



## **AMERICAN SAMOA POWER AUTHORITY**



### **SCOPE OF WORK**

## **MALAEMI WASTEWATER COLLECTION SYSTEM DESIGN**

### **I. PROJECT BACKGROUND**

The Malaemi WW Collection System Design and Construction Project will see the designing and the construction of the Malaemi WW Collection System. The Malaemi Catchment Area has been one of our potential well field and ASPA Water Division had constructed a few wells within this catchment area to supply water to customers with the area and beyond. The high water table and impact of high precipitation within the catchment area make septic tank nonfunctional and chances of overflowing is highly possible. This is one-way our underground water may be contaminated. The risk to the community is highly anticipated because they are drinking from these ASPA Wells. The Malaemi WW Collection System Project will address these concerns by providing proper wastewater disposal system to properties within this catchment area.

### **II. PROJECT GOAL/OBJECTIVES**

The project key goal and objective is to address contamination to our Malaemi Catchment Area which have good and potential Well Field. ASPA had constructed Water Wells within the area which currently supply water within and beyond. This project will also address public health and safety to people living within the Malaemi area because of poor sanitation due to cesspool and poor design septic tank. The project will be bid out to potential bidders with experience in wastewater design and construction.

### III. PROJECT DESCRIPTION

The project will be in Phases, where design will be done first and then construction will follow. The implementation will be based on what has been recommended in the design. The intention of this project is to make sure we protect the ASPA Water Wells around this well field from any contamination due to cesspool and improper septic tank built and installed within the area.

#### *Design Phase:*

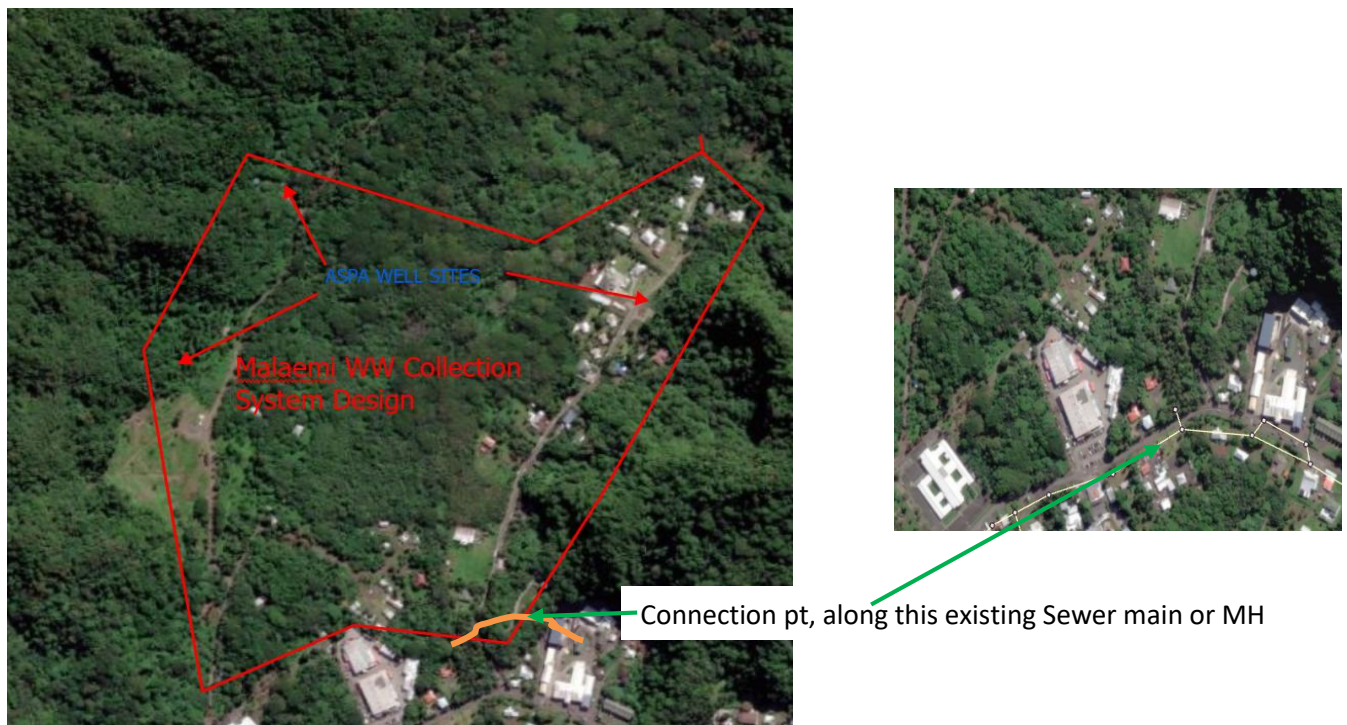
The design Phase will see the breakdown of design into Conceptual and Environmental Assessment. One of the issues that we need to address is the impact of any construction activities will have on the environment and ASPA will make sure that we follow due protocols and follow other agencies requirement for any new construction. Once this has been approved, we will then move on with the designing of the system. This will include topographic survey and designing of the Malaemi Wastewater Collection System.

