Department of Irrigation and Drainage

Minutes of Meeting

The 24th Meeting of Thailand - Malaysia Joint Evaluation Team

on the Golok River Mouth Improvement Project

23 – 24 December 2013
Ubon Ratchatani
Thailand

The 24th Meeting of Thailand – Malaysia Joint Evaluation Team on the Golok River Mouth Improvement Project

23 – 24 December 2013
Ubon Ratchatani, Thailand

AGENDA 1: OPENING ADDRESSES

Mr. Somkiat Prajamwong, the leader of the Thai Delegation, welcomed the Malaysian Delegation to the 24th Meeting of the Joint Evaluation Team (JET) on the Golok River Mouth Improvement Project on 23– 24 December 2013 in Ubon Ratchatani, Thailand.

Dato' Ir. Lim Chow Hock, the leader of the Malaysian Delegates expressed his appreciation for the warm welcome and arrangements for the meeting. Both sides introduced their delegates to the Meeting. The list of delegates is shown in **Appendix A.**

AGENDA 2: MATTERS FOR CONSIDERATION

2.1 Report of Monitoring and Evaluation of Golok River Mouth

Progress Activities

1. The pre-monsoon survey 2013 was carried out by using T.11 as reference datum by the Thai side in October 2013 as shown in **Appendix B**. It is found that river mouth cross sections of this pre monsoon survey (October 2013) are quite similar to those in the post monsoon survey (March 2013). Regularly from previous surveys, more sedimentation is accumulated from the period of post to pre monsoon seasons. From this survey it is shown that there is less sedimentation during non-monsoon season.
2. The Thai side has provided six coordinates of survey boundaries carried out in the pre monsoon survey (both ends at Ch-0.700, Ch+0.00 and Ch+0.650). They are to be used for Malaysian side as a reference for future surveys.
3. The Thai side had modified the colors legend used in the pre monsoon survey October 2013 using ATLAS colors as reference.

4. The maximum discharge of Golok River at Cableway (x119A) are as follows:
    - During non-monsoon season (April to October 2013) was approximately 103m^3/s, and
    - During monsoon season (November to December 2013) was approximately 400m^3/s.

Opinions / Recommendation

1. Almost no sedimentation occurred during non-monsoon season. This should be closely monitored for at least three consecutive season surveys. Sand transportation by wind and tidal could also be the cause of this phenomenon apart from low discharge of Golok River (103 m^3/s).
2. The Malaysian side suggested whether it is necessary to carry out an additional survey in between the period of non-monsoon season to determine whether high sedimentation from the river occurred at the same time as sediment transportation from the sea. Sand transportation along the shore could be surveyed at certain location and certain period to understand their behavior. However, the Meeting agreed that at present, there is no need to carry out such surveys and the comparison of sedimentation between post monsoon and the original design should be done in the future. The results are to be tabled at JTWG.
3. The Meeting agreed on the six (6) coordinates of cross section survey boundaries produced by Thai side to be used for future surveys.
4. The Meeting agreed to re-modified the color legend used for future surveys as follows;

Black : 0.0m to -0.9m Thai MSL.

Blue : -1.0m to -1.9 m Thai MSL.

Green : -2.0m to -2.9 m Thai MSL.

Orange: -3.0m to -3.9 m Thai MSL.

Purple : -4.0m to -4.9 m Thai MSL.

Red : -5.0m to -6.0 m Thai MSL.

5. The Meeting agreed that for the future surveys starting from pre-monsoon October 2013, both sides will use the same datum reference as well as the proposed six (6) coordinates and the re-modified color legend.

2.2 Proposed Maintenance Dredging of Golok River Mouth

Current status

From the pre-monsoon survey October 2013 (at CH 0+650m), it was observed that the river mouth was almost fully open.

Recommendation

1. There is no need to carry out maintenance dredging at present for the purpose of navigation. However, this has to be confirmed by the joint hydraulic studies to cater for coastal flooding.
2. Thai side reported that at present the river mouth blockage is about 10%, therefore dredging is not needed but for the threshold value of 50%, river mouth blockage will cause rising of water level in the Golok river of about 30 cm.
3. Details to be discussed in agenda 2.6 – Joint Hydraulic Modelling Studies.

2.3 Cableway Stations across Golok River

2.3.1 Mutual Calibration of Rating Curves

Activities

- Progress on mutual gauging works (Rating curves as shown in **Appendix C**)

First mutual

Non Monsoon season May – October 2012	Monsoon season November 2012 – April 2013
1. 15 May 2012 2. Jun 2012 3. 22 July 2012 4. Aug 2012 5. 19 September 2012 6. 18 October 2012	7. November 2012 * 8. December 2012 * 9. 23 January 2013 10. 26 February 2013 11. 14 March 2013 12. 17 April 2013

Second mutual

Non Monsoon season May – October 2013	Monsoon season November 2013 – April 2014
1. May 2013 2. Jun 2013 3. July 2013 4. Aug 2013 5. September 2013 6. October 2013	7. November 2013 * 8. December 2013 * Future plan 9. January 2014 10. February 2014 11. March 2014 12. April 2014

Note: *Calibrated by Thai side (flood in Malaysia)

- Gauging works from November to December 2012 and 2013 were done by Thai side only due it was flooding in Malaysian side.
- The discharge from Thai side rating curve was 430 m^3/s and from Malaysian side was 370m^3/s during high flow period at the elevation of 10m Thai MSL. The difference in reading by both sides are due to difference datum used (T11 datum is not apply by both sides at present).

