

SUNGAI TERENGGANU INTEGRATED RIVER BASIN MANAGEMENT (IRBM) PLANS Water-Related Issues

26 NOVEMBER 2015



**JABATAN PENGAIRAN DAN SALIRAN
NEGERI TERENGGANU**

OBJECTIVES

IRBM Plan is designed to achieve the following objectives-

- **Ensure Clean Water**
- Ensure Sufficient Water
- **Reduce Flood Risk**
- Enhance Environmental Conservation

Sungai Terengganu Basin

1. Located in the central portion of Terengganu State
2. Catchment Area: 4,560km²
3. Span across three districts: Kuala Terengganu, Hulu Terengganu and Setiu
4. Main stem begins from Tasik Kenyir and flow into the South China Sea (64.4km long).
5. Major urban areas; city of Kuala Terengganu and the town of Kuala Berang
6. Many villages are scattered all along the main rivers of Sg. Terengganu, Sg Telemung, Sg Berang and Sg Nerus.

ENSURE CLEAN WATER

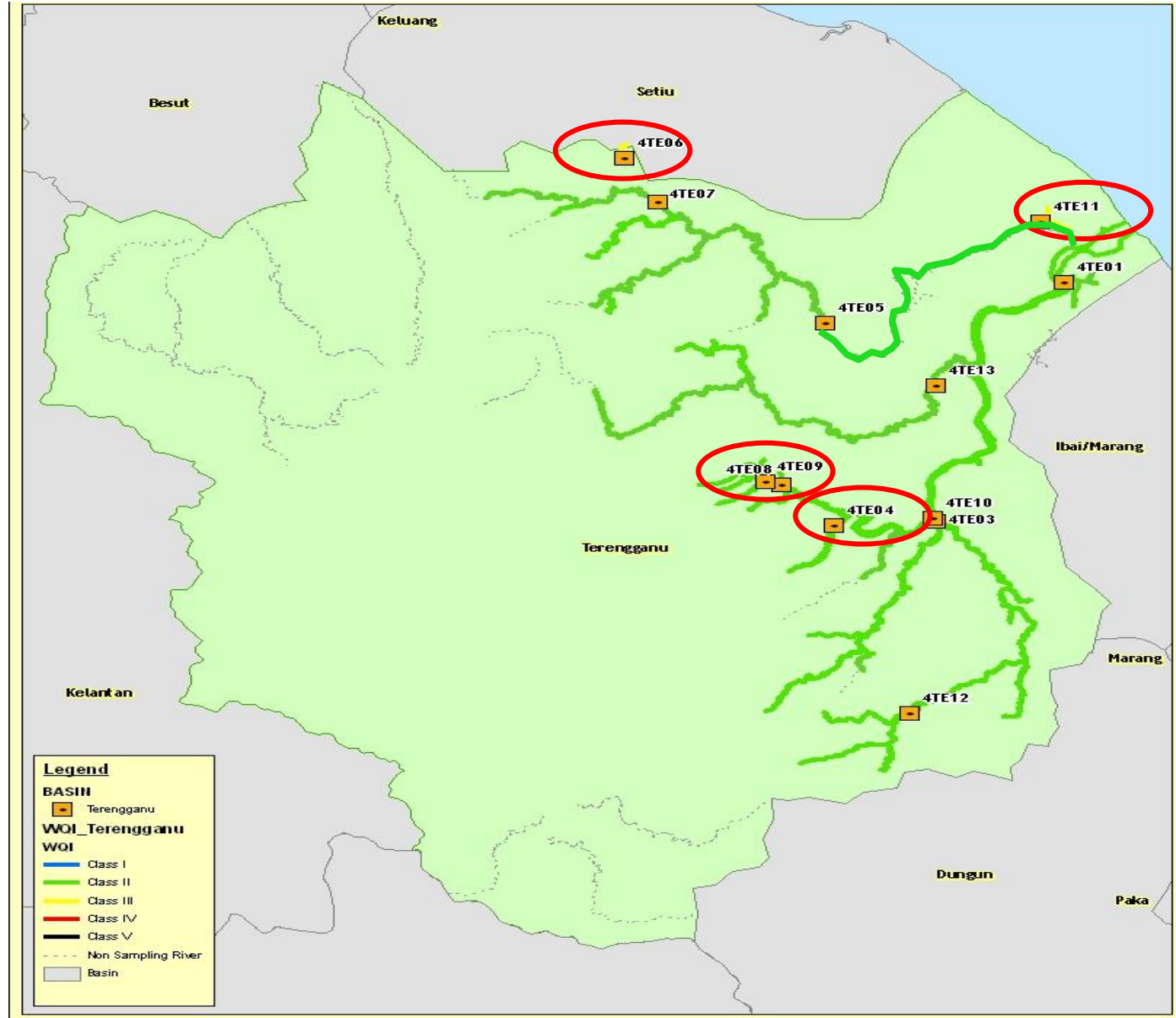
1. The water quality in Sg. Trg Basin is generally within Class II of NWQS.
2. However several sub-basin have been identified to be subjected to significant pollutant such as Sg Nerus, Sg Pueh and Sg Hiliran.

