

CEDD NEC Playbook

(Reduction of
Transaction Costs)



Version 1.0

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Preface



As CEDD continues to deliver public works under an ambitious programme, it is vital that we focus our efforts where they create the greatest value for the community. This playbook provides practical guidance on reducing transaction costs, which arise from the process-driven activities required for coordination, administration, approval, documentation, testing, supervision and dispute resolution.

By managing these costs, we create opportunities to streamline our processes, strengthen collaboration and enhance the efficiency and effectiveness of our project delivery. The playbook presents six key mindsets along with clear and actionable approaches for achieving these improvements across the project lifecycle, as well as examples of where these have successfully been adopted on our projects before.

Every colleague plays an important part in shaping a more agile, coordinated and outcome-focused organisation. With shared commitment and continuous improvement, we can deliver our projects with greater confidence, clarity and value, thereby better serving Hong Kong and supporting its future development.

Video of DCED's
Messages



Mr. FONG Hok-shing, Michael, JP.

Director of Civil Engineering and Development

Introduction

Purpose and scope of this playbook

Welcome to the CEDD NEC Playbook (Reduction of Transaction Costs) (“this playbook”), a practical resource designed to support CEDD colleagues and project teams in delivering public works more efficiently and therefore more cost-effectively.

This playbook offers practical guidance, examples and good practices to help project teams streamline processes, optimise administrative effort and redirect resources toward activities that contribute directly to project delivery and public value. It aims to help project teams work more effectively across all stages of the project lifecycle, from procurement through construction and handover.

This playbook is not a prescriptive manual or a replacement for existing government guidelines and contractual requirements. Rather, it provides practical, experience-based insights to complement established procedures. Professional judgement remains essential in applying the principles in different project contexts.

This playbook should be treated as a living document and read in conjunction with the other CEDD NEC Playbooks. As CEDD continues to accumulate experience and improve its project delivery processes, new examples, tools and industry knowledge will be added over time.

This playbook does not intend to provide any legal opinion/interpretation of the contract.

Structure of this playbook

This playbook is structured into the following chapters:

1. **Mindsets to reduce transaction costs as the *Client*:** Introduction to transaction costs and mindsets that helps project teams reduce avoidable effort.
2. **Pre-construction stage:** Approaches to clarify requirements, improve design readiness, streamline consultancy outputs, support constructability and manage Site Information early.
3. **Procurement stage:** Good practices to optimise contract packaging, select appropriate NEC ECC secondary Options, allocate risks fairly and structure procurement around project needs.
4. **Construction stage:** Practical measures to manage risks, Cost Savings Design, interfaces, material approvals, compensation events and supervision arrangements more efficiently.
5. **Handover / operations and maintenance stage:** Strategies to standardise handover information, align review timelines, resolve O&M issues early and support smoother transition into operation.
6. **Digital applications:** Use of CDEs, BIM, site management systems and AI tools to facilitate information flow, reduce duplication and expedite decisions.

Each chapter contains the following sections:

- **Introduction:** Overview of the chapter's focus and how the relevant practices can support more efficient, collaborative and value-focused delivery.
- **Applying the six Mindsets to selected key topics:** Mapping the six mindsets introduced in Chapter 1 to the respective key topics of Chapters 2-6.
- **Topical issues:** Discussion of day-to-day issues faced by project teams.
- **Examples:** Real-life examples to illustrate key points.

Disclaimer

All materials and information in this playbook should not be regarded as a substitute for and do not constitute part of the prevailing guidelines, practice notes and relevant contract provisions etc. In the event of any inconsistency or conflict between the prevailing guidelines, practice notes or relevant contract provisions etc. and this playbook, the former takes precedence. This playbook is produced for internal information and educational purposes only. It does not constitute, nor is it intended to constitute, nor should it be construed or relied upon as any legal, contractual, or professional advice. In case of doubt, you should seek advice from the NEC Executive Support Team or Contract Advisory Unit or other independent professional or legal advice before taking action on any matters to which the information or material provided in this playbook may be relevant.

Acronyms

Acronyms used in this playbook are as follows:

- AI – Artificial Intelligence
- BIM – Building Information Modelling
- CAVE – Computer-Aided Virtual Environment
- CDE – Common Data Environment
- CE – Compensation Event
- CEDD – Civil Engineering and Development Department
- CLP – CLP Power Hong Kong
- CSD – Cost Savings Design
- DEP – Design Enhancement Package
- DEVB – Development Bureau
- DfMA – Design for Manufacture and Assembly
- DPDS – Digital Project Delivery System
- ECC – Engineering and Construction Contract
- ECI – Early *Contractor* Involvement
- FAC – Framework Alliance Contract
- GBR – Geotechnical Baseline Report
- GEO – Geotechnical Engineering Office
- GI – Ground Investigation
- HD – Housing Department
- HKCG – The Hong Kong and China Gas Company Limited (Towngas)
- HKPF – Hong Kong Police Force
- LandsD – Lands Department
- MTRCL – MTR Corporation Limited
- NDT – Nuclear Densometer Test
- NEC – New Engineering Contract
- NCE – Notification of Compensation Event
- O&M – Operations and Maintenance
- PolyU – Hong Kong Polytechnic University
- PM – *Project Manager*
- PMI – *Project Manager's* Instruction
- RMO – Road Management Office
- RSS – Resident Site Staff
- SI – Site Investigation
- TAC – Term Alliance Contract

- T&C – Testing and Commissioning
- TTA – Temporary Traffic Arrangement
- UU – Underground Utility
- VR – Virtual Reality

1 Mindsets to Reduce Transaction Costs as the *Client*

1.1 Overview

As the *Client*, CEDD officers are not merely administrators of contracts but also, more importantly, owners of project outcomes. This means setting direction, creating the conditions for timely decisions and helping the *Consultant*, *Contractor*, suppliers and stakeholders work as one integrated delivery team.

In NEC projects, transaction costs increase when information is unclear and decisions are delayed. It is not possible to remove every source of transaction costs, as some coordination, checking and administration are necessary for proper project governance. However, by applying the right mindsets, project teams can tackle issues earlier, reduce repeated efforts and expedite decisions before transaction costs build up.

This chapter first explains what transaction costs are and then introduces the six practical mindsets that can help CEDD officers manage transactions more efficiently. The following chapters show how these mindsets can be applied at different project stages to support faster communication, clearer accountability, stronger collaborations and more predictable delivery.



1.2 Transaction costs

Transaction costs are the time, efforts and management resources spent on coordinating, administering and managing a project. This effort is sometimes necessary and valuable, as it supports proper governance, better decisions, quality, safety and delivery confidence. However, when these efforts become excessive, repeated or unclear in purpose, they can take effort away from the works that add value to the project and the community it serves.

These costs are often difficult to manage because they build up gradually. A delayed decision, unclear instruction, repeated check or unresolved issue may seem minor on its own, but across a project these issues can quickly create delays, reworks and unnecessary efforts. Common examples of transaction costs are shown below:

Stage	Examples
Pre-construction Costs of design coordination, approvals, value engineering, constructability review and planning before physical works begin	- Resolving design clashes - Obtaining authority approvals and responding to comments
Procurement Costs of information gathering, bidder engagement, tender evaluation, risk allocation and contract formation before award	- Preparing tender documents and contract packages - Running tender queries, clarifications and pre-tender meetings
Construction Costs of contract administration, supervision, change management, risk management, dispute avoidance, quality control and compliance during delivery	- Managing early warnings and compensation events - Coordinating subcontractors and resolving programme delays
Handover / Operation and Maintenance Costs of operating support, maintenance planning, performance monitoring and future modification decisions after handover	- Coordinating access for inspection, repair and replacement works - Evaluating additional requirements by maintenance parties
Digital Applications Costs of data management, system integration, digital processes, data quality and user adoption across the project lifecycle	- Managing multiple data sources and inconsistent formats - Managing CDEs and access permissions

The aim of this playbook is not to remove transaction costs completely. Effective project governance and delivery require robust coordination, checking and contract administration. The focus is to reduce avoidable efforts by improving how project teams work, share information, make decisions and resolve issues.

As transaction costs can arise in various ways, they cannot be reduced by a single procedure or covered fully in an exhaustive guide. The most effective response is to apply the right mindset in day-to-day project delivery. The next section introduces six practical mindsets to help CEDD project teams do this.

1.3 Six mindsets to reduce transaction costs

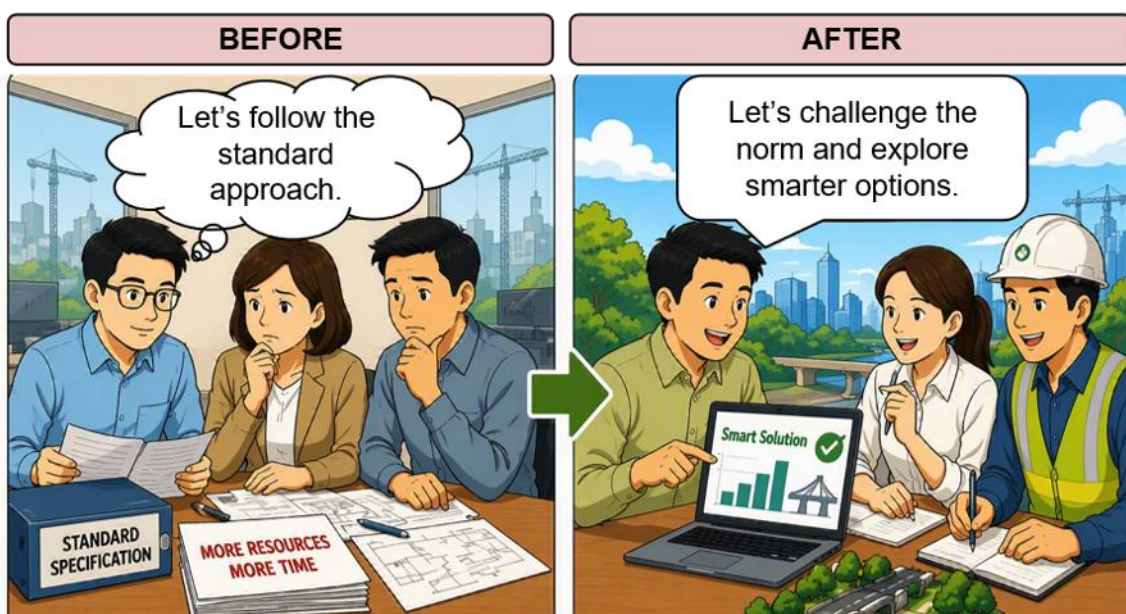
The six mindsets set out below are practical ways of thinking and working that can help us reduce avoidable transaction costs. They are not separate procedures or additional approval steps. Instead, they provide simple lens for making better decisions, improving communication, resolving issues earlier and keeping efforts focused on project outcomes.

1.3.1 Adopt a cost-conscious mindset

Create value by understanding the cost and time implications of decisions at an early stage, so that resources are used efficiently and allocated effectively to maximise value from capital works expenditure.

- **Make cost and time impacts visible early:** Review the likely cost and programme impact of key decisions, instructions, design changes and approval delays before they are fixed.
- **Raise probable cost impacts early:** When there is a probable cost and/or time impact, mitigation actions can be discussed and decided early in the Early Warning process before the issue escalates into a substantial risk.
- **Focus on whole-life asset value:** Consider maintenance access, asset performance, operational reliability and long-term affordability when selecting design, material, construction and digital options.
- **Review legacy specifications and over-design:** Consider whether standard details, prescriptive requirements or historic preferences remain suitable and proportionate.
- **Use NEC mechanisms to keep forecasts realistic:** Proper adoption of Early Warnings, CEs, programme, etc., to articulate forecast Total of the Prices and Price for Work Done to Date and to keep forecasts realistic.