Recommendation

- The meeting agreed that both sides should apply the same datum and cross section reading to make a common rating curve. There will be three rating curves i.e. Common (Joint), Thailand and Malaysia rating curves and reference datum at T11 are to be used to draw common rating curve only.

- Malaysian side agreed to make use of data from Thai side from November to December 2013 to complete the rating curve. Malaysian side shall inform to Thai side the available date to enable mutual calibration.
- The meetings strongly recommend both sides to measure and plot Golok river cross sections at cableway station in every 3 to 4 months for mutual flow measurement and calibration to observe the river bed changes.

2.3.2 Mutual Calibration of Equipment

The Malaysian side reported that the Hornet System Gauging Equipment has been calibrated in Australia on November 2013 (for hoist cable and traveler cable), while the current meter will be calibrated in May 2014.

For maintenance of Hornet System Gauging Equipment, greasing of hoist gear system and greasing main cable has been completed by November 2013.

Recommendation

- For next equipment calibration, the Meeting agreed to perform calibration in Thailand (RID laboratory)
- Result of equipment calibration should be reported to both sides (Cableway stations) and JET in order to access accuracy of the past mutual calibrations.

2.4 Progress on Real Time Monitoring System in the Golok River Basin and the Joint Website

Current status

Malaysian side informed that the table of at least 6 (six) months hydrological data in digital formats and all minutes of meeting has been uploaded as agreed in the last meeting.

Additional data sharing on mutual rating curve of Golok river discharge at cableway station should also be shared in the joint website.

Hydrological data in the upstream part of Golok river basin in terms of real-time monitoring should be implemented by both sides and shared in the joint website for the benefit of flood forecasting and warning.

Both sides proposed the new IT personnel to be included in cooperation team of the joint website as follows;

	Contact Person	**Division**
Malaysia	Engr. Steven Poh Tze Wei Pn. Siti Nor Aina Binti Zulkapli Pn.Nur Murniwati binti Abdul Majid	Water Resources Management and Hydrology, DID Malaysia
Thailand	Mr. Somchai Imyoo Ms.Chawee Wongprasittiporn Mr. Chaiwut Nakarn	Hydrology and Water Management Center for Southern Region, RID Thailand Office of Project Management, RID Thailand Office of Hydrology and Water Management

2.5 Rehabilitation of Transit Point B

The Malaysian side reported to the meeting that the rehabilitation work at Transit Point B was completed in July 2012.

From previous meeting, the analysis on the scouring problem at Transit Point B will be included in the joint study by Thai side and to be presented to Malaysian side for further discussion on the proposed mitigation/solutions. Detail will be discussed in Agenda 2.6

2.6 Joint Hydraulic Modelling Studies

The joint studies compose of

- Thailand : Joint Hydraulic Model on the Assessment of the Golok River Mouth Improvement Along Coastal Areas (Dec 2012 - Dec 2013)
- Malaysia : Joint study on Coastal Flooding at Golok River Mouth (October 2012 - Dec 2013)

The result of studies could be summarized as follows; (Detail as in **Appendix D**)

Final Scenarios of modification of Golok river mouth Improvement project

Items	Malaysia	Thailand
Final Modification Options	4 options	7 options
	Option 1: Existing	Option 1: Without project
	Option 2: Dredging	Option 2: Existing(with project)
	Option 3: Thai Breakwater extension + Thai Training wall + Malaysia training dike	Option 3: Training walls of both sides
	Option 4: Training wall Malaysia & Thailand, short groyne, breakwater Thailand.	Option 4: Thai breakwater Extension
		Option 5: Training walls + Thai Breakwater Extension
		Option 6: Dredging (same as Malaysia option 2)
		Option 7: Training walls + Thai Breakwater Extension + Malaysia training dike (Same as Malaysia option 3)
Criterions	Flooding in Golok river Sedimentation of river mouth Sand bypassing at river mouth Navigation	Sedimentation of river mouth Sand bypassing at river mouth Erosion along the coastline
Recommended options	Option 3 with optimization (as shown in **Appendix D**)	7 (as shown in **Appendix D**)

Impact on Shoreline Erosion	-None-	Shoreline erosion at Thai coastline, sand bypassing and equilibrium condition will be discussed later