#### *Construction Phase:*

As part of the deliverables by the approved design consultant, they will prepare bid document, schedule of quantities and specification that ASPA will use to bid out the construction for the Malaemi WW Collection System. This will follow all due protocols and approval process for advertisement, evaluation, and approval through the standard procedures.

### IV. PROJECT LOCATION

This project will focus on Malaemi WW Collection System



### III. SCOPE OF WORK

#### (SOW) A. GENERAL

1. ASPA has issued this RFP for A/E services from a professional consultant firm with experience in designing sewage pump/lift stations, sewage force mains and gravity flow sewage collection systems:
  - i. The design shall include all process control, mechanical, electrical, and structural components and related appurtenances to allow the facilities to be functional and operable according to ASPA maintenance and operation capabilities and requirements.
  - ii. Appurtenances shall include but will not necessarily be limited to access facilities, fencing, lighting, water connections and power supply including emergency power.
  - iii. The design shall be in accordance with the Ten State Standard.
  - iv. The proposal shall include all personnel, travel, equipment, supplies, overhead and related costs necessary to complete this SOW.
2. In general the selected firm shall accomplish and connect as many homes (80+Homes) in the project area as feasible to a WW collection system by the following: The WW collection system “Conceptual Drawings” and **2)** The WW collection system “Construction Design, Plans and Specifications”.
3. Given area to be designed, the engineering consultant will need to put together a conceptual design that will define the type of system we will need to adopt. This conceptual will look at key components such as lengths of pipes, sizes of pipes, type of pipes, location, gravity verses force main, pump stations, lateral, homes to be connected and how they will make up a collection system. Once this is done, ASPA will have to review and make some assessment on which one to adopt.
4. Once the Conceptual Drawings are complete, the selected firm shall know more precisely the amount, length and approved route of the collection system and its facilities, which the firm shall then take this information, and produce the Land Survey and the Construction Design, Plans and Specifications.
5. The bid cost shall be based on what is specified in the bid document and as expected the bidder shall make proper calculated assessment based on what is available to them at the time of bid.
6. ASPA shall provide selected firm with the following:
  - i. Schematic maps of the existing central area WW collection system and the Water Distribution system. Accuracy of maps vary. Some maps are accurate to within one foot, and other maps are accurate to within 5 feet. Some of the WW

and Water utilities have been surveyed and others not. Selected firm shall verify accuracy of the maps provided.

- ii. If there is any other underground utility, ASPA can assist with obtaining contact information.
- iii. The Wastewater Utilities Plan 2024” (Attached to this RFP).
- iv. An ASPA staff and contact person, the ASPA Project Engineer, to work closely with the selected firm.
- v. ASPA Wastewater Department documents related to our design standard details and specifications. ASPA is currently using the 10 State Standards for Sewer Design.
- vi. Water consumption information.
- viii. Right of way (ROW) services.
  - ✓ ASPA ROW will be required throughout the conceptual drawings, land survey and design process.
  - ✓ ASPA ROW work is critical, because for one, the project covers a relatively large area. There are many different landowners and village councils to deal with. Approximately ninety percent of the land here is communal owned land. The rest is privately owned and government owned land.
  - ✓ Once the Conceptual Design/Drawing is complete, the ASPA ROW staff will assist selected firm in gaining access to landowner’s properties to conduct land survey and other necessary field work related to the project design.
  - ✓ ROW shall provide the easements signed by landowner to proceed with land survey/design work.
  - ✓ Any assistance from the ASPA ROW staff throughout the project must be requested at least two days ahead of time.
  - ✓ Note, if there are any landowner issues the ASPA ROW must be contacted to handle the situation.
- ix. ASPA Archaeology services.
  - ✓ After the Conceptual Design is complete the ASPA Archaeology staff can verify which routes are cleared archaeologically and which routes

remain to be cleared.

