

# REQUEST FOR TENDERS

File: AP\_6/5/8/1  
Date: 14 February, 2020  
To: Interested consultants  
From: Sela S.Simamao, PacWastePlus Finance and Procurement Officer

**Subject: Request for tenders: Literature review on environmental leakage and management issues from lined and unlined landfills**

## 1. Background

- 1.1. The Secretariat of the Pacific Regional Environment Programme (SPREP) is an intergovernmental organisation charged with promoting cooperation among Pacific islands countries and territories to protect and improve their environment and ensure sustainable development.
- 1.2. For more information, see: [www.sprep.org](http://www.sprep.org).

## 2. Specifications: statement of requirement

- 2.1. SPREP would like to call for tenders from qualified and experienced consultants who can offer their services to undertake a literature review on the environmental leakage and management issues stemming from lined and unlined landfills, and its relevance in the Pacific region.
- 2.2. The Terms of Reference of the consultancy are set out in Annex A

## 3. Conditions: information for applicants

- 3.1. To be considered for this tender, interested suppliers must meet the following conditions
  - Submit a detailed Curriculum Vitae detailing qualification and previous relevant experience for each proposed personnel
  - Provide at least 3 references as part of the tender application
  - Provide examples of past related work outputs
  - Complete the **tender application form** – (note you are required to complete all areas in full as requested, particularly the statements to demonstrate you meet the selection criteria. **DO NOT** refer us to your CV or Technical proposal. Failure to do so will result in the application **NOT** being considered)

## 4. Submission guidelines

- 4.1. Tender documentation should demonstrate that the interested supplier satisfies the conditions stated above and is capable of meeting the specifications and timeframes. Documentation must also include supporting examples to address the evaluation criteria. Describe any additional minimum content and format requirements.
- 4.2. Tender documentation should outline the interested supplier's complete proposal:
  - Personnel (individual CV's which highlight relevant qualification and experience)
  - Technical Proposal (details to achieve tasks outlined in Annex A)
  - Financial Proposal (include timeframe and costs, proposal to remain valid for 90 days and quoted in USD)
- 4.3. Tenderers/Bidders must insist on an acknowledgement of receipt of tenders/proposals/bids.

## 5. Tender Clarification

- 5.1. Any clarification questions from applicants must be submitted by email to Sela Soakai-Simamao on [selas@sprep.org](mailto:selas@sprep.org) and copy [tenders@sprep.org](mailto:tenders@sprep.org) before 21 February 2020. A summary of all questions received with an associated response will be posted on the SPREP website [www.sprep.org/tender](http://www.sprep.org/tender) by 26 February 2020.

## 6. Evaluation criteria

- 6.1. SPREP will select a preferred supplier on the basis of SPREP's evaluation of the extent to which the documentation demonstrates that the tenderer offers the best value for money, and that the tenderer satisfies the following criteria.
- (a) Has a minimum of 5 years' experience in landfill design/construction or related waste management. 25%
  - (b) Demonstrated experience in assessing technical reports and explaining complex information in report format that both technical and non-technical audiences can understand. 20%
  - (c) Detailed methodology for how the project is proposed to be delivered (including timeframe and responsibilities) 30%
  - (d) Detailed financial proposal. 25%

## 7. Deadline

- 7.1. **The due date for submission of the tender is: 02 March 2020 (local Samoa time)**
- 7.2. Late submissions will be returned unopened to the sender.
- 7.3. Please send all tenders clearly marked 'TENDER: Literature review on environmental leakage and management issues from lined and unlined landfills' to one of the following methods:

Mail: SPREP  
Attention: Procurement Officer  
PO Box 240  
Apia, SAMOA

Email: [tenders@sprep.org](mailto:tenders@sprep.org)

Fax: 685 20231

Person: Submit by hand in the tenders box at SPREP reception,  
Vailima, Samoa.

SPREP reserves the right to reject any or all tenders and the lowest or any tender will not necessarily be accepted.

**For any complaints regarding the Secretariat's tenders please refer to the Complaints section on the SPREP website**  
<http://www.sprep.org/accountability/complaints>

## TERMS OF REFERENCE

### Literature review on environmental leakage and management issues from lined and unlined landfills

#### 1. BACKGROUND

The Secretariat of the Pacific Regional Environment Programme (SPREP) is working with the European Union's Delegation to the Pacific, and 14 Pacific Island Countries and Timor-Leste to undertake the PacWastePlus Programme, which seeks to improve and enhance waste management activities and the capacity of governments, industry and communities to manage waste to reduce the impact on human health and the environment.