Study on appropriate features of suggested options

Items	Malaysia	Thailand
Dredging need	Suggested option with dredging (Detail as shown in **Appendix D**)	
New protection work at Transit Point B	-None-	The new protection of Transit Point B is proposed by steel sheet piles in elliptical shape (10 m wide and 20 m. long). Inside the steel sheet piles, there is sand fill with concrete topping

<u>Recommendation</u>

1) Thai side needs to carry out EIA study.
2) In future, implementation of the physical works should be agreed by both sides and carried out at the same time.
3) The result with recommendation should be proposed to JTWG/JSC and relevant agencies
4) Further studies needed: salinity intrusion, physical model etc.
5) The proposed sheet pile protection at TPB by Thai side will caused wave reflection and will not allow water passing. Therefore, the meeting agreed that the proposed protection works to be reviewed and discussed in the next JET meeting.
6) More detail of joint hydraulic studies will be presented and discussed in the next JET meeting for the purpose of JTWG.

2.7 Flood Forecasting and Warning System of the Golok River Basin

Both sides agreed that both counties will carry out their own model development based on own interest but compare the output from both models. This will be presented in JET Meeting upon completion.

Thai side proposes Malaysia to set up more telemetry rainfall stations upstream of Rantau Panjang in the near future if possible. Both sides should share telemetry rainfall data in real time manner on the joint website for the accuracy of flood forecasting of both countries. Meanwhile for the flood forecasting contract of Thai side, rainfall from upstream part in Malaysia side has to be assumed.

Thai side presented that flood simulation by ANN model using 3 rainfall stations in Thai side only gave simulated runoff which was high degree of difference from observed runoff at X.119A (detail as shown in **Appendix E**). Therefore real time rainfall data from Malaysian side is highly required for the accomplishment of the flood forecasting and warning system which is currently under contract in the Thai side.

2.8 Proposed Integrated River Basin Management (IRBM) plan for the Golok River

IRBM will include both quantity and quality issues, the Thai side suggested that under the present function of Royal Irrigation Department, IRBM could be applied in terms of “IRBM of Golok River Basin Development Plan”.

First suggestion, the meeting agreed to suggest JET to propose to JTWG, under the existing MOU, to modify JTWG and JET scope of area and function by

- Expanding area from Golok river mouth to Golok River basin and
- Extending function to include joint website, data sharing, joint cableway, flood forecasting and the newly proposed IRBM.

Second suggestion is to propose JSC to assign another JTWG or JET. The meeting agreed to propose both options for JTWG/JSC decisions.

AGENDA 3: OTHER MATTERS

3.0 Proposed date and venue for the 25th JET meeting

The meeting proposed the date and venue for the next JET meeting (25th JET meeting) as follows:

Date: April 2014

Venue: 1. Mulu Cave, Miri, Sarawak, Malaysia or

2. Tioman Island, Pahang, Malaysia

AGENDA 4: Matters to be referred to the JTWG Meeting

The meeting agreed to proposed the agenda for next JTWG meeting as follows;

Matters for Information

1. Report of monitoring and evaluation of Golok River Mouth
2. Proposed maintenance dredging of Golok River Mouth
3. Cableway station across the Golok River
4. Progress of real time monitoring system in the Golok River Basin and the joint website
5. Rehabilitation program of Transit Point B

Matters for Consideration

6. Joint Hydraulic Modeling Studies
   (i) Joint study on Coastal Flooding at Golok River Mouth
   (ii) Joint Hydraulic Model on the Assessment of the Golok River Mouth Improvement along Coastal Areas.
7 Flood Forecasting and Warning System of the Golok River Basin
8 Integrated River Basin Management (IRBM) plan for the Golok River

AGENDA 5: ADOPTION OF MINUTES OF THE MEETING

The meeting agreed to adopt the minutes of meeting of the Twenty fourth Meeting of Thailand – Malaysia Joint Evaluation Team on the Golok River Mouth Improvement Project.

(Mr. Somkiat Prajamwong) Co-chairman Joint Evaluation Team, Thailand	(Dato' Ir. Lim Chow Hock) Co-Chairman Joint Evaluation Team, Malaysia

APPENDIX A

Attendance List
24th Meeting of Thailand – Malaysia Joint Evaluation Team on the Golok River Mouth Improvement Project

22 – 25 December 2013
Ubon Ratchathani Province

THAI DELEGATES

1.	Mr. Somkiat Prajamwong	Director, Office of Project Management, Royal Irrigation Department, Thailand
2.	Mr. Surasit Intharapracha	Director, Office of Engineering and Architectural Design, Royal Irrigation Department, Thailand
3.	Mr. Prinya Kamolsin	Expert on Hydraulic Engineering, Office of Research and Development, Royal Irrigation Department, Thailand
4.	Mr. Waemamu Waehama	Director, Golok River Basin Operation and Maintenance Project, Regional Irrigation Office 17, Royal Irrigation Department, Thailand
5.	Mr. Somchai Imyoo	Director, Hydrology and Water Management Center for Southern Region Office of Hydrology and Water Management, Royal Irrigation Department, Thailand
6.	Mr. Chumlap Tejasen	Chief of Project Planning Group 1 Office of Project Management, Royal Irrigation Department, Thailand
7.	Mr. Attaporn Wonglimaswat	Senior Surveyor, Survey and Engineering Bureau, Marine Department
8.	Ms. Chawee Wongprasittiporn	Civil Engineer, Professional Level Office of Project Management Royal Irrigation Department, Thailand
9.	Mr. Attapan Diloksopon	Civil Engineer, Professional Level Office of Project Management Royal Irrigation Department, Thailand

