

**COMMENTS ON DRAFT TOR FOR DETAILED ENGINEERING DESIGNS
DAK LAK PROVINCE**

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1. General Observation

The ToR should refer to the GUIDELINES FOR DETAILED ENGINEERING DESIGN which give the Key Principles for design of the subprojects as well as specific guidance for subprojects in each Province. These Guidelines should be an attachment to the ToR and should be observed by the detailed design consultants.

Concerning design flows and areas, guidance has been given in the PPTA documents, and will be provided in the Design Workshops.

Overall the ToR is rather too detailed, and some technical decisions should be left open until after the Design Workshops and the visit to Australia during which the designers will be exposed to modern pressure pipe design systems. For example, settling/ header tanks are really not required in modern design, and pumping may be directly into pressure pipe systems. Also, steel pipe is not likely to be required (except perhaps for exposed conditions), and certainly should not be specified in the ToR.

The TOR does not provide requirements for "metering" in particular the meters to measure water at the farm offtake and whether they are to be remote or local read.

The observations, findings and recommendations given below are structured in accordance with the TOR sections' numbering.

2. Findings and recommendations relating to the TOR structure and content

The structure of the TOR basically reflects the outline structure presented in the revised TOR template for DEDs. The revised TOR template complies with the current Circular 01/2015/TT-BKHĐT (MoPI) and the Decree 63/2014/NĐ-CP (GoV). Although the TOR structure is quite similar to the ADB's one, several sections' contents do not focus on their purposes as **guidelines in the ADB "User Guide for Preparing Terms of Reference"**, especially Sections 1.2, 2.2, etc.

Recommendations:

- Most of the first paragraph in Section 1.2 should be replaced by “climate resilience and water productivity in agriculture, and increase incomes by supporting farmers in growing high-value crops such as coffee, peppers, grapes, apples, dragon fruits, and mangoes through modernizing eight irrigation systems in five drought-affected provinces: Binh Thuan, Dak Lak, Dak Nong, Khanh Hoa, and Ninh Thuan”.
- The objectives in Section 1.2 have not been updated as those in the ADB documents. They should be updated by summarizing the outputs in the Report and Recommendation of the President (RRP) at <https://www.adb.org/projects/documents/vie-49404-002-rrp> ...
- Kindly update recent ADB/ GoV/ Dak Lak PPC official documents...

3. Findings and recommendations relating to Section 1. OVERVIEW ON WEIDAP/ADB8

Much basic data and formal information on the Water Efficiency Improvement in Drought-Affected Provinces Project at <https://www.adb.org/projects/49404-002/main#project-documents> have not been updated into the section “1. OVERVIEW ON WEIDAP/ADB8” (see comments: [Hai C.2], [Hai C.3], etc in the TOR with “Track changes” mode attached).

Relating to section 1.2 OVERVIEW ON WEIDAP/ADB8

Recommendation: The section should emphasize **what is the consulting tasks' context**. Special emphasis must be given to the **climate resilience and water productivity in agriculture, and irrigation modernization**.

4. Observations and comments relating to Section 2.4 Design options proposed for detail technical design

Observations and comments on the design options proposed for detail engineering design are listed below based on the proposals for Krong Buk Ha reservoir scheme. The same may apply to the other schemes.

- On-shore pumping stations are being proposed, with intake HDPE pipes set at various levels to allow for fluctuating water levels in the reservoir:

Comment: this is likely to be the best solution, but the consultant should be allowed to suggest alternatives/ modifications.

- Steel discharge pipe from the pumping station to a header/ storage tank. *Comment: it is likely that HDPE pipe of appropriate class could be used. Specifying the type of pipe in the ToR for design is not appropriate. Also, adoption of a system with header/ storage tank may not be appropriate (see below).*

- Pressure pipe water distribution (irrigation) system and use of header tanks. *Comments: Modern systems usually pump directly into a pressure pipe (ring) system with manifolds/ flow meters/ hydrant offtakes. There may not be any need for a header tank.*

Regarding the use of header tanks - please be aware that this is considered "old" technology - more expensive and does not provide for a "modernised pressurised supply system" - occasionally they may be appropriate but rarely should they be used. Therefore, the reason "header" tanks are proposed is because of the inexperience in Vietnam of modern systems. when the selected designers visit Australia they will see first hand the benefits of not using header tanks. So suggest that some of these things will be modified after the Australia field trip.