1. COST-CONSCIOUS MINDSET

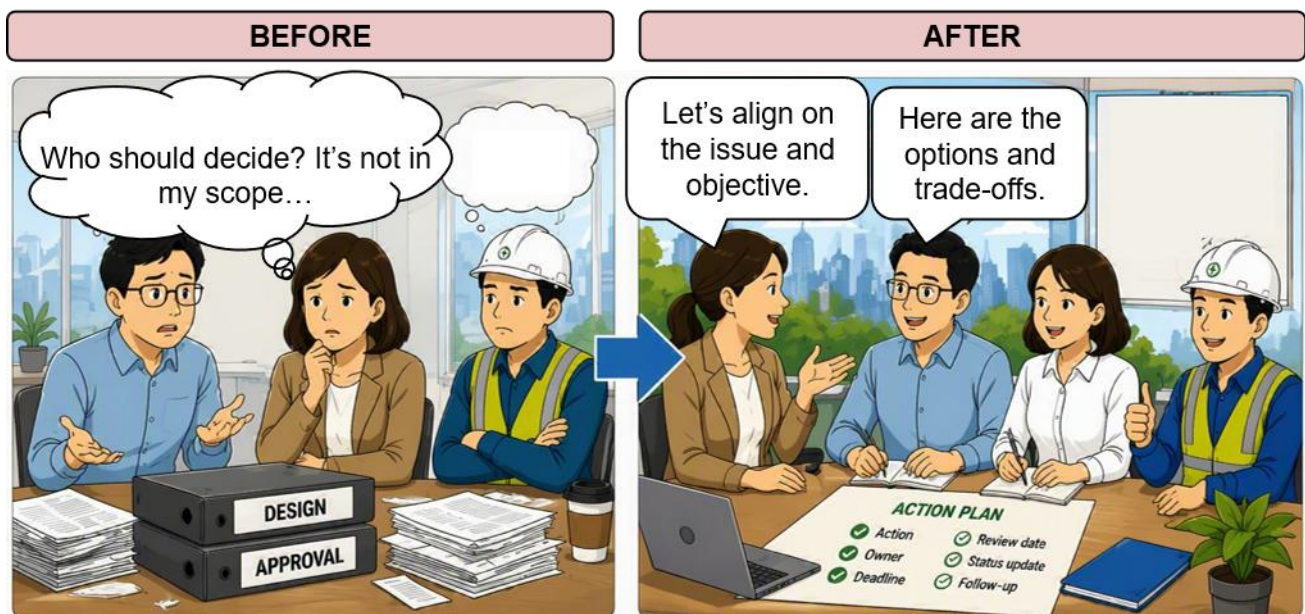


1.3.2 Lead with a facilitator mindset

Enable smoother progress by resolving issues promptly, clarifying decisions and helping others move forward in a practical, timely and coordinated manner.

- **Give clear and complete instructions:** Make requests and instructions easy to follow by stating clear of what is required, by when and why. Endeavour to coordinate responses from all relevant government stakeholders so the *Consultant / Contractor* receive clear answers rather than multiple partial or inconsistent responses.
- **Set and honour response time:** Agree internally who will respond, by when and how to escalate if the target date cannot be met. Response time should be actively managed rather than treated as informal aspirations.
- **Resolve, not just reject:** Agree, accept or propose feasible alternatives. Avoid simply rejecting without helping the project move forward.
- **Bring in stakeholders and authorities early:** Take the initiative to engage relevant stakeholders and authorities early, align CEDD's position internally and then respond to the *Consultant / Contractor* with consistent instructions.
- **Take the lead in addressing comments:** Take the lead in addressing the comments of stakeholders on the *Consultant's / Contractor's* submissions.

2. FACILITATOR MINDSET



1.3.3 Embrace an open-to-innovation mindset

Remain open to better ways of delivering outcomes and be willing to explore new ideas where they can improve value, efficiency, or delivery.

- **Ask “why” before “how”:** Before accepting an engineering design, standard detail, or specification, review the purpose it serves and consider whether the same outcome can be achieved in a more efficient way.
- **Specify outcomes where appropriate:** State the required performance, constraints and acceptance criteria rather than dictating the method. This gives the *Consultant / Contractor* room to innovate designs, construction sequence, methodologies and safety while preserving quality and compliance.
- **Learn from other projects and markets:** Be proactive in hunting for successful cases. Make reference to good examples from CEDD and other works departments, successful global achievements and industry practices as to identify more efficient delivery methods.
- **Create space for supply chain innovation:** Invite consultants, contractors, subconsultants, subcontractors, suppliers and specialists to propose practical, safe and efficient alternatives. Allow sufficient time for these ideas to be adopted.
- **Keep value engineering active throughout delivery:** Optimisation and value engineering should be active conversations throughout every stage of project delivery.

3. OPEN-TO-INNOVATION MINDSET

BEFORE



AFTER

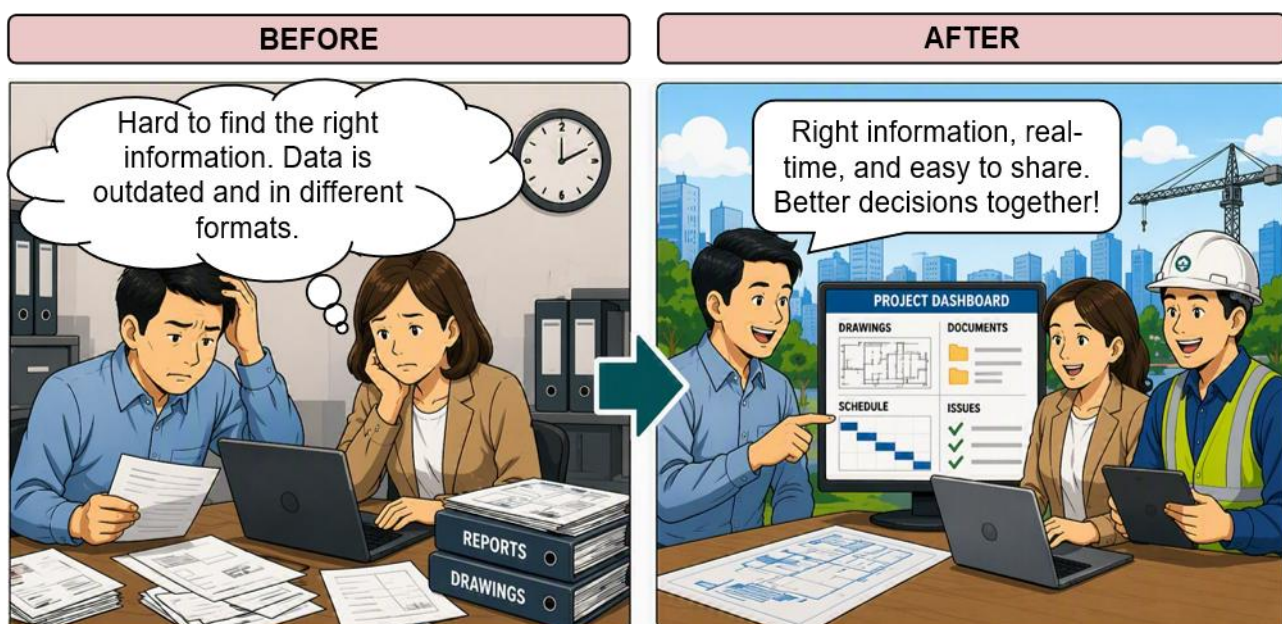


1.3.4 Adopt a digital-first mindset

Manage data and utilise digital tools to support clearer, faster and more connected decision-making, with information that is easier to access, share and act upon.

- **Use BIM as an essential digital delivery tool:** Use BIM as a live and evolving representation of the project across design, construction and handover. It is not merely a static deliverable or a record; it should support coordination, interface management, progress tracking, risk management and decision making throughout the project lifecycle.
- **Structure project data consistently:** Apply standard breakdown structures and data definitions for Digital Works Supervision System (DWSS), E-payment, NEC Health Check, etc., to support consistent recording, integration and reuse of data across systems and project stages.
- **Use AI solutions to support delivery:** Apply proven AI solutions leveraging available project data and systems to data-intensive workflows, such as document management, data retrieval and analysis. Use AI outputs responsibly, recognising their limitations and ensuring compliance.
- **Replace manual and paper-heavy processes with digital workflows:** Use digital workflows for submissions, approvals, actions, instructions and records wherever practicable. Avoid parallel paper and digital routes unless there is a clear transitional need.
- **Create a single source of truth:** Use a CDE to centralise drawings, models, correspondences, decisions and action status and integrate project systems wherever practicable, ensuring data is consistent and up-to-date.

4. DIGITAL-FIRST MINDSET



1.3.5 Deliver through an action-oriented mindset

Think slow, act fast. An action-oriented mindset helps project teams move expeditiously from discussion to decision and from decision to delivery.

- **Turn discussions into clear actions:** Conclude meetings and workshops with agreed actions, owners, target dates and follow-up arrangements, such that issues do not remain as open-ended discussions.
- **Make timely decisions based on available information:** Avoid waiting for perfect information where a practical decision can be made with reasonable confidence or engineering judgement. Record key assumptions and update them as better information becomes available. Escalate the issue to superiors for timely decision-making.
- **Follow through after issues are raised:** Do not just use Early Warnings, Early Warning Registers, or progress meetings to identify problems. Use these tools to agree mitigation actions and track them to completion.
- **Keep actions visible and accountable:** Maintain a live action tracker showing each issue, responsible party, target date and status, so the project team can monitor progress and avoid repeated discussions.

5. ACTION-ORIENTED MINDSET

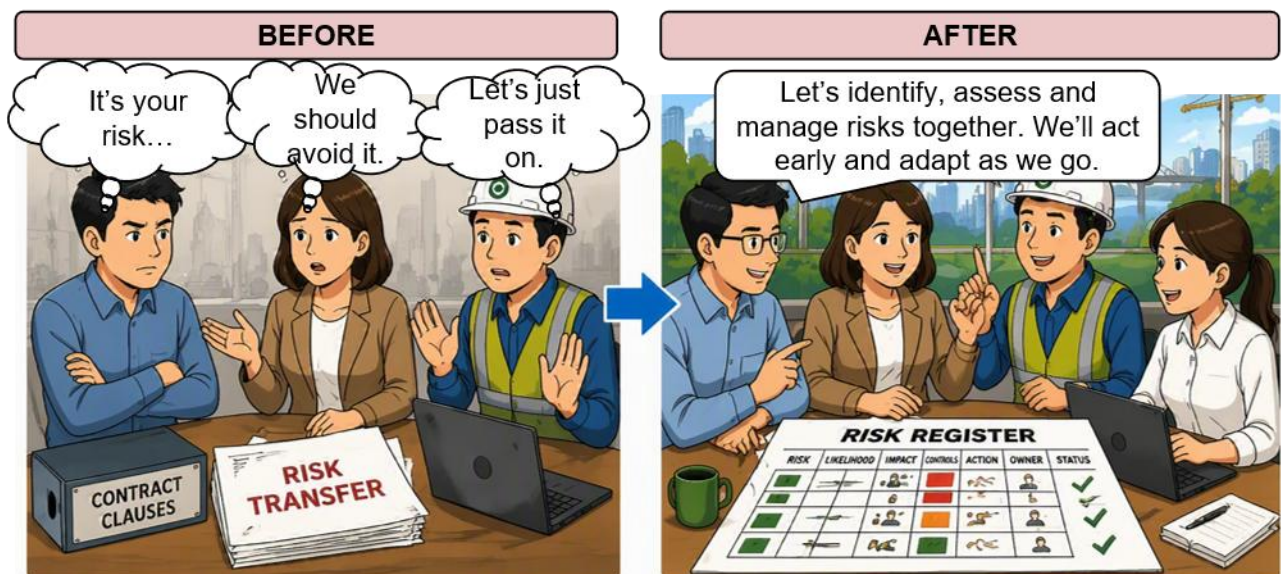


1.3.6 Act with a risk-intelligent mindset

Risks should be understood, discussed and addressed early, rather than transferred or avoided as an ongoing liability.

- **Risk identification:** Identify underground risks by utilising more advanced GI/SI (e.g. ground penetration radar, geophysics) and by experienced professionals.
- **Allocate risk to the party best able to manage it:** Assign each risk to the party with the capability and actual control to manage it. Transferring all risks to the *Consultant* and *Contractor* can increase risk premiums, defensive behaviour and later disputes.
- **Transferring risk is not mitigation:** Passing a risk through the contract does not remove the underlying risk if the receiving party cannot control it. Where a risk is retained or shared by CEDD, define the actions, cost assessment mechanism, owners and decision dates needed to manage it actively.
- **Keep the Early Warning Register live:** Update the Early Warning Register continuously to reflect current site reality. It should be a dynamic management tool, not a static administrative requirement.
- **Utilise Early Warnings:** Encourage the project team to raise Early Warnings as a standard professional practice and proactive management tool, not a sign of failure or a channel for blame.
- **Balance caution with effective delivery:** Good governance requires sound judgement and proportionate control, not avoidable administrative delay. Decisions should be driven by delivery outcomes as well as compliance.