SECRETARIAT TEAM

1.	Mrs. Jittra Boonrod	Foreign Relations Officer (Professional level) Office of Project Management, Royal Irrigation Department, Thailand
2.	Mrs. Bunruen Srisa-ad	Foreign Relations Officer (Professional level) Office of Project Management, Royal Irrigation Department, Thailand

APPENDIX A

Attendance List
24th Meeting of Thailand – Malaysia Joint Evaluation Team on the Golok River Mouth Improvement Project

22 – 25 December 2013
Ubon Ratchathani Province

3.	Mr. Piriya Thumyago	Foreign Relations Officer (Practitioner level) Office of Project Management, Royal Irrigation Department, Thailand
4.	Ms. Phatchara Amphawanon	Foreign Relations Officer (Practitioner level) Office of Project Management, Royal Irrigation Department, Thailand

IN ATTENDANCE

1.	Mr. Preecha Sukklam	Senior Expert on Civil Engineer (Project Planning) Royal Irrigation Department, Thailand
2.	Mr. Suchat Hanchanachaikul	Senior Expert on Irrigation Engineering, Regional Irrigation Office 7, Royal Irrigation Department, Thailand
3.	Mrs. Orathai Ongrattana	Director of Foreign Relations and International Cooperation Division, Bureau of International Cooperation, Department of Water Resources, Thailand
4.	Mr. Jakkarit Threenat	Irrigation Engineer (Professional Level) Regional Irrigation Office 7,Ubon Ratchathani Province Royal Irrigation Department, Thailand
5.	Mr. Kraisit Thongnun	Irrigation Technician (Experienced Level) Regional Irrigation Office 7,Ubon Ratchathani Province Royal Irrigation Department, Thailand

APPENDIX A

Attendance List
24th Meeting of Thailand – Malaysia Joint Evaluation Team on the Golok River Mouth Improvement Project

22 – 25 December 2013
Ubon Ratchathani Province

MALAYSIA DELEGATES

1.	Dato' Ir. Lim Chow Hock	Director River Basin and Coastal Zone Management, Department of Irrigation and Drainage Malaysia
2.	Ir. Hj Shahimi bin Sharif	Deputy Director (Coastal Zone), River Basin and Coastal Zone Management Department of Irrigation and Drainage Malaysia
3.	Mr. Khirluddin bin Darus	Senior Engineer, Water Resources Management and Hydrology Department of Irrigation and Drainage Malaysia
4.	Mohd Eizam bin Yusof	Engineer River Basin and Coastal Zone Management Department of Irrigation and Drainage Malaysia