7. At the beginning of the project, the selected firm shall submit a well thought out timeline/schedule of critical task completion milestones with summary descriptions approved by ASPA.
8. The selected firm shall familiarize itself with the American Samoa Government (ASG), ASPA, the project area (terrain, the villages) and the public wastewater system, the public water system, other nearby utilities and other elements that may have an impact on this project.
9. The selected firm shall meet regularly with ASPA and the ASPA Project Engineer, at least once a month to discuss project schedule, progress, proposed design and any issues that may arise.
10. Bid submission indicates familiarity with and acceptance of existing conditions in American Samoa, the project site and at ASPA. No claim for additional compensation will be allowed which is based upon a misunderstanding or lack of knowledge by the Offeror.
11. The selected firm will develop, as lead by and recommended by their professional Engineer of Record (EOR) conceptual drawings, detailed designs for construction, specifications, cost estimates, SOWs for the Owner for the purpose of Materials Request for Quotes (RFQ), and Construction Bidding documents.
12. ASPA is recommending a locally based representative to work with Designer/Consultant for better coordination with property owners and this person shall work very closely with ASPA ROW in dealing with land issues. ASPA sees this as the best approach to any new wastewater development within the affected area.
13. The recommended firm shall be responsible of organizing town hall meeting and village meeting to inform the people about ASPA's intention and ASPA presence on this meeting shall be mandatory.

#### B. MOBILIZATION AND DEMOBILIZATION

1. The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under this design contract. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract.
2. Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies and expenses to the site; permits, premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in the contract

documents.

3. Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.
4. Measurement for payment shall be made as a lump sum (LS). Payment will be made as the work proceeds, after presentation of paid invoices or documentation of direct costs by the contractor showing specific mobilization and demobilization costs and supporting evidence of the charges of suppliers, subcontractors, and others. When the total of such payments is less than the lump sum contract price, the balance remaining will be included in the final contract payment. Payment of the lump sum contract price for mobilization and demobilization will constitute full compensation for completion of the work. Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

#### C. CONCEPTUAL DRAWINGS AND ENVIRONMENTAL IMPACT ASSESSMENT

##### a) CONCEPTUAL DRAWING

1. The selected firm shall produce Conceptual Drawings (CD) of the recommended collection system route approved by ASPA.
  - i. Selected firm shall prepare CD using digital elevation modeling and our contour T-Maps of the area.
  - ii. The CD preparation will probably go through three reviews (back and forth) between firm and ASPA before selecting the final CD.
  - iii. The CD shall minimize use of pump/lift stations with force mains and maximize the use of gravity flow sewer mains with manholes.
  - iv. The CD shall include: 1) A map – a clear aerial imagery view of the proposed collection system route, 2) rough/conceptual-level, plan and profile sheets, 3) approximate materials and construction cost, and 4) the approximate operations and maintenance cost.
  - v. Note, the main vehicle roadway is the government ASG property therefore right of way issues are minimized.
  - vi. The CD shall assess two collection system route alternatives and from these two select the recommended route. This process of selecting the recommended

route shall be explained in a 3 page report. The key assumptions and reasoning behind the recommended report shall include but it is not limited to the following:

- demographic data
- Buildings and homes location
- approximate land ownership locations and village boundaries
- physical, biological, economic and social environments
- existing WW collection system and their locations
- wastewater characteristics
- regulatory requirements
- cost estimates
- environmental impacts and recommended mitigation

2. The ASPA ROW staff will use the CD to obtain village and landowner access approval to the recommended approximate location of the collection system route.

- i. Note, it will take about three weeks for ASPA ROW to collect the first large batch of landowner access approvals.
- ii. After this, the selected firm can begin their land survey for design purposes.