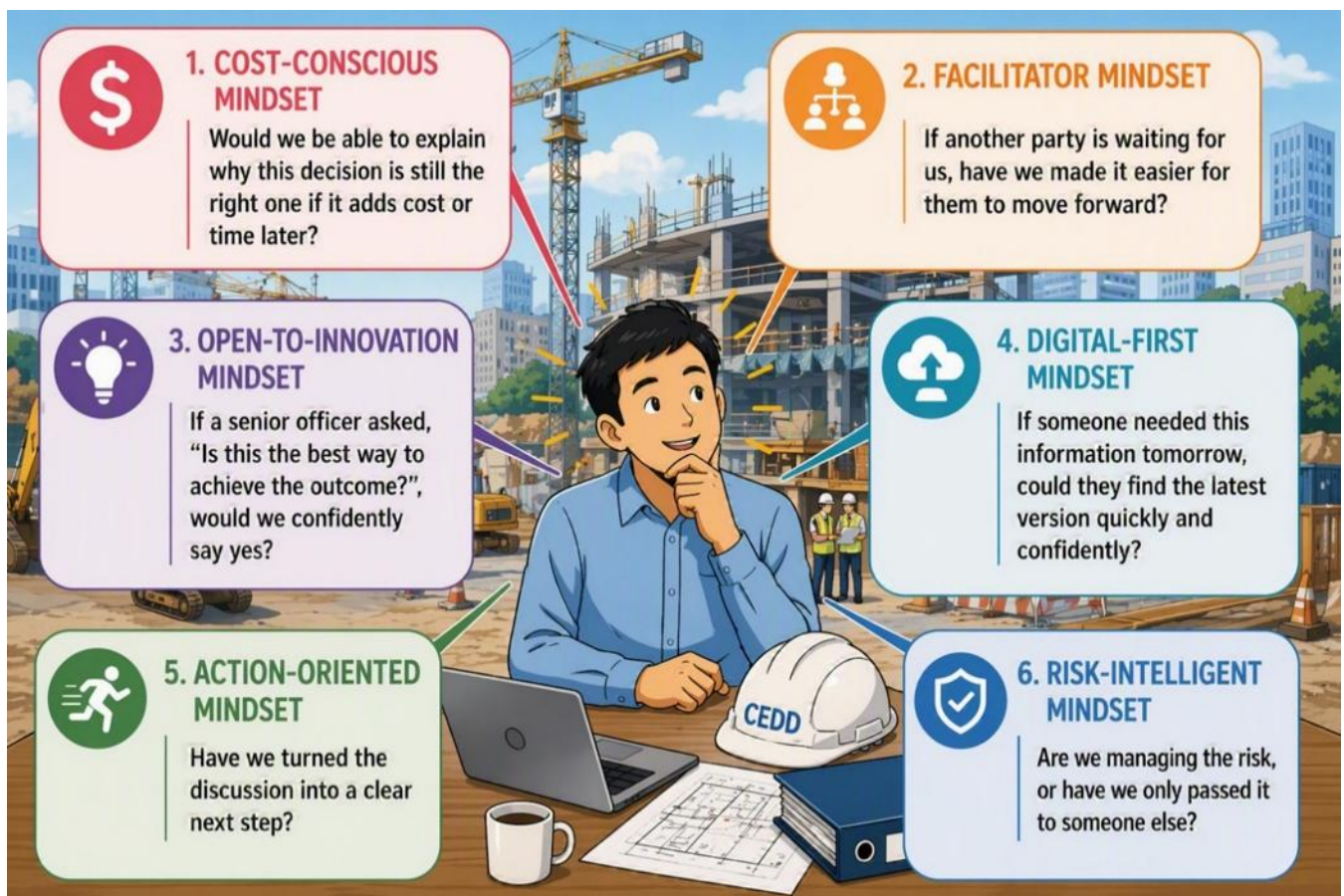
6. RISK-INTELLIGENT MINDSET



1.3.7 Applying the six mindsets: a simple self-test

The six mindsets can also be used as a simple self-test when project teams are making decisions, resolving issues, or reviewing how the works are being managed. The questions below are not a formal checklist or approval requirement. They are prompts to help teams pause, test their approach and consider whether they are creating avoidable transaction costs.

Used regularly, the self-test can help project teams identify where action is needed. For example, where information is unclear, decisions are taking too long, risks are not being raised early, or effort is being spent on repeated checking and rework. It is intended to support better judgement, clearer conversations and more timely action in day-to-day project delivery.



[Video of DD and Office H/PM's Messages on the Six Mindsets](#)



2 Reducing Transaction Costs in the Pre-Construction Stage

2.1 Overview

Pre-construction shapes cost and delivery certainty. It is also where project teams spend significant time gathering information, developing designs, negotiating scopes and securing approvals. Prolonged approvals from authorities and stakeholders can add further time implications and risks, thus increasing transaction costs. A collaborative and value-driven approach builds early alignment, expedites decisions and avoids late redesign, so project teams enter construction with confidence and shared ownership.

This chapter sets out practical pre-construction practices to define the project clearly, align stakeholders early and streamline approvals and tender preparation. The aim is a smoother transition into construction, with fewer avoidable iterations and lower transaction costs.

2.2 Applying the six mindsets to selected key topics

The topical issues discussed in the following section are not exhaustive, but are selected examples showing where transaction costs may be reduced in practice. While all six mindsets are relevant across project delivery, some are more directly applicable to certain issues than others. The table below highlights the key mindsets for each selected topic, to help project teams reduce avoidable effort and improve delivery.

Topical Issues	Mindsets
1. Early identification and verification of requirements	✓ Cost-Conscious ✓ Facilitator ✓ Risk-Intelligent
2. Streamlining consultancy deliverables and handover	✓ Cost-Conscious ✓ Facilitator ✓ Digital-First ✓ Action-Oriented
3. Early <i>Contractor</i> Involvement and constructability reviews	✓ Open-to-Innovation ✓ Action-Oriented
4. Innovative materials and database for approved materials	✓ Cost-Conscious ✓ Open-to-Innovation ✓ Digital-First
5. Designing with sufficient site investigation data	✓ Cost-Conscious ✓ Digital-First ✓ Risk-Intelligent

2.3 Topical issues

2.3.1 Issue no. 1 – Early identification and verification of requirements

By involving key users, maintenance parties and approving authorities into the conversation early, CEDD can turn requirements into shared commitments before design requirements become difficult to change. This reduces late redesign, shortens approval cycles and gives the project team greater confidence before moving into construction. CEDD should lead with **facilitator**, **risk-intelligent** and **cost-conscious mindsets**, ensuring the most cost-effective design in the design stage. For good practices and details on clarity in requests, *refer to Section 5.3.2 of the CEDD NEC Playbook (Design)*.

By adopting these mindsets and practices, transaction costs can be reduced by:

- Minimising rework and design changes;
- Reducing the number of stakeholder meetings and iterations;
- Shortening regulatory approval cycles;
- Avoiding downstream disputes.

EXAMPLE – Phased Delivery and Early Stakeholder Engagement for Cycle Tracks in the New Territories

Project Name

Cycle Tracks Connecting Northwest New Territories with Northeast New Territories

Project Office

West Development Office

Description

The project team reduced transaction costs by adopting a phased, multi-consultant and multi-**contractor** delivery strategy for a large and cross-district project, allowing lower-risk sections to proceed first while more complex sections were developed in parallel.

Mindsets demonstrated

- ✓ *Cost-conscious*: Phased delivery and parallel construction improved budget control
- ✓ *Open-to-innovation*: Used advanced visualisation and VR consultation to improve stakeholder engagement
- ✓ *Action-oriented*: Proactively coordinated stakeholders and secured early buy-in
- ✓ *Risk-intelligent*: Sequenced delivery to manage risks and complex interfaces early

Value created

- Improved programme certainty: Lower-risk sections delivered first
- Fewer coordination bottlenecks: Better alignment across multiple parties
- More reliable delivery: Parallel construction improved overall efficiency
- Reduced risk of redesign and delay: Early digital engagement secured buy-in
- Long-term public value: Safer, more connected and more sustainable infrastructure

2.3.2 Issue no. 2 – Streamlining consultancy deliverables and handover

By streamlining consultancy deliverables and by planning handover between consultancies early, CEDD can reduce repeated effort while preserving design intent and project knowledge. Clearer scopes, templates, review routes and handover requirements help the *Consultant* produce outputs, particularly for BIM or impact assessment models, that are easier to assess, easier to transfer, and more useful for the next stage of delivery.

A well-planned consultancy handover also helps the next *Consultant* build on previous work, rather than rediscovering assumptions, rechecking decisions, or repeating analysis. This reflects a **facilitator mindset** by making reviews and decisions easier, a **digital-first mindset** by improving information capture and transfer, a **cost-conscious mindset** by reducing duplicated effort, and an **action-oriented mindset** by keeping project knowledge moving between stages.

By adopting these mindsets and practices, transaction costs can be reduced by:

- Minimising rework, duplicated effort and repeated analysis;
- Shortening review and approval cycles;
- Improving design continuity between consultancy stages;
- Preventing misunderstandings, information gaps, and downstream disputes.

STREAMLINING HANDOVER BETWEEN CONSULTANCIES

Disjointed Handover



Streamlined Handover

Handover Package – Design intent, latest drawings, key assumptions, outstanding actions, lessons learned, reference documents...



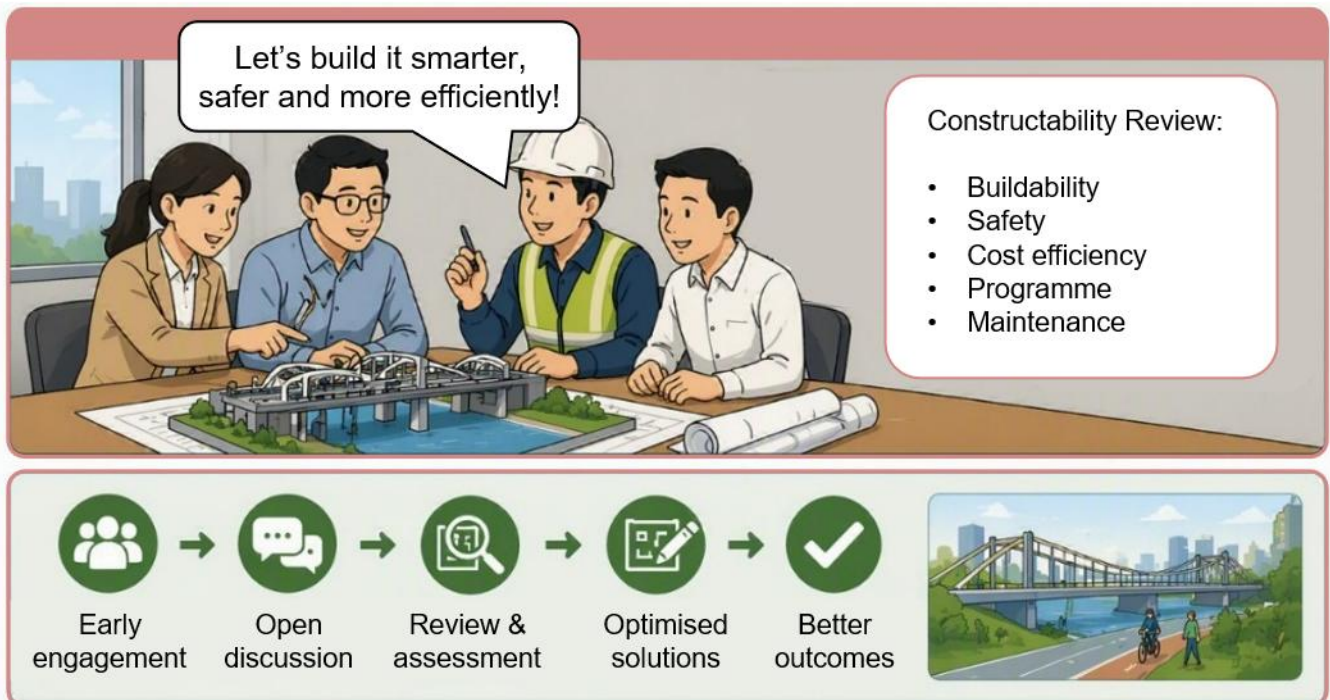
2.3.3 Issue no. 3 – Early Contractor Involvement and constructability reviews

By involving the *Contractor* and gathering specialist supply chain input before the design is locked in, CEDD can review buildability early and turn practical construction knowledge into better design decisions. This helps the project team enhance design quality, improve construction sequences and enter construction with greater certainty, reflecting an **action-oriented** and **open-to-innovation mindset**. For more details on ECI, *refer to Section 5.3.4 of the CEDD NEC Playbook (Design)*.

