/review and turnover of as-built design drawings prepared by the construction contractor
- Submission by the construction contractor of construction records / logbooks wherever maintained, operation and maintenance manual and warranty certificates
- Submission by the construction contractor of an approved building occupancy certificate and building construction completion certificate
- Facility staff orientation on the building operations including attendant equipment operations and maintenance manual.
- Review and recommend release of final progress payment including portion of retention amount per the contract.
- Post occupancy evaluation of facilities in different region and document learnings for improvement in subsequent contraction / commissioning training / operation.

b) Prepare final construction report;

c) Prepare a performance evaluation report of the construction contractor (which will be treated confidentially by PMU) for any future consideration / contract award;

d) Conduct defects liability inspection in two stages, the following:

- Six (6) months from date of completion. The defects liability inspection report shall be submitted to PMU for their issuance to the construction contractor in making good of known defects.
- Eleven (11) months from date of completion. The defects liability inspection report shall be submitted to PMU for their issuance to the construction contractor in making good of known defects.

- Conduct joint inspection of rectification works, report the completion and recommend issuance of final acceptance certificate of the Project.

7. **Project Location**

The proposed project locations for construction sites are within Tonga in following areas: Tongatapu and Vavau.

Shortlisted sites to be indicated for potential competing firms to estimate cost of assessment/travel/supervision requirements.

8. **Period of Execution**

The assignment shall be implemented over 30 months (est. 6 months for Phase 1 and 30 months for Phase 2, including 24 months for construction). The consulting firm is required to produce an activity schedule with estimated time required for addressing key deliverables.

9. List of Key Experts

The list of key experts are shown in the table below with minimum person-months allocation.

Expert	Qualification
A. Design team	
Design Team Leader (6 person-months)	Responsible for the overall design direction of the project. A bachelor's or master's degree in architecture or relevant field and hold a professional license or certification. Has extensive experience in the design field and at least 10 years of experience working on various design projects, preferably in aged care facilities. Proficient in relevant design software and tools such as CAD (Computer-Aided Design), 3D modeling software, and project management software. Understand local building codes, zoning regulations, and permitting processes that designs should comply including concerning legal and safety requirements.
Structural Engineer (3 person-months)	Responsible for ensuring the building's structural integrity and safety including designing the framework of the building to withstand various forces such as wind, earthquakes, and the weight of the structure itself. Bachelor's degree in civil engineering or structural engineering including a license from accredited institution. Proficiency in structural analysis software, and knowledge of building codes and regulations related to structural design, familiarity with construction materials and understanding of seismic and wind engineering principles among others. At least 8 years experience in structural integrity and safety in successful design projects preferably in aged care facilities.
Architect (3 person-months)	Primary designer of the building and is responsible

	for creating the overall concept, layout, and aesthetics of the structure. Holds a bachelor's or master's degree and license in architecture from an accredited institution. Updated with industry trends, new materials, technologies, and changes in building codes and regulations. At leas 8 years experience in architecture in successful design projects preferably in aged care.
Environment and Climate Change Specialist (2 person-months)	Assess the environmental impact of the building and recommend strategies for sustainability and compliance with environmental regulations. Bachelor's degree in environmental science, environmental engineering, sustainability, or related field. A strong understanding of local, regional, and national environmental regulations and codes, as well as international standards related to environmental and sustainability practices. Proficiency in sustainable design principles and green building practices, including LEED (Leadership in Energy and Environmental Design) and other sustainability rating systems; environmental impact assessment; waste management and recycling practices; sustainable materials selection; biodiversity and habitat preservation; indoor environmental quality, environmental modeling and analysis, and environmental compliance, among others.
Mechanical Engineer (1 person-month)	Design the heating, ventilation, air conditioning, plumbing, and electrical systems within the building to ensure functionality, comfort, and energy efficiency. Bachelor's degree and license or equivalent in mechanical engineering from an accredited institution. Knowledge of relevant engineering codes, standards, and regulations, as well as compliance with safety and environmental guidelines. At least 5 years experience in mechanical engineering or relevant work.
Civil Engineer (1 person-month)	Responsible for site preparation, including grading, drainage, and utility connections. Bachelor's degree in civil engineering or a related field from an accredited institution. Proficiency in designing civil infrastructure, analyzing structural integrity, performing geotechnical and environmental assessments, and assessing transportation systems. Proficiency in soil mechanics, foundation engineering, and geotechnical design for structures. At least 5 years experience in civil engineering or relevant work.
B. Supervision team	
Supervision Team Leader/Project Manager (18 person-months)	Responsible for overseeing and managing the project supervision team, ensuring the successful execution of construction project, adherence to quality and safety standards, and timely reporting to the client and management. A bachelor's or master's degree in civil engineering, construction

	management, or related discipline. At least 10 years experience in supervising construction work. Understand local building codes, zoning regulations, and permitting processes to ensure that construction projects comply with these regulations. Expertise in quality control and quality assurance processes to ensure that construction work meets established standards and specifications.
2 Construction Manager (12 person-months)	Support in overseeing and managing all aspects of construction, ensuring that they are completed on time, within budget, and in compliance with quality, safety, and environmental standards. Oversee day-to-day site activities, including managing subcontractors, suppliers, and labor. A bachelor's degree in construction management, civil engineering, architecture, or a related field. At least 7 years experience in construction industry. Familiarity with construction-related software and tools, such as project management software and computer-aided design (CAD) programs.