3. The ASPA Archaeology staff want to be kept informed of any proposed collection system routes and they will use the CD to verify which routes are cleared archaeologically and which routes remain to be cleared.

- i. This work by ASPA Archaeology staff will take about two weeks to complete.

4. Note, ASPA ROW and Archaeology may recommend CD re-routing in some areas, which the selected firm shall take into consideration and then determine alternate routes.

b) ENVIRONMENTAL ASSESSMENT INFORMATION DOCUMENT

This project will require survey of snails, may be bats and other endanger species living within this forest.

- i. To prepare a detail analysis of the area affected and this shall include social impact, physical impact and psychological impact, which may affect the implementation of the project.

- ii. To carry out an environmental assessment (EA) of the study area and how this improvement shall impact the environment surrounding the affected area.
- iii. To provide a detail analysis of any environmental impact, which are likely to be significant and shall directly or indirectly affect the environment through this project.
- iv. To provide mitigating solution to any environmental impact and how this project will address this impact.
- v. Provide cost associated with this impact and mitigation solution
- vi. We are providing sewer system to the projected area, improvements and other benefit can be clearly analyze, to reflect improvement to the environment.
- vii. Can also discuss Wastewater project development plan to this area, its economic benefits to the area.
- viii. Discuss way in which this project will be a benefit to the Environment around it.
- ix. The environmental assessment information document shall be contained in a 30 – 40 pages document only.

#### D. LAND SURVEY

1. The selected firm will be doing detailed topographic survey, civil 3d database and GIS shape files for the project sites that will affect the generation of the hydraulic calculations and construction designs.
2. This section shall cover the complete costs of providing all labor, equipment and materials required to complete all survey work needed for the design required under this SOW. It shall be the selected firm's responsibility to have a Registered Surveyor and to coordinate and work with ASPA's Survey Department to make sure all survey output is in conformance to ASPA's survey standards, standard datum and coordinates and compatible with ASPA Survey's software, Traverse PC.
3. Limited Potholing: The selected firm shall perform five (5) exploratory excavations as required to collect schematic map, assessment of ground condition and as-built information to verify the depth, location, alignment, size, and material of existing ground and underground utilities or structures. Locate the existing utility, verify the required information, backfill the excavation, and restore the surfacing equal or better condition, suitable for traffic (if along roadway) as required by DPS/DPW. The firm shall waive ASPA from any liabilities resulting from inaccuracy and poor data gathering required under this section. Any damages to existing utilities during potholing is paid by the firm. The selected firm shall secure the DPW/DPS Permit to perform potholing work in ASG roadway ROW.
4. Other utilities and structures: The survey shall also include but not limited to all existing underground utilities, storm drains, bridge/stream crossings, existing asphalt/concrete pavement, sidewalk, curb & gutter, gravel driveway, fences, rock wall, plants/grass,

trees, power/communication line and pole and all structures that may be affected during installation of WW mains and service lines. Survey includes survey of potholing locations.

5. Database: The survey shall also include raw data in Excel format containing survey descriptions such as but not limited to; UniqueID, X-coordinate, Y-coordinate, Z-coordinate, Description and Size, etc.
6. The firm shall provide a comprehensive land survey to fully describe the physical environment and each business, building, home, septic tank, and cesspools.
7. The Registered Surveyor shall work closely with ASPA Registered Surveyor to make sure controls and benchmarks used has to be ASPA validated to avoid errors in the survey data.
8. Survey and design shall only cover inhabited areas as demarcated in the location map provided. Most of the upper area are covered with forest and we have no intention to extend sewer system into those areas.