By adopting these mindsets and practices, transaction costs can be reduced by:

- Improving buildability;
- Enhancing coordination efficiency;
- Improving cost effectiveness and accuracy.

EARLY CONTRACTOR INVOLVEMENT & CONSTRUCTABILITY REVIEWS



2.3.4 Issue no. 4 – Innovative materials and database for approved materials

By being open to proven innovative materials and by reusing accepted material knowledge through a centralised database, CEDD can shorten approval cycles while maintaining technical confidence. This helps project teams adopt better solutions faster, reflecting **cost-conscious**, **open-to-innovation** and **digital-first mindsets**. For more details on innovative measures, *refer to Section 1.3.2 of the CEDD NEC Playbook (Design)*. For an example of a Common Data Environment used in the Hung Shui Kiu/Ha Tsuen New Development Area project, *refer to Section 3.3.4*.

By adopting these mindsets and practices, transaction costs can be reduced by:

- Lowering coordination effort;
- Supporting innovation efficiently;
- Facilitating the approval process.

EXAMPLE – S960 Steel Footbridge

Project Name

Fanling North New Development Area

Project Office

North Development Office

Description

The project team reduced transaction costs by adopting ultra-high-strength S960 steel to address site constraints, reduce structural weight and minimise foundational requirements. CEDD collaborated with PolyU on research and material trials and with HKU and LandsD on 3D swept-path analysis and virtual construction simulations.

Mindsets demonstrated

- ✓ *Cost-conscious*: Simplified construction, less dependent on complex foundations
- ✓ *Open-to-innovation*: First-of-its-kind S960 steel application through collaboration
- ✓ *Action-oriented*: Faster and coordinated implementation across stakeholders
- ✓ *Risk-intelligent*: New technical guidance and standards to ensure safe adoption

Value created

- 90% reduction in bridge weight: Enabled smaller foundations, 28% cost reduction
- ~2,400 tonnes of carbon emissions reduced
- Programme advanced by 6 months for early completion
- Improved safety: Reduced risks and labour demand during construction
- Greater public value: Better acceptance and project reputation



EXAMPLE – S690 High-Strength Steel and Design for Manufacture and Assembly (DfMA)

Project Name

Cross Bay Link (CBL), Tseung Kwan O

Project Office

East Development Office

Description

The project team adopted S690 high-strength steel for the main arch, extensive off-site prefabrication, DfMA and float-over installation to improve delivery efficiency.

Mindsets demonstrated

- ✓ *Cost-conscious*: Simplified construction, reduced material and transport costs
- ✓ *Open-to-innovation*: First-of-its-kind S690 steel application through collaboration
- ✓ *Action-oriented*: Integrated design, fabrication and construction planning in delivery
- ✓ *Risk-intelligent*: Off-site prefabrication and float-over installation reduced marine construction risks

Value created

- Float-over method enabled bridge erection within 5 hours
- HK\$350M cost savings
- Reduced CO₂ emissions by ~30%
- Completed 9 months earlier
- Improved safety: Avoided 1.1 million man-hours of high-risk marine works



2.3.5 Issue no. 5 – Designing with sufficient site investigation data

Better site information gives the project team confidence to design, price and allocate risk more equitably. By planning site investigation (SI) early and targeting the data that matters most, CEDD can reduce avoidable assumptions, improve buildability and prevent uncertainty from becoming downstream claims or redesign. This reflects a **risk-intelligent, cost-conscious** and **digital-first mindset**. For more details on site investigation, *refer to Section 2.2.1 of the CEDD NEC Playbook (Design)*.

By adopting these mindsets and ensuring sufficient SI data during design, transaction costs can be reduced by:

- Preventing costly redesign;
- Minimising delays during approvals;
- Making reasonable assumptions and establishing baselines in the Contract;
- Improving accuracy of risk allocation;
- Supporting better constructability planning.

EXAMPLE – NEC4 Framework Contract for Advanced GI Works

Project Name

Yuen Long South New Development Area

Project Office

West Development Office

Description

The project team reduced transaction costs with the NEC4 Framework Contract, to undertake advanced ground investigation and enabling works through separate Work Orders before committing the main works package. This allowed the *Contractor* and project teams to gain a shared understanding of site conditions.

Mindsets demonstrated

- ✓ *Cost-conscious*: More accurate design before pricing, lower risk of rework or claims
- ✓ *Facilitator*: Procurement aligned with site access and land resumption realities
- ✓ *Digital-first*: Better use of site data to inform decisions and planning
- ✓ *Action-oriented*: Early works enabled value engineering and design optimisation before the main works
- ✓ *Risk-intelligent*: Reduced uncertainty around subsoil conditions and obstructions

Value created

- Better site information before the main works
- Lower risk of future rework, changes and claims
- Improved pricing confidence for the main works package
- Shorter timeline, lower overall cost
- Better overall value: Healthier price competition, improved value for money

2.4 Summary of reduction of transaction costs during pre-construction stage

Item No.	Procedure	Reference
1.	OVERALL	
1.1	Streamlining consultancy deliverables and handover	Sec. 2.3.2
1.2	Innovative materials and database for approved materials	Sec. 2.3.4
2.	DESIGN	
2.1	Early identification and verification of requirements	Sec. 2.3.1
2.2	Designing with sufficient site investigation data	Sec. 2.3.5
2.3	Early <i>Contractor</i> Involvement and constructability reviews	Sec. 2.3.3

3 Reducing Transaction Costs in the Procurement Stage

3.1 Overview

Procurement shapes how a project will be delivered. When tender requirements, risk allocation and approval routes are clear and proportionate, project teams can reduce tender queries and help tenderers price the works with greater confidence. Clear documents, timely clarifications, and well-structured contract provisions also reduce the risk of misunderstanding after award. By setting up the contract properly from the outset, CEDD can improve market participation, support fair competition and create a stronger foundation for efficient project delivery.

This chapter applies Chapter 1's six mindsets to procurement: clearer information, proportionate requirements, better risk allocation and earlier engagement.

3.2 Applying the six mindsets to selected key topics

The topical issues discussed in the following section are not exhaustive, but are selected examples illustrating where transaction costs may be reduced in practice. While all six mindsets are relevant across project delivery, some are more directly applicable to particular issues than others. The table below shows how the six mindsets can be applied to these topical issues to help project teams identify practical ways to reduce transaction costs.

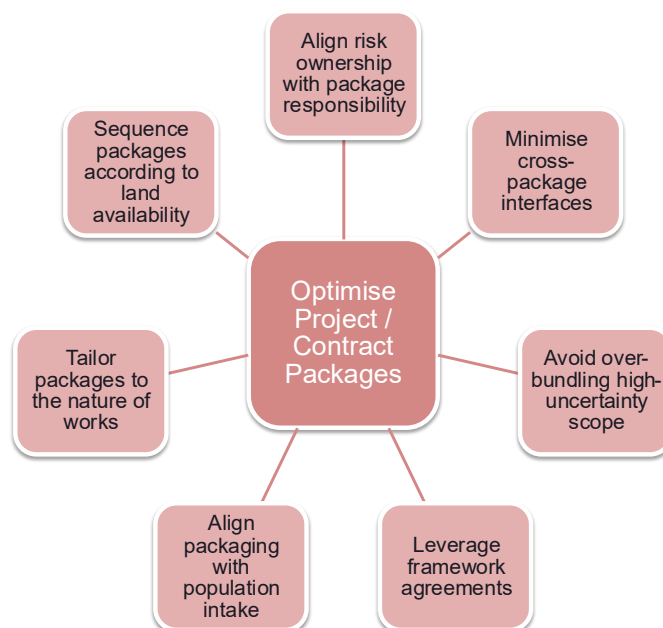
Topical Issues	Mindsets
1. Optimising project / contract packaging	✓ Cost-Conscious ✓ Facilitator ✓ Risk-Intelligent
2. Innovative procurement approaches	✓ Open-to-Innovation ✓ Risk-Intelligent
3. Leveraging NEC ECC Secondary Options	✓ Cost-Conscious ✓ Open-to-Innovation ✓ Digital-First ✓ Action-Oriented
4. Balanced risk allocation and collaborative contracting	✓ Cost-Conscious ✓ Risk-Intelligent
5. Critical review of contract specifications	✓ Cost-Conscious ✓ Open-to-Innovation

3.3 Topical issues

3.3.1 Issue no. 1 – Optimising project / contract packaging

By evaluating the benefits and risks of different project / contract packaging options at appropriate junctures during the planning and delivery stages, CEDD can reduce unnecessary interfaces and give each package a clearer delivery purpose and schedule which could flexibly adapt to the latest market conditions. For example, entrustment can be utilised between projects or departments to optimise the delivery of projects / contracts. Good packaging aligns scope, risk, land availability and stakeholder needs, helping project teams avoid coordination burden and create a smoother path to delivery. This applies **cost-conscious**, **facilitator** and **risk-intelligent mindsets** by reducing interfaces, clarifying accountability and packaging risk appropriately.

The following good practices can be adopted:



Project teams can also utilise CEDD's term contracts for advanced works, such as ground investigation and UU diversion, or minor enabling works in conjunction with the main works contract. This can reduce potential risks in the main contracts and reduces transaction costs associated with pending UU diversion, potential disputes and lengthening of construction period.

These practices reduce transaction costs by:

- Reducing interfaces to manage;
- Reducing negotiation effort;
- Reducing administrative workload.

EXAMPLE – Integration of Two Projects to Minimise Interface

(For more details, refer to Section 4.3.6 of the CEDD NEC Playbook (Design))

Project Name

Expansion of Aberdeen Typhoon Shelter

Project Office

Civil Engineering Office (Special Duties (Works) Division)

Description

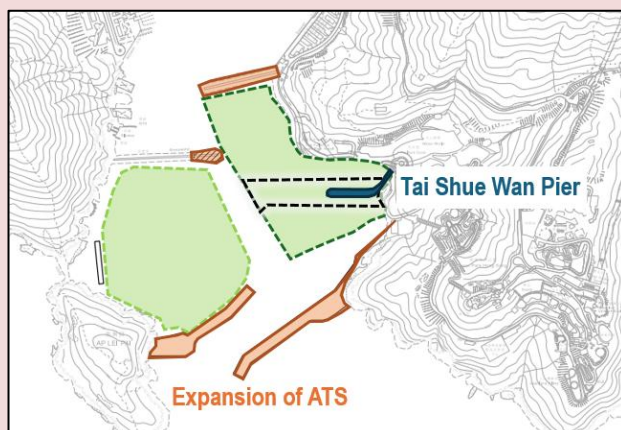
Originally, there were two separate proposed projects: the Expansion of Aberdeen Typhoon Shelter (ATS); and the Tai Shue Wan Pier. CEDD initiated the integration of these two projects by creating landing facilities onto the new breakwater and thus deleted the Pier. An in-house desktop study was conducted to investigate the benefits of such integration. In parallel, CEDD engaged early with the relevant parties, i.e. bureaux and consultants of the two projects, to resolve the administrative and contractual issues and facilitate decision-making. This joint engagement minimised project interface issues, while early resolution of governance and implementation challenges prevented downstream conflict and rework.

