*The 5th Regional Stakeholder Forum*
*First Regional Information Sharing on Pak Lay Prior Consultation Process*
*20-21 September 2018*
*Landmark Hotel, Vientiane, Lao PDR*

# Navigation Review

## Preparation of Technical Review Report for PNPCA Prior Consultation of Pak Lay Hydropower Project

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# Contents of Presentation

**O**verview of submitted document

**A**pproach for the technical review

**M**ethodology for the technical review

# Overview of the submitted document (1)

**The review of the Navigation subject under the scope of the Pak Lay HPP will contain the following items**:

- Operation, safety and maintenance.
- Navigation structure design
- Filling and Emptying system
- Lock equipment

**Information can be found in submitted document of the Feasibility Study:**

- Chapter 5: Project layout and main structure
- Chapter 6: Mechanical and Electrical equipment and Hydraulic Steel structure
- Chapter 7: Construction Organization Design

# Overview of the submitted document (cont.)

## Drawings

- The general layout is available but not the technical files including detailed drawings in AutoCAD

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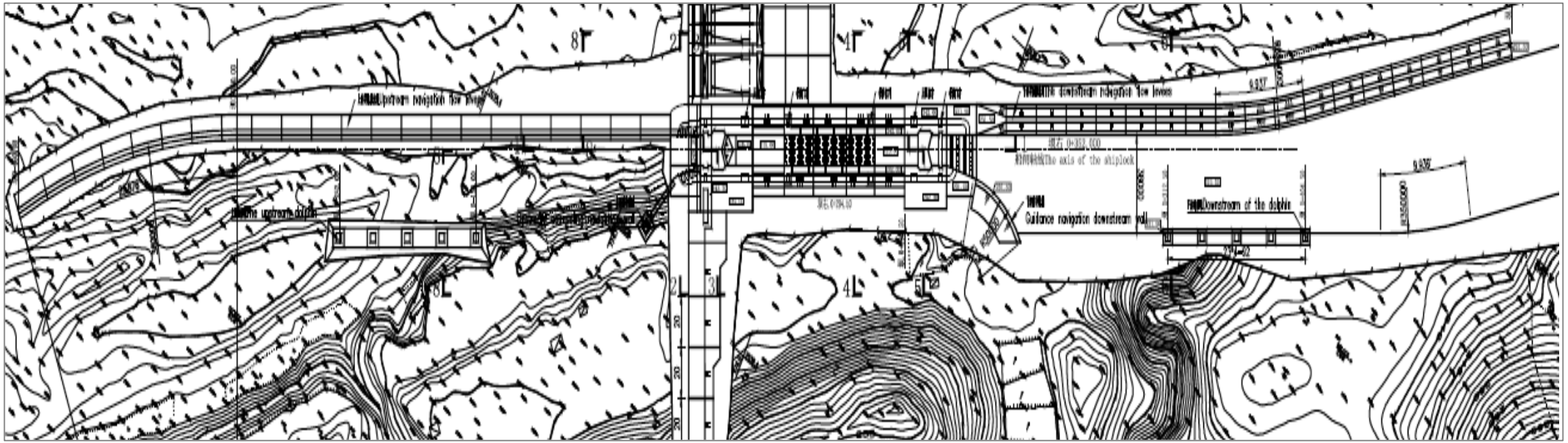

*General Layout of the Navigation ship lock – Pak Lay HPP*

# Approach for Technical Review

- To assess the details of the plans and engineering specifications
  - To compare the proposed situation of the ship lock in the Feasibility Report against the PDG/DG/best practices
- To provide outline recommendations
  - To define additional information and investigations review

# Approach for Technical review (cont.)

***Issues to look at***

- Article 9 of the 1995 Mekong Agreement (freedom of navigation along the Mekong River, not to pose an additional obstacle) - provide for the construction of navigation locks
- Long-term nature of planning and investment for navigation locks with a view of up to 50 years
- Lockage time will be kept to a minimum, consistent with safe operation, safe movement of vessels in and out
- Straight alignment to allow for the safe entry and exit of vessels
- The emptying/filling system is designed to conform to requirements for maximum transit times

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# Approach for Technical review (cont.)

**The navigation structure**:

- **Maximum working head of the navigation lock**
- A space for the ship lock for upgrading into a double-way lock
- Size of the lock chamber: **120 m long × 12 m wide × 4 m deep?**
- The passing time of a ship is guaranteed not to exceed **30 minutes**
- The access channel (generally accommodate **two standard vessels of 500 tons**).
- Entry and exit is safe
- **Durability and maintenance** requirements are reduced to lowest practical level
- **Operation system** (operation at least 12 hours a day, every day)
- **Maintenance schedule** (not more than 9 days/year)

# Approach for Technical review (cont.)

**Accessibility and others:**

- **Access to ground structures** for maintenance and operation, access for emergency response is considered
- **Passage of small craft and family boats** is considered
- **During the construction,** the suspended time and additional cost to waterborne transportation is minimized
- **Reduce the environmental impact** of possible breakdowns or failures and include measures to mitigate any such impact
- Solutions for fine **material sedimentation**
- Hydraulics (currents), river morphology (sedimentation) and wind exposure take into account when determining the location and alignment of locks (using a simulation model)

# Methodology

## Methodology

- Review with particular focus on Navigation ship lock and approach channels.
- **Discussion with relevant Hydropower Dam Designers and Government officers**
- Site visit
- Comparison with similar cases, best practices (as to compile recommendations)

# Methodology

**Guidance/Tool Documents:**

- MRC's **Preliminary Design Guidance** for Mekong Mainstream Dams in the Lower Mekong Basin (PDG) 2009;
- The MRC study "**Review of International Ship Lock Dimensions** and their Relevance to the Proposed Hydropower Developments on Mekong Mainstream dams";
- **PIANC (World Association for Waterborne Transport Infrastructure)** report: "Final Report of the International Commission for the study of Locks."
- PIANC report nr. 106-2008: "Innovations in navigation lock design"
- Various worldwide best practices such as studies conducted by USACE Various internet websites dealing with ship locks, river navigation, gates and valves for ship locks etc.;

# Thank you