#### E. CONSTRUCTION DESIGN, PLANS AND SPECIFICATIONS

1. 1. For area under this design project, based on the thorough land survey and using ancillary data available for water use patterns and quantities, a water use and wastewater flow estimate shall be developed in collaboration with the Wastewater Utility Plan 2024. The current and future water use and wastewater flow estimate shall be projected out to 20 years in the future.
2. Construction Design and Plans: Detailed design engineering/architectural drawings for construction will be prepared for all facilities under this RFP as follows.
  - i. All drawings shall be prepared in accordance with Standard US Industry Practices for civil, building, structural, electrical, electronic, mechanical, highway, and environmental engineering design.
  - ii. The drawings shall include but not necessarily be limited to plan and profile sheets, site layouts, engineering data, material takeoff lists, observed geotechnical findings, hydraulic and energy profiles, hydraulic model, schematics, process diagrams and descriptions, standard details, and electrical schematics and one-line diagrams.
  - iii. Design drawing shall include connection to existing mains, tie-in scheme, relevant specific details and the tie- in steps/methods.
  - iv. Lift Station design has to be compatible or better than the ESV WW Collection System design.
  - v. Design Drawing shall also include design for SCDA System to synchronize

with existing system, standby generator set for lift stations.

3. Specifications:
  - i. Technical Specifications shall be prepared for all items to be designed and/or included in the Invitation for Bid for construction for the facilities and/or infrastructures.
  - ii. The construction specifications shall be prepared according to the most recent Construction Standards Institute (CSI) format.
  - iii. In addition, any special conditions that must be addressed or followed in order to construct the facilities shall be identified in the specifications.
4. Construction Bid Form/Schedule:
  - i. Once the Construction Design Plan is substantially completed, a draft Construction Bid Form/Schedule shall be prepared that includes all pertinent items included in the construction plans and specifications.
  - ii. The Construction Bid Form/Schedule shall be prepared for a unit cost, firm fixed-price contract and allow ASPA to utilize it as the basis for a construction contract for the facilities designed under this RFP.
5. Schedule:
  - i. Design work activities/tasks, as provided by the A&E Firm in their proposal, shall be appropriately highlighted in the schedule.
6. Erosion Control and Drainage: (Best Management Practice)
  - i. Erosion control and drainage measures and facilities shall be included in the design including drainage structures, retaining walls, pipe dams, stream bed protection and other elements that will ensure erosion control and drainage is accomplished according to best management practices applied for similar projects or infrastructure.
7. General Surface Observational and Historical Geotechnical Analysis:
  - i. The selected Firm shall conduct a general surface observational and historical geotechnical analysis of selected areas along the proposed collection system (along with service lines) route to allow general determination of soil conditions, including presence of rock, and the impact of findings on design, construction and maintenance, presence of groundwater.
8. Restoration and Repair:
  - i. The design shall include all necessary restoration and/or repair for existing paved roads, utilities, driveways, curbs, sidewalks, walls, fences and other infrastructure that may need to be removed and/or replaced and conduct the work as set forth in the project scope of work.
  - ii. Lawns, gardens and other items that may pose an obstruction will be included in restoration. For reference on specifications, test protocols, and guidelines,

refer to the latest and most current edition of the American Association of State Highway and Transportation Officials (AASHTO) Manual– A Policy on Geometric Designs of Highway and Streets – also known as the “Green Book”.

9. Engineer’s Cost Estimates:

- i. Once the Design Plan is substantially completed, a detailed engineer’s cost estimates shall be prepared in accordance with the items included in the draft construction bid form/schedule that conforms to applicable industry standards such as RS Means Estimating Manuals and Guidelines.
- ii. Appropriate indexes that account for inflation and other factors that are pertinent to American Samoa including special logistical constraints are to be included.
- iii. A&E firm shall also provide a Material List of all materials required to complete construction to allow ASPA to utilize it for a Request for Quotes (RFQ). Cost estimates shall include capital costs, annual O&M costs, and annual O&M costs per 1000 gallons WW.

10. Value Engineering:

- i. In accordance with USEPA Federal Funding Requirements, a Value Engineering Analysis (VEA) shall be completed for the facilities to be designed and upgraded.
- ii. The VEA will strive to ensure the design results in maximum cost efficiency for operation and maintenance of the facilities and hydraulic (H&H), etc.) and design calculations for all and every infrastructure necessary to complete the requirement of this scope of work such as but not limited to: concrete encasement, reinforce concrete jacket, pavement design, thrust block, pipe support/hangers, box culvert, concrete vault, gratings, pipe bedding, pipe buoyancy protection and as requested by ASPA.