Mindsets demonstrated

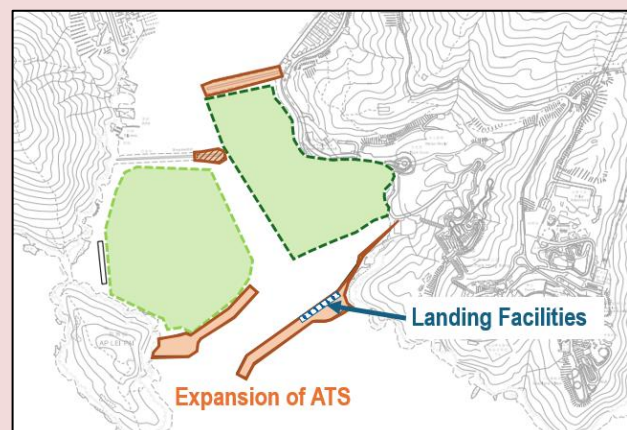
- ✓ *Facilitator*: Streamlined coordination and decision-making through early engagement
- ✓ *Action-oriented*: Joint engagement to reduce duplication in interfacing and study
- ✓ *Risk-intelligent*: Addressed issues early to avoid downstream conflicts and rework

Value created

- Simplified delivery: Single project, consultancy agreement and works contract
- Time and cost savings: Reduced statutory procedures, design approvals, tendering and funding processes
- Minimised interfacing risks and disruptions
- Increased anchorage areas



Original Design



Integrated Design

3.3.2 Issue no. 2 – Innovative procurement approaches

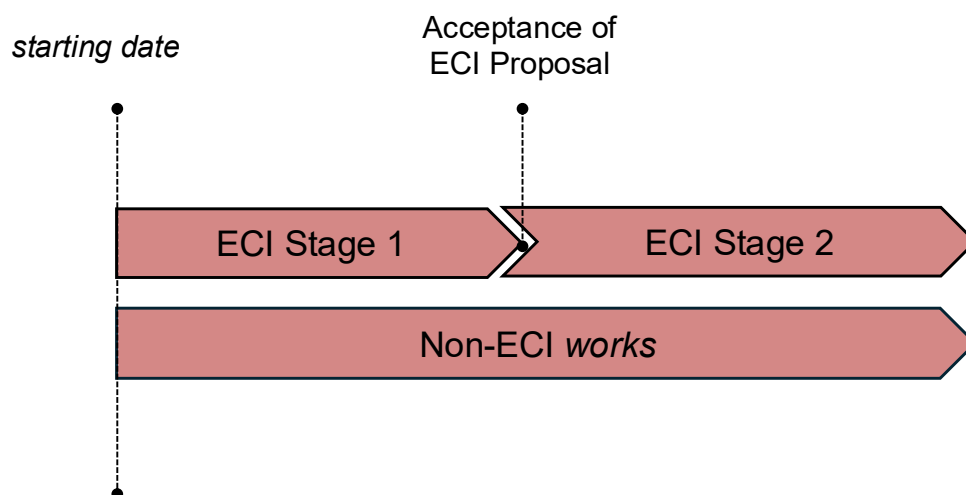
Innovative procurement approaches help deal with project-specific challenges by shaping the procurement strategy around the needs of the project. Thinking about them early can influence design, packaging, risk allocation and delivery arrangements. These helps improve coordination, clarify responsibilities and manage interfaces more effectively. They also shows **open-to-innovation** and **risk-intelligent mindsets** by choosing procurement routes that better fit the project.

These practices reduce transaction costs by:

- Simplifying procurement processes;
- Clarifying risk allocation and responsibilities early;
- Enabling early market engagement;
- Promoting collaboration.

Examples of innovative procurement approaches are shown below and discussed in **Section 5.2.3 of the CEDD NEC Playbook (Design)**. Early and proactive review of procurement options can shape key decisions from the outset, including design development, packaging, risk allocation and delivery strategy, so that the project is structured in a way that better supports efficient delivery.

- Early *Contractor* Involvement (ECI); [Section 5.3.4 of the CEDD NEC Playbook \(Design\)](#)
- Framework procurement; [Section 5.2.3 of the CEDD NEC Playbook \(Design\)](#)
- Direct or centralised procurement; [Section 5.2.3 of the CEDD NEC Playbook \(Design\)](#)
- Hybrid ECI.



EXAMPLE – Direct Procurement through Framework Contract

Project Name
San Tin Technopole

Project Office
North Development Office

Description

The project team explored a framework-based direct procurement arrangement, allowing CEDD to procure selected materials and equipment directly from suppliers or manufacturers across multiple contracts. This approach reduced repeated procurement effort, improved supply chain coordination, and lowered mark-ups arising from multiple contractual layers.

Mindsets demonstrated

- ✓ *Cost-conscious*: Reduced transaction costs and *Contractor* risk premiums
- ✓ *Open-to-innovation*: Tested a procurement approach that differed from the traditional main *Contractor*-subcontractor-supplier model
- ✓ *Action-oriented*: Moved from concept to trial by applying the framework approach across selected contracts and material categories
- ✓ *Risk-intelligent*: Reduced *Contractor* supply chain risk by giving CEDD a more direct role in securing key materials and equipment.

Value created

- Reduced transaction costs from repeated supply chain handling and layers
- Lower project costs caused by transaction costs and *Contractor* risk premiums
- Reduced uncertainty passed through *Contractor* pricing
- Better connection between suppliers and subcontractors across multiple contracts
- Scalable procurement model: Practical for other projects needing common suppliers across multiple contracts

3.3.3 Issue no. 3 – Leveraging NEC ECC Secondary Options

By linking incentives to the project outcomes that matter most, CEDD can encourage the *Contractor* to focus effort on critical milestones, safety, handover, or other performance priorities. Used well, NEC ECC Secondary Option X20 (Key Performance Indicators) turns performance management into a shared delivery tool rather than a monitoring exercise, reflecting **cost-conscious** and **action-oriented mindsets**.

Secondary Option X30 (Innovation & Technology) gives project teams a structured way to invite, assess and adopt innovation and technology solutions. By focusing proposals on real delivery pain points, CEDD can turn innovations into practical improvements in site productivity, administration, reporting and decision-making, reflecting **open-to-innovation** and **digital-first mindsets**. For more information on the operation of Secondary Option X30, *refer to Section 4.1 of the CEDD NEC Playbook (Financial Management)*.

By adopting these mindsets and ensuring NEC ECC Secondary Options are utilised appropriately, transaction costs can be reduced by:

- Reducing repeated follow-up and supervision;
- Speeding up decision-making and implementation;
- Encouraging practical solutions to delivery problems.

EXAMPLE – NEC ECC Secondary Option X20 for Timely Site Clearance

Project Name
San Tin Technopole

Project Office
North Development Office

Description

The project team reduced transaction costs by using NEC ECC Secondary Option X20 to introduce KPIs linked to the timely clearance of specific site areas, the early completion of tree survey reports and site appraisal schemes.

Mindsets demonstrated

- ✓ *Cost-conscious*: Focused effort on site clearance and early deliverables for land handover and road openings
- ✓ *Facilitator*: Clearer delivery priorities, project team focused on critical enabling works
- ✓ *Action-oriented*: Set clear KPIs and incentives to drive timely action and progress
- ✓ *Risk-intelligent*: KPIs and incentives to manage risks early, not react to delay later

Value created

- Timely delivery under environmental and land resumption constraints
- Lower risk of delay to first population intake, handover to other contracts and claims
- Smoother coordination across stakeholders and enabling works
- Reduced potential prolongation and dispute costs
- Better project value: More efficient resource use and overall project delivery

3.3.4 Issue no. 4 – Balanced risk allocation and collaborative contracting

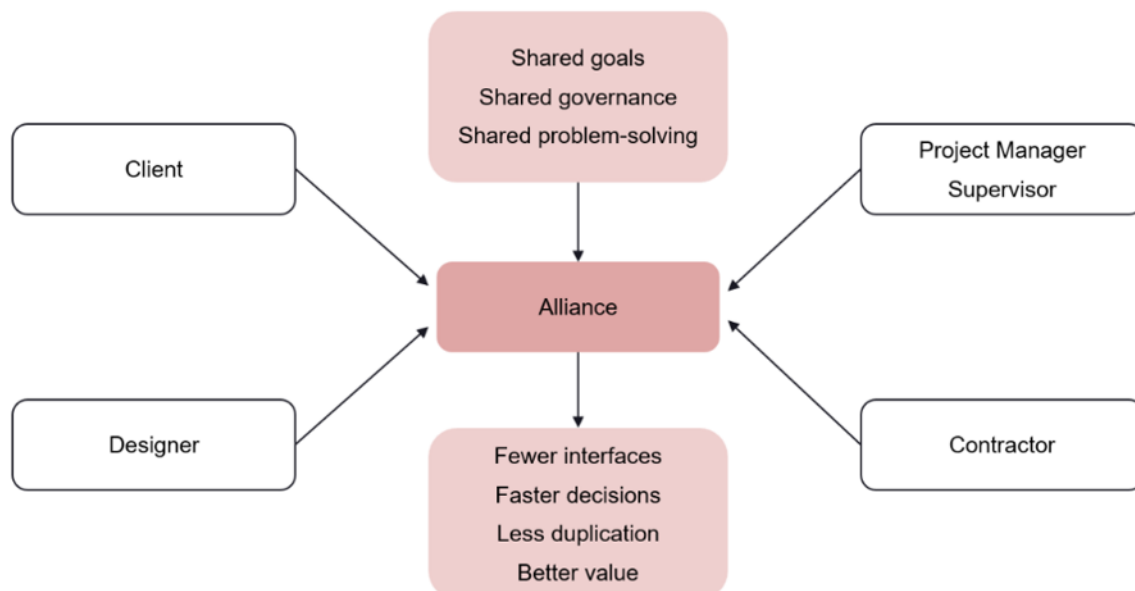
By allocating risks to the parties best able to manage them, CEDD can create a more confident and collaborative tender environment. Fair allocation reduces over-pricing, avoids paying for excessive risk premium and encourages parties to manage uncertainty together before disputes arise. This demonstrates **risk-intelligent** and **cost-conscious mindsets** by avoiding passing risks that tenderers cannot reasonably price for, thereby reducing the premiums created by uncertainty.

These practices reduce transaction costs by:

- Assigning risks to the parties best able to manage them;
- Fostering early and open communication to resolve issues before escalation.

Information can be included in the tender documents to provide greater clarity for tenderers as they make assessments for works activities and balance risk allocation. Examples include:

- Underground Utility Schedule
- Geotechnical Baseline Report (GBR) [Section 5.2.2 of the CEDD NEC Playbook \(Design\)](#)



Project teams may consider collaborative contracting where projects require multiple parties to work together across shared interfaces, risks and outcomes. These arrangements can improve alignment, support shared problem-solving and reduce transaction costs by cutting duplication, delay and dispute. This may include NEC Secondary Option X12 (Multiparty Collaboration); as well as newer collaborative forms now associated with NEC such as Framework Alliance Contract (FAC-1), and Term Alliance Contract (TAC-1) and the newly announced NEC4 Project Alliance Contract (PAC). Adopting these forms is an innovative step, as it uses contract models designed to enable more integrated and collaborative delivery.

EXAMPLE – Streamlining Multi-Contract Delivery through Alliance Coordination and Shared Digital Records

Project Name

Hung Shui Kiu / Ha Tsuen New Development Area

Project Office

West Development Office

Description

The project team reduced transaction costs by forming an Alliance across six NEC contracts with shared governance, joint planning and standardised processes, reducing duplication and improving coordination. Digital tools, early warning practices and scalable solutions further streamlined decision-making across contracts. A CDE centralised approved material submissions, facilitating the checking process.

Mindsets demonstrated

- ✓ *Cost-conscious*: Saved over 25% of costs from aggregated procurement
- ✓ *Facilitator*: Shared governance, standardised processes and simplified approvals
- ✓ *Digital-first*: CDE centralised information, data more consistent and transparent
- ✓ *Action-oriented*: Knowledge sharing, reused approvals across teams and contracts
- ✓ *Risk-intelligent*: Early warning, managed risks early and avoided escalation

Value created

- Over 50% saved in approval time through simplified processes and joint decisions
- Over 25% cost savings from aggregated procurement and process efficiencies
- Reduced duplication: Approved material submissions in CDE for reference facilitating the checking process
- Better alignment and stronger collaboration across all parties
- Scalable benefits: Innovation and knowledge shared to lower costs consistently

< > shared

下載資料夾

名稱	大小	檔案類型
HSK Knowledge Sharing Workshops		資料夾
HSK Material List		資料夾
HSK Method Statement List		資料夾
HSK Subcontractor List		資料夾

Contract No. Naming convention for quoting by other contracts, e.g. structure, utility. Category of material, e.g. structure, utility. Material details. Reference Submission No. Submission & Approval Dates. Contract Requirement.