Water Quality Status (2005-2010)

Sungai	WQI (2005 - 2010)	Class	Water Quality Status	Pollution Source / Remark
Sg. Terengganu (4TE04)	80	II	Slightly Polluted	Empangan Kenyir (DO, COD)
Sg. Pueh (4TE09)	79	II	Slightly Polluted	Ladang Sawit Bkt Kapah (COD)
Sg. Pueh (4TE08)	75	III	Slightly Polluted	KKS Bkt Kapah (AN, DO, COD, BOD)
Sg. Berang (4TE12)	92	II	Clean	Hulu Sg Berang
Sg. Berang (4TE03)	88	II	Clean	Kilang Getah Mardec
Sg. Terengganu (4TE10)	88	II	Clean	Water Intake Gaung
Sg. Telemong (4TE13)	86	II	Clean	Mewakili Sg. Telemong
Sg. Terengganu (4TE01)	87	II	Clean	Water Intake Pulau Musang
Sg. Nerus (4TE06)	78	II	Slightly Polluted	Kg Felda Chalok (COD, BOD, TSS)
Sg. Nerus (4TE07)	87	II	Clean	KKS Felda Chalok
Sg. Nerus (4TE05)	83	II	Clean	KKS Bkt Nenas
Sg. Nerus (4TE11)	59	III	Polluted	Kaw. Perindustrian Gong Badak (AN, TSS, pH, COD, BOD)

- Based on 12 DOE MWQM Stations
- WQI from 2005 – 2010 shows predominantly Class II (Clean) status
- Exceptions:
 - Upstream Sg Terengganu (Slightly polluted), Sg Pueh & Sg Nerus (Slightly polluted/ Class III)
- Source : Study of IRBM Plan Sg Trg (2010)

DOE MWQM Stations



Sources of Pollution

1. Development activities along riverbanks that do not follow standards and regulations.
2. Sand extraction activities
3. Palm oil mill
4. Sewerage from industries and residential
5. Old and insufficient sewage treatment system. Untreated sullage are directly discharges into the rivers.

Sources of Pollution

6. Batik manufactures
7. Slaughterhouses
8. Improper land clearing, embankment works and illegal logging
9. Excessive rubbish especially plastics are thrown indiscriminately into the rivers
10. No enforcement against individuals/company that do not follow rules and regulations

POLLUTION SOURCES

Wet Market



**Sungai
Hiliran**

POLLUTION SOURCES



Batik Effluent

**Keropok Lekor
Effluent**

**Sungai
Hiliran**



NEW DEVELOPMENT AT KENYIR LAKE



**Kenyir Lake
Duty Free Island**



Kenyir Water Park

ENSURE SUFFICIENT WATER

1. Sg. Terengganu is sufficient to cater to existing and future water demand.
2. The river yield is high and can support the demand increase.
3. However, there is still a need to increase production and supply for water demand.
4. Kenyir Lake is the water reservoir for Sg. Terengganu, thus, any future development must be well planned in order to ensure clean water supply.

REDUCE FLOOD RISK

1. Sg. Terengganu is subjected to North East Monsoon, and received very high and long duration of rainfall.
2. The construction of Kenyir Dam has lessened the flood risk along the river, However this dam has limitation in storace capacity.
3. Flood in 2014 due to extreme rainfall which recorded an average 4696mm where water has to be release by overflow spillway.

4. Flash floods also occur at downstream due to poor drainage system and tidal effect.
5. Development along side the river also can contribute to flood.

FLOOD EVENT (DECEMBER 2014)

