Coastal Protection | CPCOP

PUB Issues Code of Practice on Coastal Protection

PUB, Singapore's National Water Agency (**PUB**), has issued the first edition of the Code of Practice on Coastal Protection (**CPCOP**), which will take effect from 2028. The CPCOP is a key component of Singapore's new coastal protection regulatory framework under the Sewerage, Drainage and Coastal Protection Act 1999 (**SDCPA**), following the commencement of the Coastal Protection and Other Amendments Act 2026 (CPOAA) on 29 May 2026. The regime is significant for landowners, developers, tenants, occupiers, purchasers, financiers and operators of coastal and waterfront assets, as it introduces legally enforceable obligations to plan, implement, maintain and, where necessary, operate coastal protection measures for prescribed places.

Executive Summary

- The CPCOP sets baseline planning, design, operational, inspection and maintenance requirements for coastal protection measures.
- The statutory regime places primary responsibility on owners (who may include lessees or tenants) of prescribed places, while PUB coordinates the continuous line of defence through prescribed boundaries and the Coastal Protection Interpretation Plan (**CPIP**).
- Non-compliance may give rise to notices, remedial obligations, PUB step-in powers, cost recovery and criminal liability.
- Affected businesses should begin assessing asset exposure, redevelopment plans, lease and transaction documents, and operational readiness before the CPCOP takes effect in 2028, and should seek advice on how the regime may apply to their specific assets or transactions.

Background and Policy Rationale

The policy objective is to establish a continuous line of defence against both permanent coastal flooding caused by sea level rise and transient coastal flooding arising from events such as high tides, storm surges, wave action and seawater backflow through drains. In Parliament, Ms Grace Fu, Minister for Sustainability and the Environment, explained that landowners are generally best placed to implement measures suited to their own sites, redevelopment timelines and business needs, while PUB will coordinate boundaries, interfaces and technical standards to ensure that individual measures join up effectively.

The CPCOP complements the existing Code of Practice on Surface Water Drainage and sets standards for coastal protection measures across the project lifecycle, from planning and design to inspection, maintenance and operation. It is centred on adaptability to future climate projections, continuity of protection along the Absolute Protection Boundary (**APB**), and the ongoing structural and operational integrity of coastal protection measures.

Who is Affected

The principal obligations apply to Owners[1] of "prescribed places", which include premises at which an APB is prescribed, premises within a transiently floodable area (coastal) (**TFA(C)**), sheltered structures within such areas, and nearshore or offshore structures. A person prescribed to be an "Owner" of a "prescribed place" may include a lessee or tenant or a person responsible for payment of property tax. Whether a particular asset is affected will depend on the prescription of boundaries by subsidiary legislation and the details set out in the CPIP. Landowners and lessees or tenants with coastal, waterfront, marine, port, industrial, logistics, utilities, hospitality or infrastructure assets should therefore monitor Gazette notifications and the CPIP, and consider coastal protection exposure as part of legal and technical due diligence.

Core CPCOP Requirements

PUB has identified the following key features of the CPCOP:

(a) Designing coastal protection measures with adaptability to cater for future climate projections, including sea level rise;

(b) Establishing clear requirements on coastal protection levels and design standards to ensure a continuous line of defence along the APB;

(c) Requiring regular inspection and maintenance to uphold structural integrity over time; and

(d) Setting guidelines for coastal deployable barriers, including their operational use and monitoring.

Planning and Design

At the planning and design stage, the CPCOP seeks to ensure that coastal protection measures are both effective when first implemented and adaptable to future sea level rise scenarios. Before commencing planning and design, the relevant project team should obtain the prevailing CPIP, which identifies or delineates relevant coastal protection boundaries, the applicable coastal protection measure, any coastal protection safety corridor and the coastal protection reserve.

The design should then address, among other matters, the applicable Coastal Protection Level (**CPL**), future adaptability, the required reserve for future modification or maintenance access, hydraulic connections, design standards, and the interface with adjoining coastal protection measures.

[1] An Owner is defined in the CPCOP as the person within the definition of "owner" in section 2D of the SDCPA.

In broad terms, the key planning and design requirements include:

(a) **CPIP and planning**: Before commencing the planning and design of any APB measure, Development-Specific Measure (**DSM**) or TFA(C), the qualified person (**QP**), Developer, Owner or Registered Surveyor must first obtain the prevailing CPIP,[2] which will describe, detail or delineate, among other things, the applicable coastal protection boundaries, TFA(C), coastal protection measure and CPR.