Approved Material Submission Summary in C1 to C5 (As at 31 July 2025)

Contract No.	Submission No.	Category	Sub-Category	Material Submission Reference	Material	Brand/ Model	Supplier	Manufacturer	Submission Date	Approval Date	Reference Submission No.	Referent GS and P
YL202304	MA-C4-007	Geotechnical	GI Works	242VC-SF/MS00132	Bentorate (Benzonal GTCA)	Bentonal GTCA	---	Clariant	3-Mar-2025	6-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-008	Geotechnical	Pumping Test	242VC-SF/MS00163	Bentorate (EnviroPlug Medium & Coarse)	EnviroPlug Medium & Coarse	Kiran Sun Machinery Factory	MYO-BEN, Inc.	4-Mar-2025	19-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-009	Geotechnical	Pumping Test	242VC-SF/MS00144	Bentorate (Benzonal GTCA)	Bentonal GTCA	Hop Hong Hardware Co. Ltd.	Clariant	4-Mar-2025	19-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-010	Geotechnical	Pumping Test	242VC-SF/MS00140	Fiber Fabrics	---	Geo Ngai	Geo Ngai Pipes Product Ltd.	4-Mar-2025	19-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-011	Geotechnical	Pumping Test	242VC-SF/MS00142	PVC Pipe	---	Geo Ngai	Geo Ngai Pipes Product Ltd.	4-Mar-2025	19-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-012	Geotechnical	Pumping Test	242VC-SF/MS00139	Slotted Steel Casing	---	Geo Ngai	Geo Ngai Pipes Product Ltd.	4-Mar-2025	19-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-013	Geotechnical	GI Works	242VC-SF/MS00165	PVC Pipe	---	Geo Ngai	Geo Ngai Pipes Product Ltd.	20-Mar-2025	21-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-014	Geotechnical	GI Works	242VC-SF/MS00172	10mm Aggregate	---	Keen Wah Construction Materials Co. Ltd.	---	20-Mar-2025	21-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-015	Geotechnical	GI Works	242VC-SF/MS00170	Piezometer (GEOSENSE)	Geosense	Union Engineering & Trading Co., Ltd., Hong Kong	---	20-Mar-2025	21-Mar-2025	---	PS 7.295(c)
YL202304	MA-C4-016	Miscellaneous	Levelling	242VC-SF/MS001618	Auto-Measuring Products	---	Gomtech Technology Ltd.	Asiatic Agricultural Industries Private Ltd.	2-Apr-2025	18-Apr-2025	---	PS 7.131(a)
YL202305	MA-C5-001	Geotechnical	GI Works	25239-FON-M-00048	Cement	Runfeng CEM150/50	China Resources Cement Holdings Ltd.	Dongguan China Resources Cement Manufacturing Co., Ltd.	25-Jul-2025	---	---	PS 7.295(c)
YL202305	MA-C5-002	Geotechnical	Pumping Test	25239-FON-M-00048	Bentorate (EnviroPlug Medium & Coarse)	EnviroPlug Medium & Coarse	Kiran Sun Machinery Factory	MYO-BEN, Inc.	25-Jul-2025	---	MA-C4-008	PS 7.295(c)
YL202305	MA-C5-003	Geotechnical	GI Works	25239-FON-M-00048	Bentorate (Benzonal GTCA)	Bentonal GTCA	---	Clariant	25-Jul-2025	---	MA-C4-007	PS 7.295(c)

3.3.5 Issue no. 5 – Critical review of contract specifications

If CEDD provides vague or incomplete specifications in the design or tender and expects the *Contractor* to “figure it out,” the *Contractor* will respond in one of two costly ways: 1) inflating the tender; or 2) cutting corners. Critically reviewing contract specifications is essential to ensure project requirements are properly tailored to the unique constraints of each project and risks are allocated more equitably. This demonstrates **cost-conscious** and **open-to-innovation mindsets** in practice.

By adopting these mindsets and ensuring specifications are critically reviewed, transaction costs can be reduced by:

- Reducing the need for rework and re-drafting;
- Minimising disputes and claims downstream;
- Reducing clarifications and tender queries;
- Creating more efficient evaluation.

CRITICALLY REVIEWING CONTRACT SPECIFICATIONS

Accepting All Legacy Specifications



Critical Review



3.4 Summary of reduction of transaction costs during procurement stage

Item No.	Procedure	Reference
1.	CONTRACT DESIGN	
1.1	Critical review of contract specifications	Sec. 3.3.5
1.2	Leveraging NEC ECC Secondary Options	Sec. 3.3.3
2.	RISK MANAGEMENT	
2.1	Balanced risk allocation and collaborative contracting	Sec. 3.3.4
3.	PROCUREMENT PLANNING	
3.1	Innovative procurement approaches	Sec. 3.3.2
3.2	Optimising project / contract packaging	Sec. 3.3.1

4 Reducing Transaction Costs in the Construction Stage

4.1 Overview

During construction, transaction costs stem from challenges in administration and coordination, such as prolonged negotiations and approvals, disputes and excessive documentation. The NEC contract is designed to reduce these challenges, based on its core principle that the *Parties*, the *Project Manager* and the *Supervisor* act in a “spirit of mutual trust and co-operation” (Clause 10.2). This is implemented through key contractual provisions such as early warnings (Clause 15), maintaining an up-to-date Accepted Programme (Clause 31) and timely assessment of compensation events (Clause 63). This chapter, alongside the **CEDD NEC Playbook (Construction)**, sets out good practices to translate these collaborative principles into practice.

4.2 Applying the six mindsets to selected key topics

The topical issues discussed in this section are not exhaustive, but are selected examples illustrating where transaction costs may be reduced in practice. While all six mindsets are relevant across project delivery, some are more directly applicable to certain issues than others. The table below shows how the six mindsets can be applied to these issues to help project teams identify practical ways to reduce transaction costs.

Topical Issues	Mindsets
1. Managing risks efficiently and escalating early	✓ Facilitator ✓ Risk-Intelligent
2. Design Enhancement Package and Cost Savings Design	✓ Cost-Conscious ✓ Open-to-Innovation ✓ Action-Oriented
3. Streamlining interface management	✓ Facilitator ✓ Digital-First ✓ Action-Oriented ✓ Risk-Intelligent
4. Proactive management of Compensation Events	✓ Cost-Conscious ✓ Facilitator ✓ Open-to-Innovation ✓ Digital-First ✓ Action-Oriented ✓ Risk-Intelligent
5. Optimising supervision team (hybrid-RSS arrangement and combined RSS teams)	✓ Cost-Conscious ✓ Facilitator ✓ Action-Oriented ✓ Risk-Intelligent

4.3 Topical issues

4.3.1 Issue no. 1 – Managing risks efficiently and escalating early

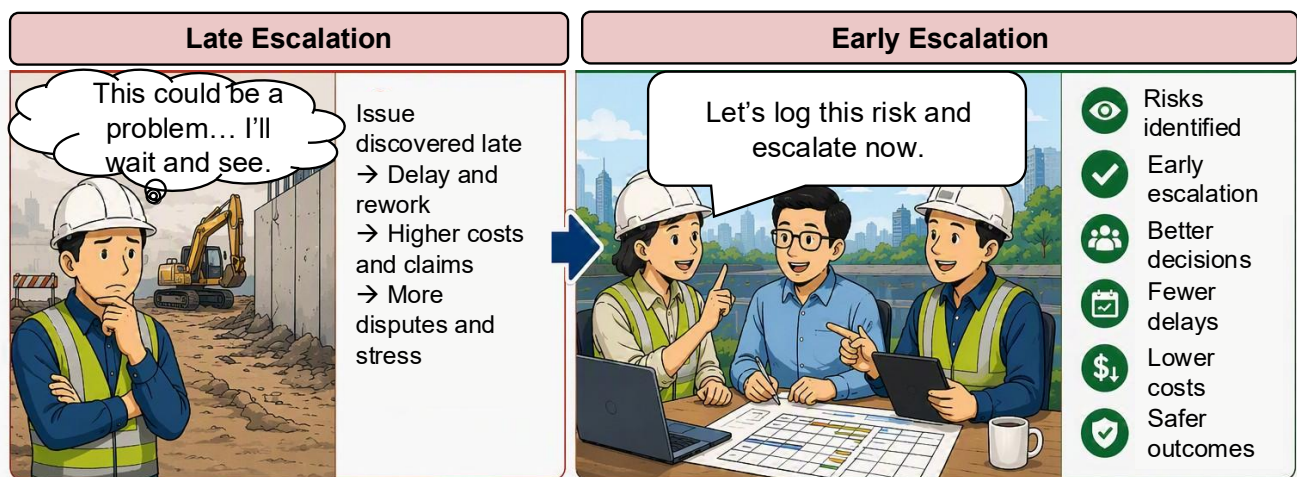
Manage risks efficiently and escalate early to reflect **risk-intelligent** and **facilitator mindsets**. These core NEC mechanisms help reduce transaction costs. **Section 2 of the CEDD NEC Playbook (Construction)** outlines good practices for this, including:

- Using the Early Warning process effectively; **Section 2.2.2 of the CEDD NEC Playbook (Construction)**
- Ensuring active involvement as the *Client*; **Section 2.2.3 of the CEDD NEC Playbook (Construction)**
- Prompt escalation of high-risk items or risks to D2/D3 officer that remain unresolved for over three months. **Section 2.2.4 of the CEDD NEC Playbook (Construction)**

These practices reduce transaction costs through:

- Faster issue resolution;
- Swifter confirmation and quotation assessment of CEs;
- Avoidance of disputes.

MANAGE RISKS EFFECTIVELY AND ESCALATE EARLY



4.3.2 Issue no. 2 – Design Enhancement Package and Cost Savings Design

Due to site constraints, such as restricted ground investigation access, or conservative design and O&M requirements, designers often adopt cautious assumptions during the design stage. The DEP provides a structured way to revisit these assumptions during construction as more accurate information is revealed, allowing the *Consultant* and the *Contractor* to identify cost-saving refinements and programme improvements. By combining *Contractor's* constructability expertise with *Consultant's* design knowledge, DEP and CSD enable practical and buildable enhancements that reduce costs and support more efficient delivery, reflecting **open-to-innovation**, **cost-conscious** and **action-oriented mindsets**. DEP proposals result from a collaboration between the *Client*, the *Consultant* and the *Contractor*. Upon reaching a consensus among the contracting parties, the *Consultant* leads the detailed assessment and is incentivised through bonuses. CSD proposals are typically initiated by the *Contractor* under the prevailing contract mechanism.

Putting DEP and CSD into practice with these mindsets can reduce transaction costs by:

- Expediting works to avoid programme delays and prolongation overheads;
- Minimising the number of potential CEs.

For details on design optimisation, *refer to Section 4.3.4 of the CEDD NEC Playbook (Design)*. For details on CSDs involving a change to the works with its detailed design subject to development for construction, *refer to Section 4.3.1 of the CEDD NEC Playbook (Financial Management)*.

EXAMPLE – Rethinking Design to Accelerate Housing Site Handover

Project Name

Site Formation and Infrastructures Works for Public Housing Developments at Pok Fu Lam South (Kai Lung Wang South Site)

Project Office

Civil Engineering Office

Description

The project team reduced transaction costs by rethinking the original design and delivery approach to meet a tight housing handover target on a constrained site. CEDD worked closely with the Housing Department (HD), the *Consultant* and the *Contractor* to replace the original bored pile and soldier pile solution with cut-slope and soil nails, and to replace rigid barriers with flexible Natural Terrain Hazard Mitigation barriers.

Mindsets demonstrated

- ✓ *Cost-conscious*: Reduced heavy temporary works and plant mobilisation
- ✓ *Open-to-innovation*: Challenged the default design and adopted innovation solutions
- ✓ *Action-oriented*: Early alignment across departments and project parties
- ✓ *Risk-intelligent*: Lowered programme risk and construction complexity

Value created

- Early completion by more than two years
- ~HK\$50 million direct cost savings, plus similar indirect savings
- Improved safety: Eliminated large piling works and heavy plant operations
- Higher productivity: More work fronts opened
- Lower carbon footprint: Reduced concrete use, more adaptable barriers
- Better community outcomes: Enhanced delivery quality and public benefit

4.3.3 Issue no. 3 – Streamlining interface management

Effective interface management is critical during construction, where delays in coordination, submissions, or decisions can directly affect site progress. With an **action-oriented mindset**, project teams take the lead in coordinating with stakeholders and interfacing parties.

By managing interfaces in a more coordinated and systematic way, project teams can make decisions faster and keep construction activities moving. This reflects a **facilitator mindset** by clarifying responsibilities and approval routes, a **digital-first mindset** by using shared platforms and records, a **risk-intelligent mindset** by identifying approval and interface risks early, and an **action-oriented mindset** by helping the project team resolve issues before they affect the critical path.

With these mindsets, project teams can significantly reduce transaction costs by:

- Reducing delays linked to late approvals or unresolved interfaces;
- Preserving technical knowledge through centralised and accessible records.