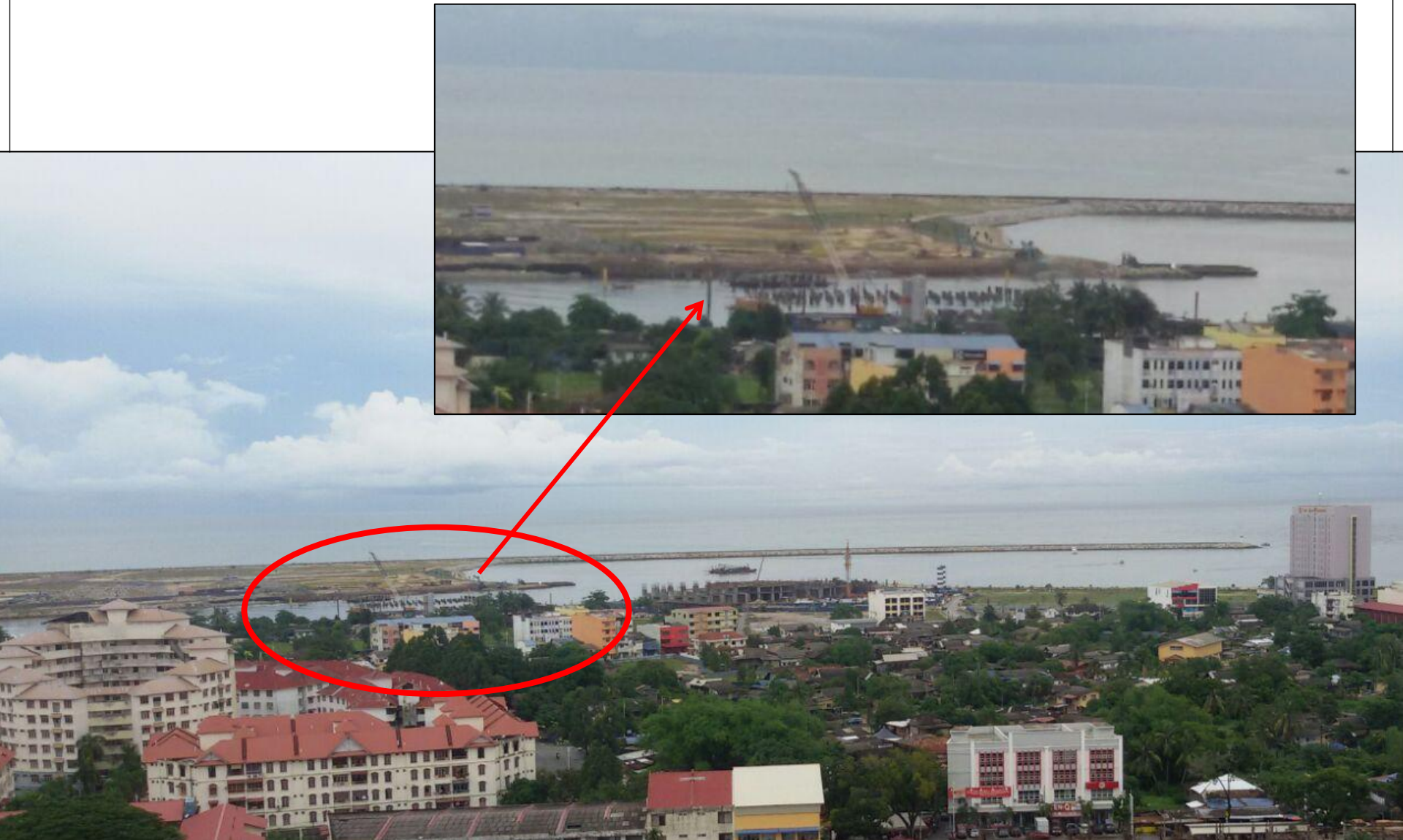
FACT: First event occurred since 30yrs operated . The highest water level recorded was 148.04m, 3.04m higher than maximum capacity level)



RIVER OBSTRUCTION AT THE RIVER MOUTH



DEVELOPMENT AT THE RIVER MOUTH



Construction of a New Drawbridge at the river mouth entrance

DEVELOPMENT ALONG RIVERBANK



Land Reclamation – Double Frontage Road and New Pasar Payang

DEVELOPMENT ALONG RIVERBANK



Land Reclamation – Kampung Cina and Taman Warisan

ENHANCE ENVIRONMENTAL CONSERVATION

1. Sg. Terengganu is still rich in biodiversity where several critically-endangered species of fauna have been identified.
2. All future development must take into consideration environmental friendly design and landscaping to help conserve the environment and also create beautiful scene along the river or across the city.



CHALLENGES IN IMPLEMENTING IRBM PLAN

1. Stakeholders— roles and responsibilities / overlapping powers and jurisdiction
2. Citizen - Lack of understanding with regards to the importance of water quality
3. Development encroached river banks/river reserve.

CONCLUSION

The current state of Sg. Terengganu is considered to be still good;

- The overall water quality is clean. Some is still acceptable at Class II. Both Point and Non-Point sources of pollution have to effectively managed.
- There is sufficient water for current demand.
- Floods is not a major problems since the existence of Kenyir Dam. However, floods may occurred due to extreme rainfall within the catchment.

- Mitigation measures: structural (river improvement works, etc) and non-structural (flood plain management, upgrade/install new hydrological stations, etc) still need to be done at downstream
- The basin is rich in bio-diversity. Awareness campaigns – must be conducted continuously and be updated accordingly to educate citizen.
- There is a need to set up a river management body that comprises all stakeholders so that decision can be made in consensus and responsibility are clearly outlined.



THANK YOU