(b) **Adaptability for future climate projections**: For developments with more than 30 years of remaining lease, the QP, Developer or Owner must implement the APB measure or DSM through either the Incremental Build Approach or the Single Build Approach. For developments with 30 years or less of remaining lease, the APB measure or DSM must not be lower than the CPL computed for the 0.7m Relative Mean Sea Level Rise (RMSLR) planning scenario.

(c) **CPL and CPR**: The CPL is the required minimum elevation of an APB measure or DSM to protect against permanent coastal flooding and transient coastal flooding, and must be computed by the Professional Engineer (**PE**) (Civil) using prescribed coastal hydraulic boundary parameters. The PE must determine the required Coastal Protection Reserve (**CPR**) based on the remaining lease duration of the development. The CPR must include, as applicable, the additional footprint for a future build APB measure and maintenance access space.

(d) **TFA(C)s and hydraulic connections**: For areas designated as TFA(C), the Protection Boundary (**PB**) must not be allowed to retreat landwards in the long term due to permanent coastal flooding unless approved by PUB. Ground levels of the TFA(C) and PB must be maintained at or above the Protection Boundary Level (PBL), except for functional uses such as water bodies or drains located within the TFA(C). The CPCOP also addresses hydraulic connections, including process water pipes and backwater flow.

(e) **Design standards**: APB measures must be designed in accordance with the applicable Approved Documents, Singapore-adopted Eurocodes, Singapore National Annexes and relevant British Standards, with alternative equations, assessment methodologies or partial factors requiring approval from PUB and the Building and Construction Authority (BCA). Where an existing structure or geological feature is proposed as the APB measure, the Owner must appoint a PE (Civil) to verify and demonstrate compliance with the CPCOP.

(f) **Interfaces between adjoining APB measures**: Interface requirements are a key feature of the CPCOP. APB measures must be continuous with adjoining APB measures, with appropriate joint connections taking into consideration watertightness, leakage and seepage. Neighbouring owners may need to coordinate designs, share relevant plans, align construction timelines and allocate responsibility for interface works so that the continuous line of defence is not compromised. The CPCOP distinguishes between the Preceding APB measure and the Succeeding APB measure, requires a Development Interface Report for the

[2] When available, the CPIP may be obtained through the Singapore Land Authority's INLIS.

Preceding APB measure, and permits integrated designs between adjacent Owners with mutual consent, subject to the further requirements in the CPCOP.

(g) **Environmental and biodiversity considerations**: Coastal protection works in or near sensitive areas, or with potential transboundary impact, may require consultation with technical agencies and, where significant environmental impact is possible, an environmental study under the prevailing environmental impact assessment framework. Environmental considerations may therefore affect the location, design, programme and cost of coastal protection works, particularly for waterfront developments and marine or coastal infrastructure.

Inspection and Maintenance

Upon completion of the coastal protection measures, the Owner will be responsible for ensuring that these measures remain safe, functional and effective. As coastal protection measures are exposed to persistent coastal conditions, regular upkeep is essential to ensure they continue to perform as intended.

The continuing inspection and maintenance obligations include ensuring that all components of each APB measure are inspected to ensure structural integrity, safety and functionality are not compromised throughout the intended design life, with an inspection regime comprising Annual Inspection, Periodic Structural Inspection (Coastal) and Post-Event Inspection. The Owner remains responsible for repairing any damage to an APB measure, irrespective of whether such damage results from the Owner's activities or other causes.

The CPCOP also prescribes further requirements on the appointment and role of the Flood Protection Manager (**FPM**) and PE (Civil), inspection reports, classification of defects and remedial actions.

An annual declaration confirming that all inspection and maintenance requirements have been met must also be made by the Owner and the FPM to PUB.

Coastal Deployable Barriers

Where static coastal protection measures (e.g., seawalls and embankments) cannot be implemented along the APB due to waterfront operational needs, the Owner may consider the use of coastal deployable barriers, such as swing gates, flip-up barriers, raised barriers and sliding gates.

Given the greater operational risks associated with deployable barriers, stringent requirements govern their use. Deployable barriers should not be treated as a default alternative to static protection measures. The CPCOP prescribes specific eligibility conditions, including operational need, the status of the development at the time the APB is prescribed, and pre-installation requirements, and PUB's prior approval must be obtained. Coastal deployable barriers may be used if all of the following conditions are satisfied:

(a) The Owner/QP is able to demonstrate an operational need (e.g., operations related to maritime transport, logistics and services);

(b) It is proposed for a development that is existing or has obtained its Design Gateway approval when the APB is first prescribed; and

(c) The proposed barrier is fully or partially pre-installed.