PacWastePlus seeks to generate improved economic, social, health and environmental benefits for Pacific Island Countries arising from stronger regional economic integration and the sustainable management of natural resources and the environment. The programme activities will be designed to assist Countries to ensure the safe and sustainable management of waste with due regard for the conservation of biodiversity, reduction of marine litter, health and well-being of Pacific island communities, and climate change mitigation and adaptation requirements.

Countries participating in the PacWastePlus programme are:

Cook Islands, Democratic Republic of Timor-Leste, Federated States of Micronesia, Fiji, Kiribati, Nauru, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu

#### 2. OBJECTIVE

The objective of this activity is to understand the environmental risks posed by lined and unlined landfills. The research should provide evidence of appropriate landfill design considerations for the Pacific Region (considering the environmental and climatic attributes of the region) and due consideration of the materials typically managed in landfill in the region.

Landfills are the most common means of disposing solid waste in the Pacific, which either results in the burying of waste or the accumulation over time, amassing into the mounds that are a common sight in small island countries. Of the 15 participating countries under the PacWastePlus programme, there are only 2 lined landfills.

#### 3. SCOPE OF WORK

An evaluation of the impact of landfills on the environment is a crucial topic in the literature and has received increased attention recently, given growing environmental concerns. The main goal of this literature review is to conduct a comprehensive assessment of possible impacts of landfills on the environment. Disposal of solid waste in landfills entails a number of environmental risks. The results of this effort shall provide information on landfills as a source of environmental risk.

The successful consultant shall undertake a literature review, which compare (i) sanitary landfills; (ii) semi-aerobic landfills; and (iii) open dumpsites and its suitability to the Pacific Region given the unique geographic settings and economic status of these island nations.

### 3.1 Project Delivery

The required tasks under this engagement are summarised in Table 1.

Table 1: Project Activities

Task 1	Develop a Research Plan to fulfil the objective of this engagement for approval of SPREP
Task 2	Undertake a literature review to assess the types of landfills highlighted above and its suitability to the Pacific. <i>Optional Extra – research on appropriate landfill funding mechanisms.</i>
Task 3	Develop a report from the findings of the literature review.

#### Task 1: Research Plan

The successful consultant is required to develop a research plan which will be submitted to SPREP for approval before it is implemented. The plan should explain the overall strategy, methodology, and analyses to be used to successfully accomplish the project objectives.

At a minimum, the plan should be structured to answer the following key questions:

- What are the Standard Designs for landfills?
- What are the environmental risks posed by each landfill type?
- What are the impacts on human health from each landfill type?
- Considering the Pacific context and its landscape, what is the ideal site location (low-lying, coastal, mountainous) for the construction/establishment of each landfill type?
- What are the environmental problems associated with the development and operation of each landfill type?
- What environmental monitoring system is used to check for groundwater contamination and for landfill gas?
- What is the financial cost required for each landfill type (construction of new landfill cells and daily overall operations)?
- What are the Operation Requirements? (Skills, machineries, Maintenance, Availability of materials such as liners and drainage aggregates)
- What is a general assessment of suitability of each landfill and the minimum requirements for it to be considered? (land types, elevation above sea level, weather etc)
- What are the Potential Economic returns for countries from each landfill type? (landfill gas harvesting, potential after use of landfill sites, etc)
- What is the general assessment of suitability of each landfill type to receive wastes from the 8 waste streams targeted by PWP? (may include standard operating procedure of handling and transportation)
- What should be the lifespan for each landfill type, and the possibility for extension?
- What are the Rehabilitation and aftercare measures to be considered very early in the design and operation phase of each landfill type?

The consultant shall develop an output report including cited evidence for any conclusions made and should offer guidance on best possible waste management activities as they relate to landfill design and management. It is believed such guidance may include:

- appropriate landfill design considerations suitable for the pacific context
- appropriate materials for landfilling, and advice on best value management of any materials recommended being excluded from landfill

## **Task 2: Literature Review and Assessment**

The consultant shall undertake a comprehensive literature review which shall compare (i) sanitary landfills; (ii) semi-aerobic landfills; and (iii) open dumpsites and its suitability to the Pacific Region given the unique geographic settings and economic status of these island nations.

The outcome of the assessment will determine the most appropriate landfill for project countries by answering the key questions highlighted under Task 1. Given the geographical and economic settings of the Pacific Region the assessment is required to focus on the environmental, social and economic costs.