The following good practices can be applied:



- Host regular high-level coordination meetings with interfacing projects/stakeholders (e.g. MTRCL, CLP, HKCG, etc.)
- Unite interfacing parties to join Early Warning meetings to decide action-items early

For details of streamlined approved materials, see the *Example of the Hung Shui Kiu/Ha Tsuen New Development Area under Section 3.3.4*.

EXAMPLE – Streamlined Temporary Traffic Arrangement (TTA) Approval

(For more details, refer to Section 3.3.2 of the CEDD NEC Playbook (Design))

Project Name

Trunk Road T4 in Sha Tin

Project Office

East Development Office

Description

The project team reduced transaction costs by streamlining the TTA approval process through early alignment, structured engagement and proactive stakeholder management. Trial-based validation (e.g. drone and video evidence) and on-site ambassadors enabled early issue resolution, reduced uncertainty and minimised rework.

Mindsets demonstrated

- ✓ *Cost-conscious*: Streamlined process reduced effort and minimised rework
- ✓ *Open-to-innovation*: Innovative engagement approaches to address public concerns and avoid delays
- ✓ *Action-oriented*: Early stakeholder involvement and joint discussions to reach agreement in principle
- ✓ *Risk-intelligent*: Use of data and trial-based validation to manage risks and support early decisions

Value created

- 100+ TTAs approved within the first year
- Improved programme certainty: Maintained project progress
- Lower administrative effort: Fewer submissions and less rework
- Reduced redesign and delay: Minimised resource idling and prolongation risks
- Greater public value: Better acceptance and project reputation



EXAMPLE – Facilitating Project Interface Management with Housing Department through Stakeholder Workshop

(For more details, refer to Section 4.3.4 of the CEDD NEC Playbook (Design))

Project Name

Site Formation and Infrastructure Works for Public Housing Development at Tsing Yi Road West

Project Office

Civil Engineering Office

Description

The project team reduced transaction costs by organising a critical stakeholder workshop with senior management from the Housing Department and Civil Engineering Office, CEDD to openly discuss design challenges, user requirements and interface issues.

Mindsets demonstrated

- ✓ *Cost-conscious*: Adopted an optimised design that delivered significant cost savings
- ✓ *Open-to-innovation*: Challenged the default design to explore a better way
- ✓ *Action-oriented*: Solved interface issues early through direct collaboration
- ✓ *Risk-intelligent*: Identified and managed risks early to avoid future delays and claims

Value created

- Over HK\$10 million in capital cost savings
- Reduced risk of delays, claims and future maintenance issues
- Improved efficiency: Simpler retaining wall solution and interface management
- Better outcomes: Smoother delivery, better value for the community



4.3.4 Issue no. 4 – Proactive management of Compensation Events

Manage CEs proactively to keep momentum and minimise administrative burden. *Section 4 of the CEDD NEC Playbook (Construction)* identifies key good practices for efficient CE management, which are shown below:

Topical Issues	Mindsets
1. Assessing CEs using a prospective forecast approach as soon as possible after the dividing date <i>*Sections 4.2 & 4.2.3 of the CEDD NEC Playbook (Construction)</i>	✓ Cost-Conscious ✓ Facilitator ✓ Digital-First ✓ Action-Oriented ✓ Risk-Intelligent
2. Collaborating on risk pricing and assumptions prior to issuing instructions <i>*Sections 4.2 & 4.2.4 of the CEDD NEC Playbook (Construction) and Section 3.3.1 of the CEDD NEC Playbook (Financial Management)</i>	✓ Cost-Conscious ✓ Facilitator ✓ Open-to-Innovation ✓ Action-Oriented ✓ Risk-Intelligent
3. Utilising <i>Project Manager's</i> assumptions to promptly address uncertainties <i>*Section 4.2.4 of the CEDD NEC Playbook (Construction)</i>	✓ Facilitator ✓ Action-Oriented ✓ Risk-Intelligent
4. Agreeing on baseline resources early to simplify assessment of people costs <i>*Section 4.2.6 of the CEDD NEC Playbook (Construction)</i>	✓ Cost-Conscious ✓ Facilitator ✓ Action-Oriented

These practices reduce transaction costs through:

- Early confirmation of the validity of CE/NCEs and saves paperwork via timely escalation;
- Reasonable forecast payments using the *Project Manager's* assumptions save administrative costs on record-keeping;
- Alternative quotations balance time and cost impacts.

4.3.5 Issue no. 5 – Optimising supervision team (integrated *Client*-RSS supervision model)

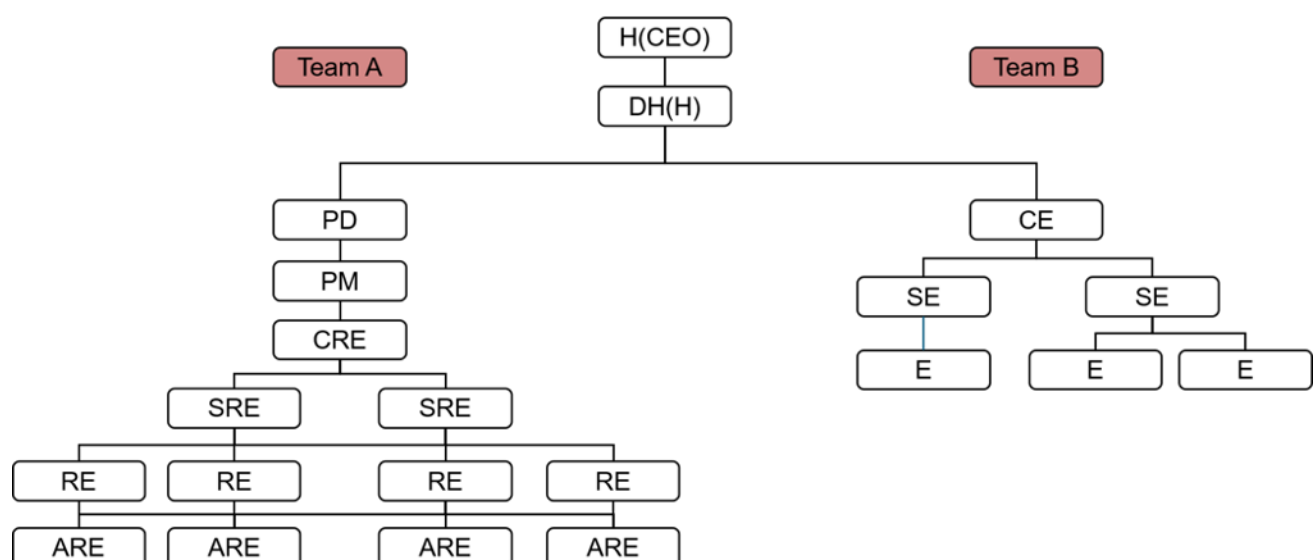
By building an integrated *Client*-RSS supervision model, CEDD can keep technical knowledge close to decision-making while deploying RSS effort where it adds most value. This helps the project team respond faster, avoid duplicated checks and engage other departments directly when early technical input is needed. To achieve an optimised supervision team, project teams should embrace **cost-conscious**, **facilitator**, **action-oriented** and **risk-intelligent mindsets**.

These practices reduce transaction costs by:

- Minimising unnecessary interfaces and duplicated checks;
- Streamlining decision-making.

In general, RSS executes their duties in accordance with the Consultancy Agreement. This *Client*-RSS supervision model with active participation of CEDD officers working closely with RSS on site, which includes chairing mission room meetings, liaising with government departments and stakeholders, and identifying and mitigating risks early, can reduce time impact and transaction cost.

Below is an example of the organisational structure of the *Client*-RSS supervision model in the Tan Kwan Tsuen Public Housing Development, where Team A being the RSS team and Team B being CEDD officers.



Integrated *Client*-RSS Supervision Model

EXAMPLE – Use of Nuclear Densometer Test (NDT)

Project Name

Site Formation and Infrastructure Works near Tan Kwai Tsuen in Yuen Long – Contract 1

Project Office

Civil Engineering Office (HP2)

Description

By adopting a hybrid *Client*-RSS supervision model, the project team enabled more direct coordination between the project office, RSS and GEO, allowing the NDT to be raised, assessed and trialed more efficiently as an alternative to the Sand Replacement Test. The arrangement facilitated earlier feedback, trial testing and joint reviews.

Mindsets demonstrated

- ✓ *Cost-conscious*: Reduced transactional effort and improved testing efficiency
- ✓ *Open-to-innovation*: Enabled exploration of NDT as a more efficient testing method
- ✓ *Action-oriented*: Streamlined approvals and joint reviews to make decisions faster
- ✓ *Risk-intelligent*: Tested and refined the solution early to manage risk proactively

Value created

- Faster decisions due to quicker technical engagement with GEO
- Shorter soil-testing turnaround time due to reduced communication steps
- Improved coordination across departments and the approval process
- Lower transaction costs: Reduced repeated discussions and delays
- Better use of resources: More efficient site progress, better utilisation of resources



Obtain preliminary results from lab
one day after



Sand Replacement Test

Obtain instant preliminary
results on site



Nuclear Densometer Test

EXAMPLE – Setting up a Task Force Group

Project Name

Site Formation and Infrastructure Works near Tan Kwai Tsuen in Yuen Long – Contract 2

Project Office

Civil Engineering Office (HP2)

Description

CEDD established a task force group to address interface and implementation challenges early. It brought together CEDD, HKPF (Yuen Long District), HKPF (RMO), Transport Department and Home Affairs Department. In regular meetings, CEDD took the lead to seek support on difficult cases with strong objections from business undertakings and/or villagers.

Mindsets demonstrated

- ✓ *Cost-conscious*: Focused resources to resolve key issues early to avoid extra costs
- ✓ *Facilitator*: Led coordination with departments and stakeholders to remove blockers
- ✓ *Action-oriented*: Took proactive steps and followed through to execute the scheme
- ✓ *Risk-intelligent*: Escalated risks to the right stakeholders early for timely resolution

Value created

- Improved collaboration across departments and stakeholders
- Smoother and quicker implementation due to stronger support
- Maintained good working relationships for ongoing projects
- Lower transaction costs: Reduced delays, additional efforts and potential disputes
- Better use of resources: Workfronts increased from 5 in Jan 2025 to 11 in Aug 2025

4.4 Summary of reduction of transaction costs during the construction stage

Item No.	Procedure	Reference
1.	Cost and Design Optimisation	
1.1	Design Enhancement Package and Cost Savings Design	Sec. 4.3.2
2.	Streamlined Management and Communication	
2.1	Streamlining interface management	Sec. 4.3.3
3.	Collaboration, Communication and Interface Integration	
3.1	Proactive management of Compensation Events	Sec. 4.3.4
3.2	Optimising supervision team (integrated <i>Client</i> -RSS supervision model)	Sec. 4.3.5
4.	Proactive Risk and Time Management	
4.1	Managing risks efficiently and escalating early	Sec. 4.3.1

5 Reducing Transaction Costs in the Handover / Operation & Maintenance Stage

5.1 Overview

Handovers set the foundation for safe and efficient operation. Yet project teams often spend significant time reconciling fragmented asset data, inconsistent records and contractual close-out requirements. O&M manuals, T&C records, warranties, asset registers and digital models often go through multiple rounds of revision when information is incomplete or held in different places. A collaborative handover approach reduces this burden. It makes requirements clear, builds shared accountability between project teams and maintenance parties and protects long-term asset performance.

This chapter sets out practical ways to reduce transaction costs in handover and O&M by standardising asset information, improving transparency and strengthening coordination between project teams and maintenance parties. The aim is a predictable handover that supports long-term performance and reinforces NEC's collaborative culture.

5.2 Applying the six mindsets to selected key topics

The topical issues discussed in the following section are not exhaustive, but are selected examples illustrating where transaction costs may be reduced in practice. While all six mindsets are relevant across project delivery, some are more directly applicable to particular issues than others. The table below shows how the six mindsets can be applied to these topical issues to help project teams identify practical ways to reduce transaction costs.

Topical Issues	Mindsets
1. Standardising handover documentation systems	✓ Facilitator ✓ Digital-First
2. Optimising handover timeline with escalation	✓ Facilitator ✓ Action-Oriented ✓ Risk-Intelligent
3. Streamlining handover	✓ Facilitator ✓ Digital-First

5.3 Topical issues

5.3.1 Issue no. 1 – Standardising handover documentation systems

Establishing uniform digital templates, formats and platforms for O&M manuals, as-built records, BIM models and asset registers helps ensure that handover information is consistent, well-structured and easy to verify, reflecting **digital-first** and **facilitator mindsets**. By replacing ad hoc hard-copy submissions with standardised digital tools, such as CDEs and DPDS, project teams can reduce duplication, minimise errors and provide maintenance parties with timely information that links directly to their asset management systems.

