

STANDARD INDUSTRI PEMBINAAN

(CONSTRUCTION INDUSTRY STANDARD)

CIS 31:2024

FLOOD RISK ASSESSMENT IN MALAYSIA

Description: Flood, Risk Assessment, Vulnerability Index, Risk Map, Vulnerability Map

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CONSTRUCTION INDUSTRY DEVELOPMENT BOARD



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Flood Risk Assessment In Malaysia
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COMMITTEE REPRESENTATION

This Construction Industry Standard Industry (CIS) was managed and developed by the Construction Industry Development Board Malaysia with the assistance of the Technical Committee of CIS for Flood Risk Assessment which comprises representatives from the following organisations;-

Agensi Pengurusan Bencana Negara (NADMA)

The Association of Consulting Engineers Malaysia (ACEM)

Board of Engineers Malaysia (BEM)

Creative Variety Sdn. Bhd.

Dewan Bandaraya Kuala Lumpur (DBKL)

Dr. Nik & Associates Sdn. Bhd. (DNASB)

Environmental Resources Management (ERM)

Institut Penyelidikan Air Kebangsaan Malaysia (NAHRIM)

Jabatan Pengairan dan Saliran, Malaysia (JPS)

Kementerian Kerja Raya (KKR)

Master Builders Association Malaysia (MBAM)

RBM Engineering Sdn. Bhd.

Universiti Teknologi Malaysia (UTM)

Universiti Teknologi MARA (UiTM)

VERITAS Architects Sdn. Bhd.

PREFACE

This Construction Industry Standard (CIS) hereby referred to as CIS 31:2024 was developed as Construction Industry Standard for Flood Risk Assessment by the Construction Industry Development Board (CIDB) Malaysia to sets out the standard to perform flood risk assessment through assessment and development of the parameters-indicators of flood vulnerability index and flood risk classification of the critical infrastructure. There are four (4) main stages including data acquisition and pre-processing of geospatial data, improvements of flood vulnerability cluster, indicators, sub-indicators and weight values, flood vulnerability and risk mapping, and evaluation of the flood risk assessment.

Compliance with this Construction Industry Standard does not of itself confer immunity from legal obligations.

Any feedback or questions on this document should be directed to CIDB at standard@cidb.gov.my.

FLOOD RISK ASSESSMENT IN MALAYSIA

SECTION 1: GENERAL

1.1 Scope

This standard complements the Guideline and Manual for Flood Risk Assessment (FRA) published by the Construction Industry Development Board (CIDB) Malaysia (2019), as well as any existing acts, guidelines, standards, and regulations in force. It is structured to facilitate the Principal Submitting Person (PSP), or any other involved parties in conducting an assessment of potential flood impacts associated with proposed new developments.

This document sets out the standard methodology for conducting a Flood Risk Assessment (FRA) and Flood Vulnerability Index (FVI) in Malaysia and enhances the need for the local authorities to utilise the flood hazard map provided by the authority. This CIS must be read with the “Flood Risk Assessment and Flood Vulnerability Index for Critical Infrastructure (CI) in Malaysia” and the “Manual for Flood Risk Assessment and Flood Vulnerability Index for Critical Infrastructure (CI) in Malaysia”.

1.1.1 Consideration of Flood Risk Assessment

Consideration of flood risk assessment and flood vulnerability index shall complement the existing local acts and guidelines subjected to the locality of the proposed development area as follows:

- a) The proposed development area falls into the flood risk area as in the enforced development plan (*rancangan pemajuan yang berkuatkuasa*) or identified by the local authorities.
- b) Land development area of 50 ha and above.
- c) Land development of less than 50 ha in flood prone areas.
- d) JPS is entrusted to produce flood hazard maps for all major river basins, in stages.
- e) In the event that a flood risk map is available, the developer shall conduct a flood risk map of the development project as well as a more detailed analysis and assessment to be approved by the relevant authority.

1.1.2 Application of Flood Risk Assessment

The process of integrating flood risk assessments and the creation of flood risk or vulnerability maps into new development can be executed by the following parties:

a) Federal

Incorporate flood risk assessment and vulnerability maps into national planning coordinated by PLANMalaysia and overseen by JPS.

b) State/Local Authority

Incorporate flood risk assessment and vulnerability maps into the state or local authority's structure plan, local plan, or special area plan (*Rancangan Kawasan Khas*) coordinated by the State PLANMalaysia and overseen by the State JPS. While for Federal Territories they should align with their respective requirements. Integration into any comprehensive river basin management plan is recommended.

c) **Developer**

Developers should undertake a flood risk assessment for the proposed site, its surroundings, and downstream areas, ensuring control at the source. Additional flood risk assessments might be needed during the planning permission phase.

1.2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- a) Akta Kerja-kerja Saliran 1954 (1988)
- b) Akta Kerajaan Tempatan (1976): (Semenanjung)
- c) Undang-undang Kecil Kerja Tanah
- d) Akta Jalan, Saliran dan Bangunan 1974 (1994)
- e) Akta Perancangan Bandar dan Desa 1976
- f) Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction. United Nations. (2016) UNDRR.
- g) Statistical and Probability Analysis of Hydrological Data. In: Chow, V.T., Ed., *Hand Book of Applied Hydrology*, McGraw Hill, New York, 81-97. (1964) Chow, V.T.
- h) Hydrological Procedure No. 1 (Revised and Updated 2021). Estimation of Design Rainstorm in Peninsular Malaysia. Ministry of Natural Environment Malaysia. (2021) JPS.
- i) Hydrological Procedure No. 1 (Revised and Updated 2018). Estimation of Design Rainstorm in Sabah and Sarawak. Ministry of Natural Environment Malaysia. (2018) JPS.
- j) Updating of Condition of Flooding and Flood Damage Assessment in Malaysia. (2012) JPS.
- k) Flood risk assessment and mapping in Abidjan district using multi-criteria analysis (AHP) model and geoinformation techniques, (cote d'ivoire). *Geoenvironmental Disasters*, 3(1). <https://doi.org/10.1186/s40677-016-0044-y>. (2016) Danumah, J. H., Odai, S. N., Saley, B. M., Szarzynski, J., Thiel, M., Kwaku, A., Kouame, F. K., & Akpa, L. Y..

1.3 Terms and Definitions

The definitions provided are sourced from the United Nations Office for Disaster Risk Reduction (UNDRR, 2016) and Chow (1964).

a) **Average Recurrence Interval (ARI)**

Average Recurrence Interval is the average length of time between rain events that exceed the same magnitude, volume, or duration.

b) **Capacity**

The combination of all the strengths, attributes, and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience.