



6th March, 2020

TIP/20/0603/A

Mr. Roshan Shaikh,
Secretary,
Local Government Department,
Government of Sindh,
Tughlaq House,
Sindh Secretariat,
Karachi

Sub: Meeting of the Technical Committee for Evaluation of Design Review Report submitted
by NESPAK on K IV Project held on 5 March, 2020

Dear Sir,

In accordance with agreed procedure decided in meeting of the Technical Committee, held on 5 March 2020, I on behalf of TI Pakistan submits following observations on the additional statements from M/s Deltares third party review report, in the draft final report of Technical Committee, suggested by two committee members of KWSB.

TI Pakistan Comment 1.

1. M/s Deltares prepared third party review on 2 October 2019, which was numbered and was forwarded by Project Director on 10 October 2019 to M/s Osmani by PD, duly stamped by M/s Deltares and M/s NESPAK. The report reference is Attribute 11204220-002-HYE-0010 Pages 13, and on top of every page the caption written is 11204220-002-HYE-0010, October 2, 2019, stays final. Following are the section 3.1 and 3.3 of the report.
Copies of two repeats are attached. .

3.1 Input data. The results of these simulations have been used to verify and confirm the hydraulic calculations performed by NESPAK. There are small differences in the calculation results from Deltares and NESPAK. These differences have been analysed and discussed with NESPAK engineers and our mutual conclusion is that these differences are negligible and are caused by the difference in the numerical methods that were used.

3.3 Conclusions

The results of these simulations have been used to verify and confirm the hydraulic calculations performed by NESPAK. There are small differences in the calculation results from Deltares and NESPAK. These differences have been analysed and discussed with



NESPAK engineers and our mutual conclusion is that these differences are negligible and are caused by the difference in the numerical methods that were used.

The conclusion is that the design flow rate of 260 MGD and 650 MGD can be transported by the canal and siphons. The water levels in the canal are within acceptable limits.

TI Pakistan Comment 2.

In the meetings of the Sub Committee of the Technical Committee, held on 1.1.2020, on the question of sufficiency of the velocity in siphons, MD KWSB confirmed that the velocity is less than 10ft/sec in the KWSB existing Siphons, operational without any problem since last 30 years. This finding was also confirmed in the meeting on K IV held for Core Commandeer and CM Sindh, on 20 December 2019 by MD KWSB that there were no issues of velocity in the existing KWSB Siphons operational since last 30 years.

TI Pakistan Comment 3.

Another report M/s Deltares third party review report dated 2 December 2019 is available, in which following ambiguities have been noticed.

A). Following paragraph is inserted in 3.1.

The hydraulic calculations do not take into account the degradation of the hydraulic capacity over time due to sedimentation, fouling, biological growth on the canal/siphon walls or other causes. One of the major risks in the system is settling of sediment in the siphons, causing a reduction of the hydraulic capacity.

The risk of sediment settling can be estimated using simple design equations such as the Shields criterion and the Rouse number. However, an important parameter in these equations is the particle size of the sediment. At this time there is only very limited information available on the expected sediment particle sizes, sediment load or any other properties of the sediment that may be transported through the canals and siphons. As such, additional studies regarding sediment properties should be performed and any assessment regarding sediment transport should be verified at a later design stage when this information is available. In order to do a preliminary assessment of the risk of sedimentation in the siphons, the particle size classification of ISO 14688 has been used as input for a preliminary assessment.

B). Following two paragraphs are inserted in 3.3.

A preliminary assessment of the risk of sedimentation in the siphons indicates that the flow velocity in the siphons is not sufficient to transport medium and coarse sediments.

Fine sediments may transport through the siphons, depending on the exact sediment properties and sediment load. It should be noted that this assessment only considers the particle size and density of the sediment. For large amounts of sediment or sediment with cohesive particles other physical phenomena can influence the sediment transport.



This analysis should be performed during the initial design phase of the project and mitigating measures could have been incorporated into the original design. It is highly recommended to perform additional analysis and studies regarding sediment transport through the canals and siphons and design mitigating measures where required, as these aspects directly affect the reliability and the hydraulic capacity of the system.

TI Pakistan Comment 4.

Examining the two M/s Deltares third party review reports, one of 2 October 2019 and second on 2 December 2019, following ambiguities are noted, which needs to be clarified from M/s NESPAK and M/s Deltares.

1. M/s Deltares third party review of 2 October 2019, Attribute 11204220-002-HYE-0010 Pages 13 and on top of every page the caption written is 11204220-002-HYE-0010, October 2, 2019.
2. Each page of report is stamped by M/s. NESPAK, and page (i) , by M/s Deltares.
3. Total pages computerised typing is 13, and numbered as 1/13. 2/13 etc.

4. Report status is final on each page.

Whereas M/s Deltares third party review of 2 December 2019

1. M/s Deltares third party review of 2 December 2019, also Attribute 11204220-002-HYE-0010 Pages 13 and on top of every page the caption written is 11204220-002-HYE-0010, 2 December , 2019.
2. Each page of report is **not** stamped by M/s. NESPAK, 3 by M/s Deltares.
3. Total pages computerised typing is 13, and numbered as **1/12. 2/12 etc. and that too 12 is written by hand.**

4. Report status is final on each page.

Following two additions in M/s Deltares third party review of 2 December 2019 contradicts themselves, and also why two final reports were prepared by M/s Deltares .

3.3 A preliminary assessment of the risk of sedimentation in the siphons indicates that the flow velocity in the siphons is not sufficient to transport medium and coarse sediments, means they have conducted the test on hydraulic model for medium and coarse sediments.

But in 3.1 of the report states that for large amounts of sediment or sediment with cohesive particles other physical phenomena can influence the sediment transport. **This analysis should be performed during the initial design phase of the project and mitigating measures could have been incorporated into the original design**



Kindly get reports for these ambiguities , from KWSB, M/s NESPAK and Ms Deltares on these issues, and make this letter as annexe of the Final Committee Report.

Syed Adil Gilani


Managing Director

TI Pakistan

Member of Technical Committee