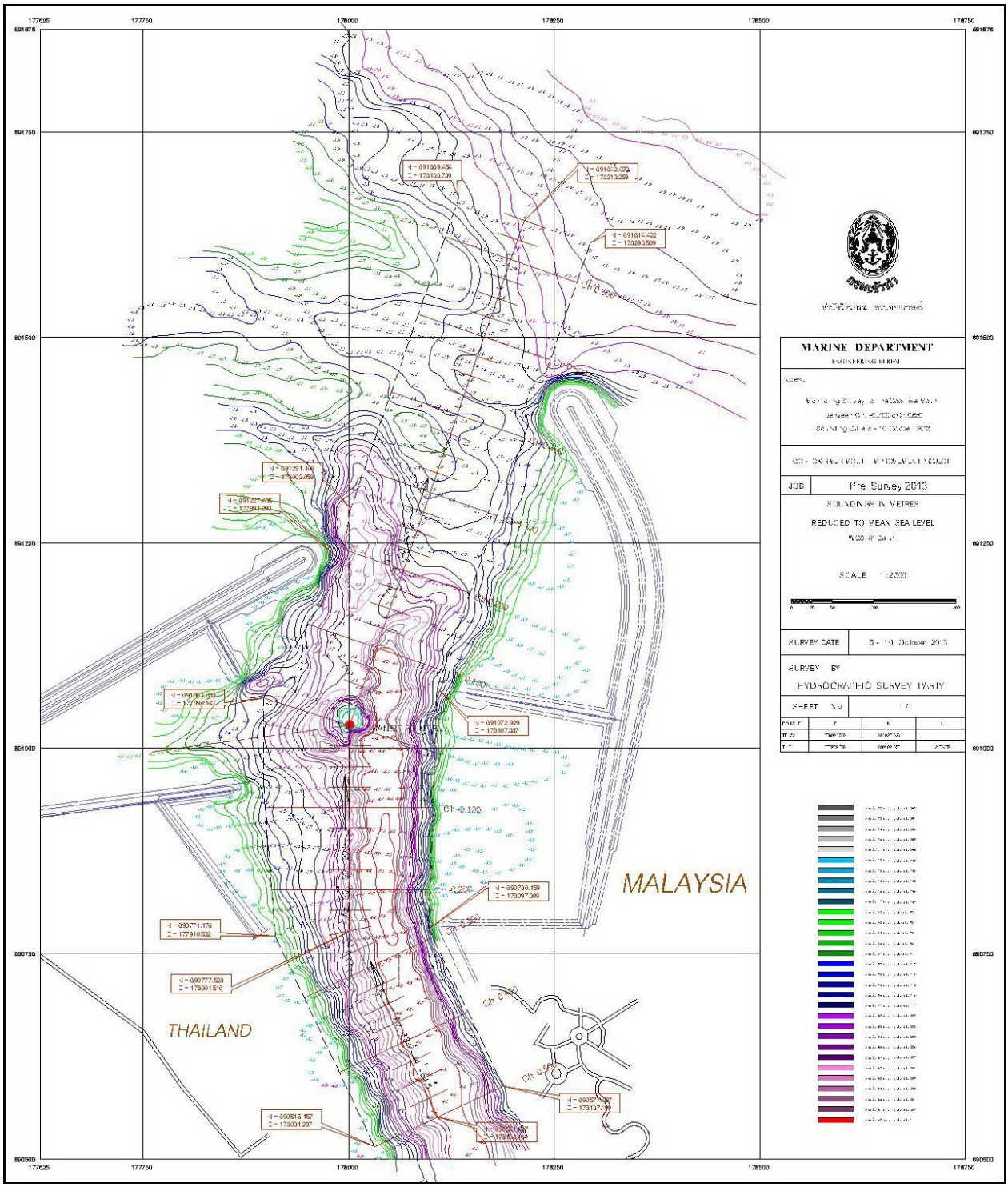
IN ATTENDANCE

5.	Mr. Mohd Sor bin Othman	Senior Engineer, River Basin and Coastal Zone Management Department of Irrigation and Drainage Malaysia
6.	Aisyah Sakina Ahmad	Engineer River Basin and Coastal Zone Management Department of Irrigation and Drainage Malaysia
7.	Mr. Lim Foo Huat	Malaysia Consultant
8.	Mr. Mark Oliver	Malaysia Consultant

PRE- MONSOON SURVEY

APPENDIX B

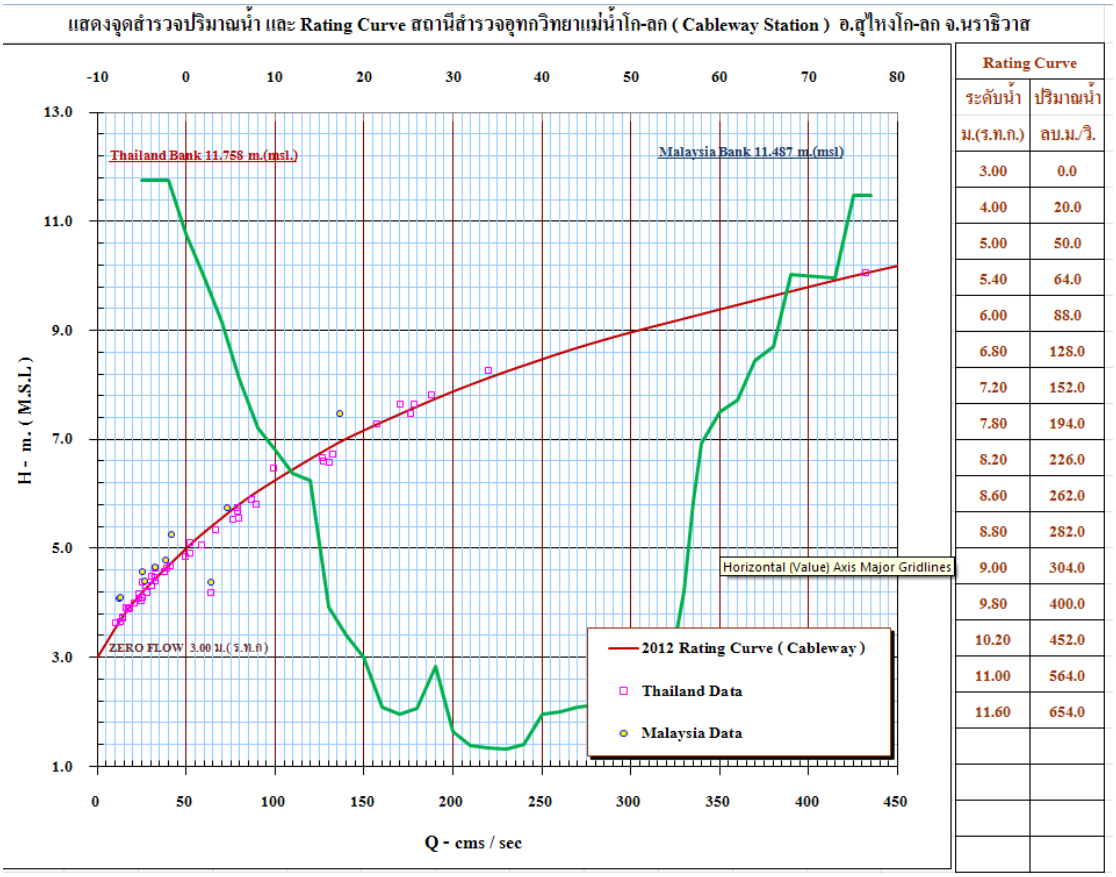
PRE-MONSOON SURVEY
(OCTOBER 2013)