The Owner must ensure deployment by the time stipulated by PUB in the deployment notification and maintain deployment until PUB issues the standdown notice. The CPCOP also prescribes requirements for Flood Response Plans, training, annual exercises, monitoring systems, inspection and maintenance submissions, monthly inspection of pre-installed components and modifications.

Enforcement and Liability

The CPCOP should not be viewed as a purely technical guideline. It is linked to statutory obligations under the SDCPA. Non-compliance may result in PUB notices, requirements to carry out remedial works, restrictions on unauthorised works or alterations, emergency intervention by PUB, cost recovery and criminal liability.

In particular, an Owner who fails to ensure that a prescribed place has a coastal protection measure meeting the applicable standards, or fails to expand it when required by revised standards, may be liable on conviction to a fine of up to S$200,000, imprisonment for up to two years, or both. Owners should therefore treat CPCOP compliance as part of their legal, operational and asset management risk framework, not merely as an engineering issue.[3]

Owners should also note that works to put in place, expand or alter a coastal protection measure may require PUB clearance or approval, and that maintenance, inspection, monitoring, notification and record-keeping obligations may continue after completion. PUB may also exercise emergency powers[4] where there is an impending high sea level event and immediate action is required to protect against coastal flooding.

Funding Support

The Government has indicated that financial support may be made available to assist landowners with the necessary costs of putting in place coastal protection measures, and that reimbursement in tranches is being considered to help with cashflow and progress monitoring. The details of the grant framework, including eligibility, quantum, supported cost categories and treatment of ownership changes, remain to be confirmed. Landowners should therefore plan on the basis that capital expenditure, maintenance obligations, business disruption and lifecycle costs may need to be addressed in their own budgets and contractual arrangements.

Key Practical Implications and Takeaways

The CPCOP has implications beyond engineering compliance. It may affect asset valuation, redevelopment feasibility, capital expenditure planning, financing, insurance, operational resilience,

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[3] See section 30E of the SDCPA.
[4] See section 43 of the SDCPA.

environmental, social and governance (ESG) and climate-risk reporting, and the allocation of risk in real estate, infrastructure and corporate transactions.

For acquisitions, disposals, leases and financings involving coastal or waterfront assets, parties should consider specific due diligence on CPIP status, APB or PB exposure, existing coastal structures, PUB approvals, inspection and maintenance records, future expansion reserves, eligibility for funding support, and allocation of compliance responsibility on completion, lease expiry or transfer of ownership.

The following sets out, by way of illustration, what each key category of stakeholder should have regard to:

(a) **Existing landowners and asset operators**: Identify potentially affected assets, monitor Gazette notifications and the CPIP, review existing seawalls and coastal structures, budget for studies and lifecycle costs, preserve approvals, as-built drawings, maintenance reports and inspection records, and consider how responsibilities may be allocated with lessees, tenants, occupiers, management corporations, service providers and neighbouring owners.

(b) **Developers and project owners**: Build CPCOP requirements into feasibility studies, design briefs, redevelopment timelines, authority approvals, construction procurement, environmental study scoping and long-term maintenance planning.

(c) **Purchasers, vendors, landlords, lessees, tenants and lenders**: Address coastal protection exposure through diligence, conditions precedent, representations, warranties, covenants, indemnities, access rights, operational protocols and allocation of grant proceeds, capital expenditure, maintenance obligations and responsibility for responding to PUB notices.

(d) **Operational waterfront businesses**: Assess early whether static coastal protection measures may interfere with operations and whether deployable barriers may be appropriate, bearing in mind the need for PUB approval, operational readiness, training, monitoring, inspection and standdown protocols, and potential business interruption if barriers must be deployed during high sea level events.

Next Steps

Businesses should begin by assessing whether any of their existing or proposed assets may fall within future prescribed places, APBs, protection boundaries or transiently floodable areas. For potentially affected assets, Owners (including lessees, tenants and occupiers), operators and purchasers should consider obtaining technical and legal advice early, reviewing redevelopment and capital expenditure timelines, identifying possible interface issues with neighbouring plots, and considering whether static measures or deployable barriers may be appropriate.

PUB has been engaging relevant stakeholders, including professional bodies, industry associations and potentially affected landowners on the CPCOP since 2025, and further engagement sessions are expected in the second half of 2026. Landowners should use this period before the CPCOP takes effect in 2028 to map exposure, engage appropriate QPs and PEs, review transaction and lease documentation, and incorporate coastal protection obligations into asset management and business continuity planning.

The implications of the matters canvassed above will depend on the particular asset, tenure, development plans, operational arrangements and contractual position of each affected party. If you would like information and/or assistance on the above or any other area of law, you may wish to contact the Partner at WongPartnership whom you normally work with or any of the following Partners:

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