10. **Reporting Requirements and Deliverables**

The following deliverables and reports shall be submitted. The contract will be a combination of output-based arrangement for the design phase and input-based for the supervision phase.

Stage 1 – Architectural & Engineering Design			
No	Description of Deliverables	Schedule	Format
D1	1. Project Inception Report that includes at least: o Availability of Key Experts; o Preliminary Assessment on conceptualization of design requirements / documents for Aged Care Centre / Facilities; o Functional needs / arrangements for Aged Care Centre / Facilities; o Desk review of design requirements for proposed different locations and specific needs, if any o Consultation with key stakeholders on expectations / policy requirements / regulatory compliances o Updated Work-plan with Schedule for mobilization of Key Experts for respective roles	Week 3 – 4 on signing of Contract	
D2	2. Draft Floor Plans (Options) with all functional needs for proposed Aged Care Centre / Facilities for different	Week 5 – 8	1x Hard Copy 1x Electronic Copy – All files to be accessible

	capacities / geographical locations ○ Organize workshop / meeting for reviewing functional considerations, comments on functional flow and potential construction materials / approach for prosed floor plans		
D3	3. Assessment of proposed construction sites with respect to land, environment and social safeguards; and complete land topography survey	Week 6 – 9	
D4	4. Finalize floor plans for different sizes and secure endorsement from relevant authority as standard plan / layout	Week 10 – 12	1x Hard Copy 1x Electronic Copy – All files to be accessible
D5	5. Schematic Designs prepared with preliminary cost estimate for different region / sites	Week 13 – 18	1x Hard Copy 1x Electronic Copy – All files to be accessible
D6	6. Schematic Designs prepared for proposed construction site and secure endorsement from relevant authority	Week 19 – 20	1x Hard Copy 1x Electronic Copy – All files to be accessible
D7	7. Detailed Construction Design Documentation completed for 1st Aged Care Centre ○ Architecture Design ○ Structure Design ○ Hydraulics & Mechanical Design ○ Electrical Design ○ Bill of Quantity ○ Environment Management Plan Application submitted for Construction Permit from relevant Statutory Body (Building Board / Environment Authority)	Week 21 – 36	3x Hard Copy 1x Electronic Copy – All files to be accessible
D8	8. Facilitate PMU in preparation of Bidding Document and assist in securing approval for announcing Bid	Week 24 – 32	
D9	9. Facilitate PMU in Bidding Process for selecting competent contractor and contract awarded for the 1st Aged Care Centre	Week 37 – 46	
D10	10. Induction of successful contractor in site on design requirements, safeguard requirements, and contractual terms / conditions including periodical reporting / verification requirements	Week 50 – 52	
Stage 2 – Construction Management & Supervision			
D11	11. Monthly Progress Update Report with	Every Month	1x Electronic Copy – All

	at least following points: a. For Projects under Construction o Progress Update with photographs o Progress against immediate construction milestone o Availability / sufficiency of materials for continuing work o Number of workers (by gender) o Days impacted by weather o Incidents / accidents if any o Compliance to design standards and specifications o Compliance to safeguard requirements and contract terms / conditions o Issues requiring changes compared to design, and whether resolved on site without any impact to cost o Issues if any from communities o Visits to site by any local authority o Any risks for delays, etc. o Status of Performance Security o Status on financial position / claims or certification of claims, if any o Any others, from time to time b. For Projects yet to be awarded o Status update of each Project in each design stage with estimated timeline for completing detail design o Any others, as required by PMU c. For Projects Completed and on completion of Defects Liability Period o Final Report on completion with As-built Plans, Certificate of Occupancy, Take Over Certificate, Warranty Certificates of Equipment, Operation and Maintenance Manual, Photograph of Project / building sites before and after construction, Photograph of official		files to be accessible

	handover, defect issues, resolution of defects with relevant picture / certification from Officer-in-charge, and Performance Evaluation Report of Construction Contractor. o Certification for disbursement of final retention amount.		
D12	12. Final Report that highlights the learnings, successes and challenges in managing the design and construction of Aged Care Centres; the possibility for adaptation of similar design / construction for future projects; and capacity of contractors and local authorities in managing similar Projects in Tonga.	End of Contract	1x Hard Copy 1x Electronic Copy – All files to be accessible

Note: The Consulting Firm reports to Project Manager, PMU. They submit periodic report in email through authorized representative unless otherwise instructed and submit construction drawing in hardcopy (A3) in original with certification from respective engineer.