APPENDIX C

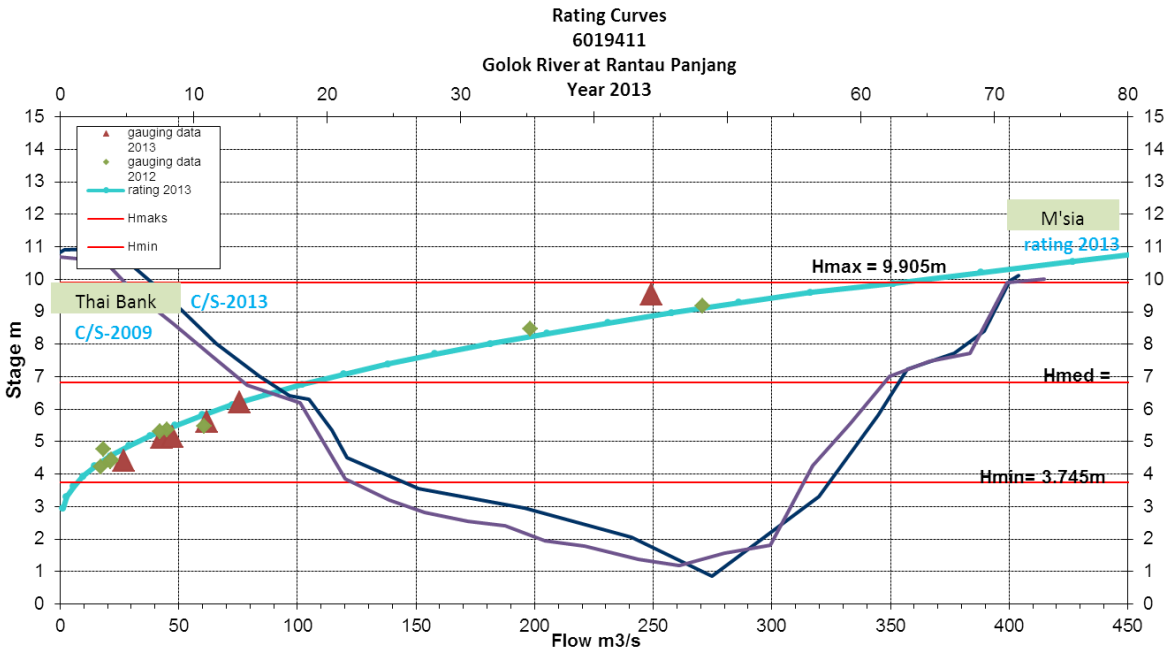
COMMON RATING CURVE FOR MUTUAL CALIBRATION