Historically, it has been common practice to dispose of landfill waste in low-lying estuarine and coastal areas where land had limited value. The extent of legacy pollution in coastal sediments, impacts of saline flooding on contaminant release and the nature, behaviour and environmental impact of solid waste release in the coastal zone all play a role in landfill siting. The consultant shall

- identify preferred geographic locations that would pose the least pollution risk,
- and to develop alternative management strategies based on the preferred locations and any specific risk associated with the preferred locations.

The successful consultants shall research and identify appropriate and successful Standard Operating Procedures for minimizing environmental impacts from each type of landfill.

Information gathered shall include, but not be limited to:

- Effective sampling and analysis protocols to properly evaluate landfill efficacy
- Proper procedures for landfill daily operations (access, disposal and cover)
- Gas and leachate containment/control
- Stormwater/leachate drainage system to control runoff especially during heavy rain

It is envisaged that the outcome of this engagement will inform Pacific countries of the risk of current landfill practice and assist in opting for a more environmental sound landfilling practice that improves economic, social, health and environmental benefits for Pacific people. For this reason, Rehabilitation and aftercare must be considered to minimise leakages from closed landfill. Information gathered shall include but not limited to:

- The potential after use of the site for each landfill type,
- Operational requirements of each landfill type, to ensure that the capping is designed to suit the intended after use
- Surface contours before and after settlement
- Specifications and materials to be used in the final cap
- Preservation/installation of environment performance control or monitoring features such a leachate and gas systems, surface water drainage features
- A way of achieving cost recovery for the rehabilitation works during the economic life of the landfill
- A way to meet financial assurance requirements
- An outline of timeline/triggers for rehabilitation.

## **Task 2 - Optional Extra (please quote to include this issue in the literature Review**

The consultant shall research and identify successful funding schemes for the construction, operation and maintenance of landfills. Information gathered shall include but not be limited to:

- Regulations and statutes that provide for taxes or fees used for landfill construction and maintenance

- Other innovative approaches to fund landfill activities
- Minimum Gate Fee needed for different waste type to ensure financial sustainability of landfills
- Debt Recovery Plan.

### Task 3: Report Development

Develop a report from the findings of the literature assessment, with the inclusion of a summary table assisting readers to quickly assess which of the type of landfill they would like to explore further in the full report.

Specifically, we would like the report to answer the following questions:

1. Do “dumps” (unlined and unregulated landfills) cause a clear and persistent environmental / social and economic impact on communities in the Pacific? (include literature evidence)?
2. What is the toxicity, scale and likelihood of chemical release from each landfill type?
3. What risk does mixed waste materials co-located in each landfill type pose for the toxicity of leachate released?
4. Is the scale of a facility important (i.e. dump of limited products, and more of a mono-fill process – do they cause same level of impact)?
5. What items and chemicals (in leachate) are typically released to the environment from poorly management and controlled waste management facilities? What impacts do these fugitive items have on the environment and human health?
6. What are the identified options, opportunities, impacts from waste separation / waste diversion prior to anaerobic management (landfilling)?
7. Which waste types should be actively avoided from landfilling, and what management options should be considered for their management?
8. Possible creation of a risk matrix (Social, Environmental, Economic) based on the scenarios of waste management facilities. (Case study evidence).
9. Identify any research gaps relevant to the Pacific context (for possible future research investment).

### 3.2 Schedule of Work

The activities are to be completed no later than **May 31, 2020** with a preference for the activities to be completed much earlier.

Expected project activity is detailed in Table 2, it is expected that tender responses will detail how and when each of these steps will be delivered.

**Table 2:** Project Schedule

<b>Activity</b>
<i>Notification of Successful Consultant &amp; Contract Signing</i>
1. Introductory and Planning teleconference between successful consultant and PacWastePlus project management unit (PMU)
2. Submission of Research Plan to PacWastePlus PMU for approval
3. Submission of Task 2 Outputs
4. Review of Task 2 Outputs by PacWastePlus PMU

5. Submission of Task 3 Outputs
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6. Review of Task 3 Outputs by PacWastePlus PMU
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7. Acceptance of all Deliverables.
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### **3.3 Budget**

Submissions are required to itemise all financial elements of their proposal in USD, including, but not limited to, the following:

- Salary costs (hourly rate)
- All applicable taxes

Please note: Submissions that exceed USD 15,000 will not be considered.

### **4. Other Information**

The successful consultant will be provided with any relevant project documentation by the PacWastePlus team.