11. Design Presentations:

- i. Selected firm shall provide four presentations, one of the 30% preliminary design, the second on the 60% draft detail design, the third on the 90% final draft design and fourth on 100% draft and final Design. After each presentation firm shall incorporate review comments from ASPA into the next updated design draft. Each presentation should last approximately one hour, in person or virtually.

12. Septic Tank and Cesspool Decommissioning:

- i. Design shall include a detail showing septic tank and cesspool decommissioning.

14. Bidder shall provide one Post Design presentation of the final ASPA approved Design.

- i. The presentation is for the ASPA Executive Director, and engineering staff for up to 15 people. The presentation includes a 3 to 5 page summary explanation of the design with schematics.
- ii. The presentation shall last up to 2 hours, first half to provide a clear explanation of the design and its highlights and the second half to include a question and answer period. Presentation/workshop can be “in person” or by video conference including an agenda.
- iii. Presentation shall be conducted by the Firm’s main contributors to the design as well as the professional licensed staff who approved the report. The goal is for the audience to thoroughly understand the design, the design’s analysis of the ASPA WW System, recommended routes and its facilities and associated implementation impacts and related topics.

15. QA/QC Document:

The Consultant/Firm shall prepare a QA/QC document that shall guide the quality assurance and quality control to the project when bit out for construction. The document shall clearly define roles and the matrix shall clearly define key responsibility. This document shall be used by ASPA to manage QA and QC during construction. The template shall be very clear and simple to use when managing QA/QC.

16. Construction Management Support:

ASPA shall require the Designer’s support to review all request for information related to the design and submittals from contractors during construction. This review of RFI’s and submittals shall be coordinated in the manner not to delay the construction timeline. The contractor shall allow time for review and action of any RFI and/or submittals.

**F. MINIMUM DELIVERABLES:**

Note, the selected firm shall keep design, project documents, and report sections sized 25MB or less to make emailing sections of the report easier.

- ii. Detailed Architectural and Engineering Construction Plans on 24” x 36” Bond Paper stamped by a U.S. Registered Professional Engineer (EOR) or Registered Architect (RA) for all pertinent items within the SOW as required.
- iv. A 3 to 5 page summary of Design with schematics required.
- v. A Bid Schedule for finite components of the system and facility upgrades, and significant tasks within the SOW.
- vi. A detailed cost estimate for all items in the Bid Schedule including direct cost, overhead, contingencies, profit, bonding and shipping;
- vii. A schedule for provision of the deliverables by the Consultant to ASPA in Gantt and PERT Chart formats.
- viii. Conceptual drawings, engineered and EOR stamped documents related to the

design such as hydraulic modeling report, value-engineering analysis, calculations, technical specifications and standards.

- ix. Detailed technical specifications, stamped by a registered US Registered Professional Engineer as mentioned above.
- x. An Operations Plan outlining methods and means by which the facilities will be operated and maintained within the resources and/or capabilities of ASPA.
- xi. Operation and Maintenance manuals addressing all mechanical, process and control components for the pump/lift stations.
- xii. Milestone schedule and timeline to completion with summary descriptions. Updated at least every couple months.
- xiii. Post report presentation on PowerPoint slides, summary and agenda.
- xiv. Three (3) hard bound copies and electronic copies (i.e. AutoCAD, pdf, Excel spreadsheet, ArcGIS) of report, summary, maps, tables, figures and all deliverables.
- xv. Other items as necessary/required.

16. The design shall be submitted in logical increments similar to the following:

- i. Milestone schedule and timeline
- ii. 30% submittal – Shall include Conceptual Design Final, Environmental Assessment, Final Survey and Preliminary Construction Design, Plan and Specifications
- iii. 60% submittal – Shall include Environmental Assessment, Construction Design, Plan and Specifications.
- iv. 90% submittal – Shall include Environmental Assessment, Construction Design, Plan and Specification.
- v. 100% submittal - Shall include Final draft for Environmental Assessment, Construction Design, Plan and Specifications.
- vi. Final report is complete once ASPA and USEPA approves of and signs Final submittal.
- vii. Each submittal will be followed by an ASPA review with comments within 20 calendar days. These comments shall be addressed and incorporated into the next submittal if recommended. Also, an ASPA comment and selected firm response list shall be maintained and shared with ASPA.