THAILAND

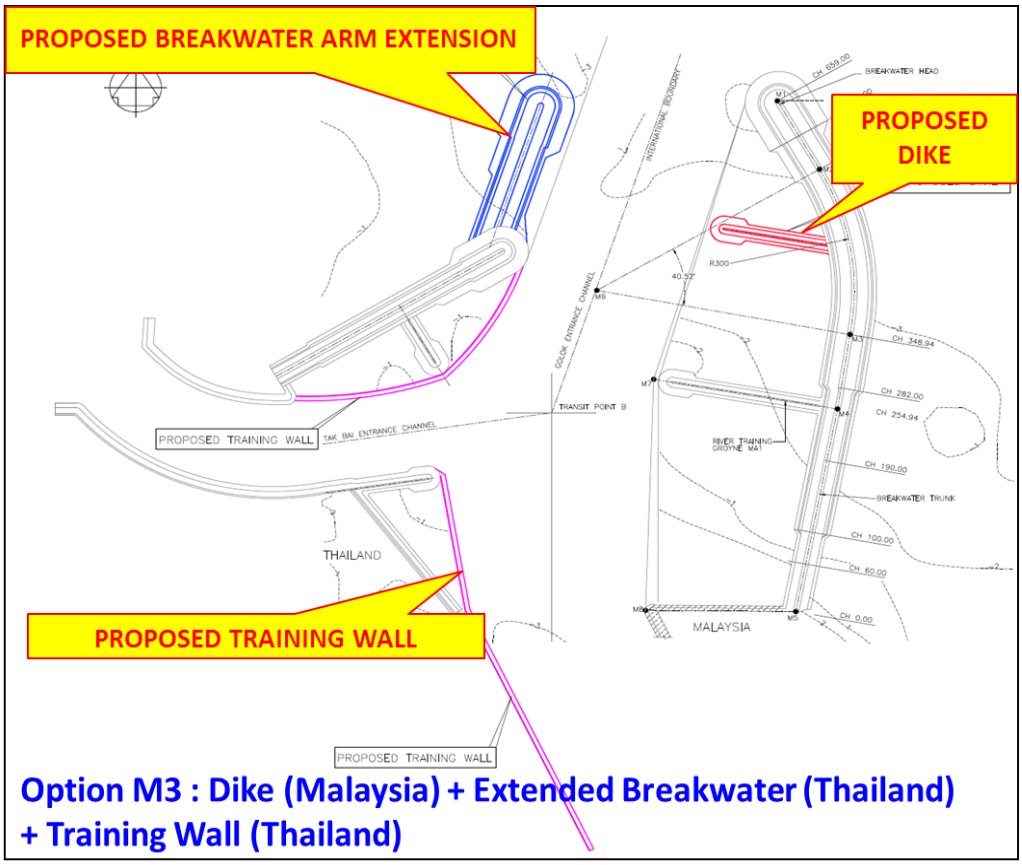


Rating Curve	
ระดับน้ำ	ปริมาณน้ำ
ม.(ร.ท.ก.)	ลบ.ม./วิ.
3.00	0.0
4.00	20.0
5.00	50.0
5.40	64.0
6.00	88.0
6.80	128.0
7.20	152.0
7.80	194.0
8.20	226.0
8.60	262.0
8.80	282.0
9.00	304.0
9.80	400.0
10.20	452.0
11.00	564.0
11.60	654.0

MALAYSIA

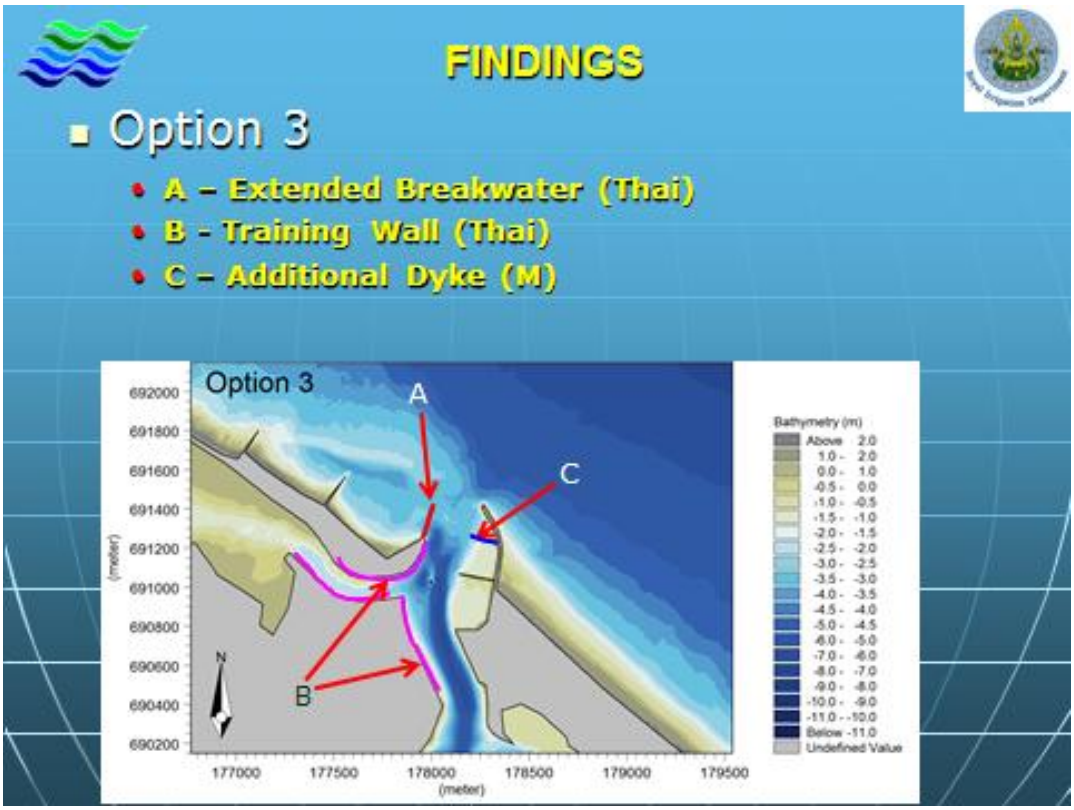


SCENARIO 7T



Option M3 : Dike (Malaysia) + Extended Breakwater (Thailand) + Training Wall (Thailand)