- No phrases of "manifold" are appeared in the TOR. Why not?
- The TOR does however fail to mention any details of the farm offtakes or "manifolds" and the determination of number sizing and location of these.
- Pressure pipe control system: the ToR appears to adopt water levels in a header/ small storage tank at a high point as the feed-back controlling pumps' operations. *Comment: this is one possible solution. Another solution is to pipe pressure sensors with no header tank. Before making this decision the DD contractor shall study both and discuss with pump manufacturer as well as the Client.*
- Irrigation pipeline is HDPE loop system and appears to take off from header tank. The text refers to pressure reducing valves (as well as air valves and hydrants) along the pipeline. *Comment: there is really no need to break up the system with a steel discharge pipe, header tank and HDPE irrigation pipe system. Also, there is mostly likely no need for pressure reducing values. It would be better to have constant capacity*

flow values at the hydrants. The ToR should remain open at this stage, and allow the option for a truly modern pressure pipe distribution system to be discussed and agreed.

- Relating to the SCADA systems:
 - The TOR does not provide details of "metering" in particular the meters to measure water at the farm offtakes and whether they are "remote read".
 - Control principles are not addressed for variable frequency drives (VFDs), pumps and other devices.
 - No communication protocols have been proposed.
 - Real time monitoring and control have not been presented.
 - There are no information on SCADA HMI, software and databases, etc.

Comments: The ToR should clearly state the required functions of the SCADA system, covering: pump operations, pressure pressures, flows, etc. Also: (i) The transmission of data/ coded signals from sensors – loggers/ remote terminal units (RTUs) to central control offices and vice versa should use the Internet and the 4G/ 5G universal mobile telecommunication system or the latest mobile technology; (ii) Real time SCADA and applications of IOT technology shall be considered; (iii) The Websocket protocol/ technology should be applied for real time SCADA systems; (iv) SQL Server and ArcGIS databases would be very useful for control and management as well as maintenance of pressure pipe systems, etc.

- Relating to sediment and micro-irrigation. Comment: the ToR should mention that farmers may tank up micro-irrigation (drip/ sprinkler) from the pressure pipe hydrants (outlets), and appropriate arrangements need to be made to prevent ingress of sediment. This is likely to require screens at the pumping station.

Note: The design documents that have been provided should have been referenced and included as part of the TOR.

5. Findings and recommendations relating to Section 3. OBJECTIVES AND SCOPE OF CONSULTING SERVICE

The scope of works has not listed main tasks.

Please note that selected design consultants will be expected to attend a study tour in Australia to visit similar schemes in the Riverland district of South Australia.

Regarding the provision in section 3.2.7.1 for the required hydrology and irrigation calculations, this was extensively covered in the feasibility stage and the design irrigation requirement was established. It is not appropriate or within the design consultants ability to review some of these calculations.

6. Findings and recommendations relating to Section 5. PRODUCTS AND SCHEDULE OF SUBMISSION

Please note that the schedule should be based on the milestones as set out in the guidelines for SPs DEDs.

7. Findings and recommendations relating to Section 6. REQUIREMENTS ON WORK REQUIREMENT AND CAPACITY OF THE CONSULTANT

The preferred designers should have had experience with pressurised urban water supply systems as there are many of these through Asia- it is unlikely that they will have had experience with pressurised irrigation supply systems...

Kindly consider:

- Any consultants must demonstrate experience in "urban pressurised water supply systems". The priority will be given to consulting firms having experience in designing pressurised irrigation supply systems for HVCs/ agriculture.
- Any consultants must use "EPANET" or WaterGEMS unless otherwise approved.
- Any prospective consultants must attend a 'briefing workshop' before submitting tender.

8. Findings and recommendations relating to using English language

The TOR contains so many mistakes in using English language, especially English vocabulary.

With regard to the main mistakes, the recommendations are:

Serious mistakes on the TOR cover need to be corrected as follows:

replace:

“TERM OF REFERENCE” with TERMS OF REFERENCE

“DETAILED TECHNICAL DESIGN” with DETAILED ENGINEERING DESIGN

“the irrigation system” with the irrigation systems (also in headers)

“Drought Affected” with Drought-Affected (also in headers)

“TRAFFIC” with TRANSPORT

...

English mistakes as the above mistakes and many others, as well as main spelling mistakes in TOR pages have also to be corrected or should be corrected/ replaced (see track changes), for examples:

replace “Asia Development Bank” with Asian Development Bank, “Asia Development Fund” with Asian Development Fund, HVC with HVCs, High Value Crops with High-Value Crops, Project Administration and Management Handbook with Project Administration Manual, Technical Assistant with Technical Assistance, etc. (page 3);

replace “Asia Development Bank” with Asian Development Bank, “title” with name, “the irrigation system at the provinces of” with the irrigation systems in the provinces of, etc. (page 4);

replace ..., etc.

Note: The TOR in “Track changes” mode is attached as a guidance for ease of reference.

9. Specific Observations and Recommendations

As a last remark, some specific observations on the TOR presentation are issues in formatting, section/ item numbering and naming, line spacing, spelling mistakes, repeated paragraphs, etc.

The TOR is extremely specific in its requirements on some things that is probably unnecessary, for example: some things like specifying "steel pipe" is not appropriate.

Kindly find the attached for the TOR in "Track changes" mode in order for being able to improving the presentation.