SCENARIO 3M



SCENARIO 3M

Findings –Option 3 vs Option 3+Dredging

Condition	Option 3	Option 3 + Dredging
Current - Low Q, Peak flood (tide)	Current more homogeneous across main river channel – no more eddy near Thai breakwater and river mouth	Similar results but water level slightly reduced
Current - Low Q, Peak Ebb (tide)	Extended breakwater (T) trained the flow and additional groyne (M) enhance flushing and increased current	Similar results but slight increment in current speed in river channel
Sediment transport - Low Q, Peak flood (tide)	Sedimentation shifted to main river flow and reduced	Similar results but sedimentation at Thai side further decreased
Sediment transport - Low Q, Peak ebb (tide)	Flow is constrained by extended breakwater – eliminate eddies, flush sediment off river mouth	Similar results but more sediment shifted further offshore
Bed change over 1 day at Low Q	Sedimentation shifted off the extended breakwater – wider navigation channel near b/water opening, > 150 m width	Similar results but more sedimentation shifted further offshore
Wave penetration	Constraint opening between breakwater opening – less wave penetration into river	Similar results due to similar gap width between breakwater

CONCLUSION

Option 3 will :

- Increase peak river discharge and decrease water levels during high flow conditions when floods occur;
- Increase current speed in the river thus enhance flushing;
- Decrease sedimentation at existing Thai breakwater and shift towards offshore; and
- Reduce wave penetration due to narrow opening between breakwater.

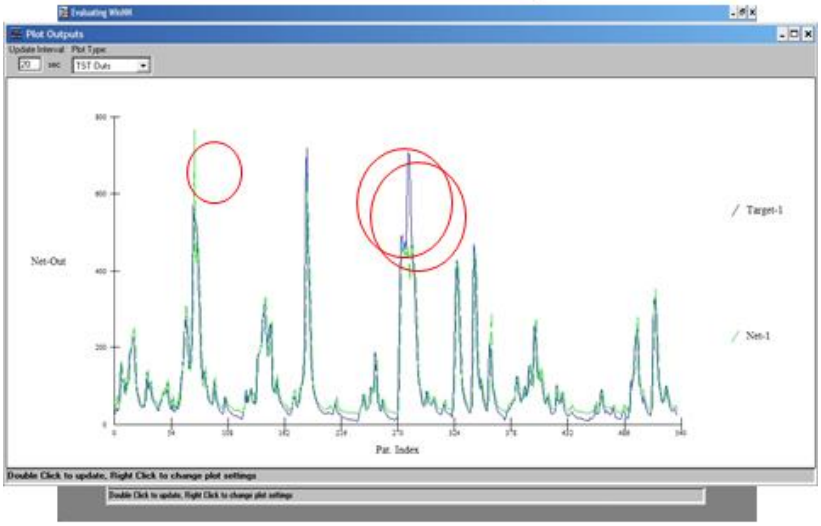
Option 3 with dredging will :

- Further reduce water level;
- Further increase current speed in river channel;
- Further reduce sedimentation at Thai breakwater and shift towards offshore;

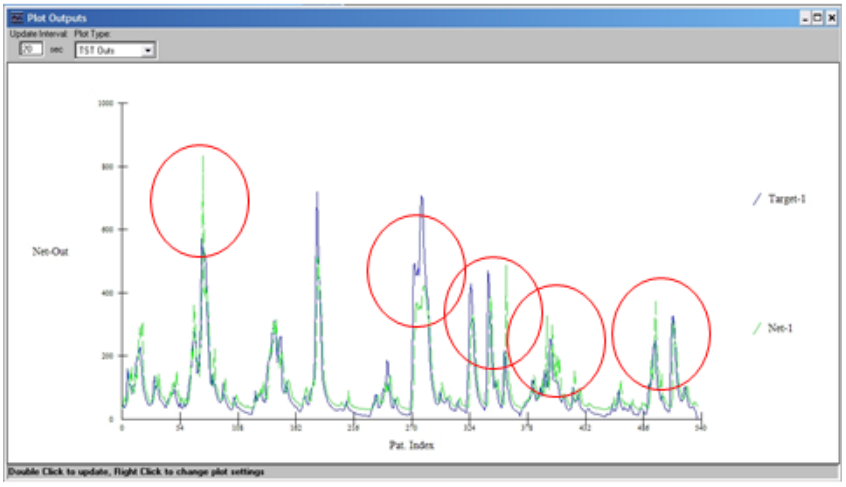
APPENDIX E

Differences 69 – 79 %

Calibration and Result: for forecast 1 day in advance



Calibration and Result: for forecast 2 day in advance



Calibration and Result: for forecast 3 day in advance