These practices reduce transaction costs by:

- Reducing the need for rework, duplication and manual handling;
- Accelerating review and acceptance;
- Improving data accessibility for maintenance teams.

STANDARDISING HANDOVER DOCUMENTATION SYSTEMS



5.3.2 Issue no. 2 – Optimising handover timeline with escalation

By agreeing handover review periods and escalation triggers early, CEDD can keep outstanding items visible and prevent issues from drifting. Project teams may consider holding regular D2-rank coordination meetings with O&M parties / departments during the construction stage to review the design, handover requirements and programme. This would reflect **facilitator**, **action-oriented** and **risk-intelligent mindsets**.

These practices can reduce transaction costs by:

- Preventing indefinite delays;
- Ensuring timely resolution of issues;
- Reducing extended supervision costs;
- Avoiding contractual disputes.

With reference to DEVB General Circular No. 1/2024 para. 8(I), alerts to senior officers (preferably at directorate rank) should be used for repeated rejections or resubmissions, with a clear record of the issues so decisions are informed and timely.

5.3.3 Issue no. 3 – Streamlining handover

Resolve O&M-related issues early through joint technical workshops and a simple early warning process. Escalate only when needed but bring in senior managements or directorates before issues harden into disputes. This reflects **facilitator** and **digital-first mindsets**.

These practices can reduce transaction costs by:

- Minimising adversarial disputes;
- Reducing people and works costs for additional changes required by O&M parties;
- Preserving working relationships;
- Keeping projects on schedule.

The following good practices can be adopted:

- **Make use of BIM CAVE (Computer-Aided Virtual Environment):** Use BIM CAVE to facilitate the handover of completed works to O&M parties by providing an immersive, life-size 3D/4D virtual walkthrough that allows project teams and facility managers to jointly inspect design / as-built models, verify asset data and resolve closeout discrepancies before final acceptance.
- **Early agreement with undertakers:** Secure early agreement with utility undertakers (e.g. CLP, Towngas) on their programme and works sequence.
- **Introduce an early warning and O&M party issue-flagging system:** Create a simple, structured early warning process for project teams and maintenance parties to flag potential O&M-related concerns.
- **Conduct joint technical clarification workshops:** Hold regular workshops where project teams and O&M stakeholders collectively review emerging issues, technical interpretations and documentation gaps.

5.4 Summary of reduction of transaction costs during handover / operation and maintenance stage

Item No.	Procedure	Reference
1.	OVERALL	
1.1	Standardising handover documentation systems	Sec. 5.3.1
1.2	Optimising handover timeline with escalation	Sec. 5.3.2
1.3	Streamlining handover	Sec. 5.3.3

6 Reducing Transaction Costs with Digital Technology Application

6.1 Overview

Poor information management is a major driver of transaction costs. When data is fragmented or inconsistent, project teams spend time searching, checking and reconciling. This is most visible at handover and O&M, but it also appears in design updates, approvals and routine reporting. Using digital tools well creates a single source of truth and a clearer workflow. This reduces back-and-forth, supports faster decisions and enables project teams to focus on engineering judgement and service delivery.

This chapter sets out practical digital practices that reduce coordination effort and improve continuity across project stages. The aim is not technology for its own sake, but better outcomes: clearer information, faster decisions and smoother transitions into operation.

6.2 Applying the six mindsets to selected key topics

The topical issues discussed in the following section are not exhaustive, but are selected examples illustrating where transaction costs may be reduced in practice. While all six mindsets are relevant across project delivery, some are more directly applicable to particular issues than others. The table below shows how the six mindsets can be applied to these topical issues to help project teams identify practical ways to reduce transaction costs.

Topical Issues	Mindsets
1. Contractually binding BIM	✓ Digital-First ✓ Risk-Intelligent
2. Adopting common data environments for centralised data and knowledge management	✓ Digital-First ✓ Action-Oriented
3. Digital site management	✓ Cost-Conscious ✓ Digital-First
4. Driving efficient contract management	✓ Facilitator ✓ Digital-First
5. BIM and CAVE for conflicts and inspections	✓ Facilitator ✓ Digital-First

6.3 Topical issues

6.3.1 Issue no. 1 – Contractually binding BIM

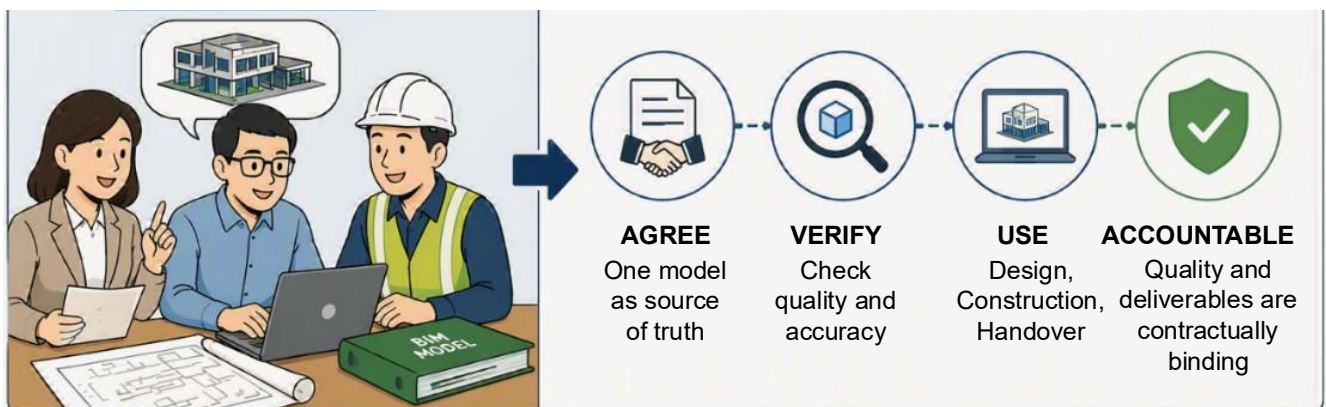
Making BIM a contractual requirement ensures that all tenderers work from the same clear and consistent digital model, reflecting a **digital-first mindset**. In the design stage, this ensures the quality of the design, enables CEDD to review the design before tender, identifies issues and conflicts to manage disputes, and allows for a more accurate estimate on works sequence, reflecting a **risk-intelligent mindset**. In the construction stage, BIM can be used for progress monitoring, resolving site issues in early warning meetings, payment assessments and coordinating with UU / interfacing works. With clearer expectations and better-defined scope, BIM deliverables for tendering become more accurate and coordinated, improving certainty and reducing misunderstandings throughout the project.

These practices can reduce transaction costs by:

- Reducing clarification queries;
- Minimising correspondence over discrepancies;
- Lowering claims arising from ambiguity.

Project teams may refer to DEVB Technical Circular (Works) No. 1/2025 for requirements and details for contractually binding BIM.

CONTRACTUALLY BINDING BIM



EXAMPLE – BIM Application for Design of Junction NJ20

Project Name

San Tin Technopole Phase 1 Stage 1 (West) – Contract 3

Project Office

North Development Office

Description

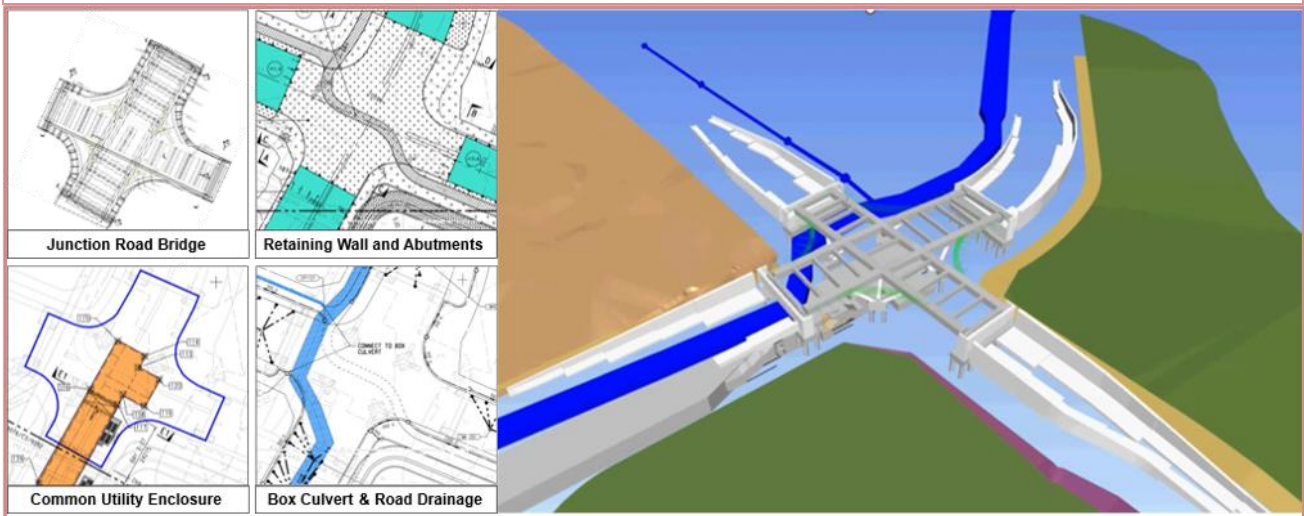
Road Junction NJ20 involved elevated road bridges, common utility enclosures, box culverts, and multiple pipeworks and utilities. BIM was fully utilised for spatial coordination among different layers of infrastructure elements in the design stage.

Mindsets demonstrated

- ✓ *Facilitator*: Improved coordination between design disciplines by making complex interface easier to visualise
- ✓ *Digital-first*: Used BIM to coordinate multiple infrastructure layers and provide a clear digital basis for design review
- ✓ *Action-oriented*: Enabled project team to resolve design coordination issues earlier and process the detailed design more smoothly
- ✓ *Risk-intelligent*: Identified spatial conflicts and constructability risks early before they could affect construction

Value created

- Improved design confidence with a clearer basis for pre-construction decisions
- Streamlined design process despite complex geometry and multiple interfaces
- Early detection of spatial conflicts between various structural elements
- Holistic review of how different elements would be built and coordinated



6.3.2 Issue no. 2 – Adopting common data environments for centralised data and knowledge management

Implementing a CDE provides a single, trusted digital space where project documentation, design information, approved materials and handover records can be stored, shared and updated throughout the project lifecycle. By consolidating information in one platform accessible to relevant stakeholders, the CDE supports consistent data management, reduces fragmentation and promotes better coordination among the *Client*, the *Consultant* and the *Contractor*, reflecting **digital-first** and **action-oriented mindsets**.

These practices reduce transaction costs by:

- Minimising redundant submission and reducing repeated works;
- Shortening approval cycles;
- Ensuring reliable version control;
- Supporting knowledge reuse;
- Improving collaboration and coordination.

The following good practices can be adopted:

- **Establish clear CDE standards and folder structures:** Define a consistent folder hierarchy, naming conventions, metadata requirements and access rules, so that project teams store and manage information in a uniform manner across the project lifecycle.
- **Embed CDE workflows into contracts and project briefs:** Specify submission processes, review steps and approval responsibilities within consultancy and works contracts.
- **Provide targeted training and simple guidance for users:** Offer short training sessions, quick-reference guides and examples of good submissions to help the project teams confidently use the CDE.
- **Monitor usage and maintain data quality throughout the project:** Conduct periodic checks on CDE usage, version control and data completeness.

For more information on how a CDE was used in the Hung Shui Kiu/Ha Tsuen New Development Area, see **Section 3.3.4**.

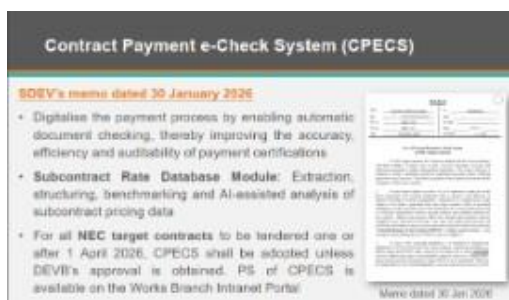
6.3.3 Issue no. 3 – Digital site management

Digital site management uses tools to monitor site conditions, progress, safety and resource usage in real time. These tools give the project teams quick access to accurate site information without relying only on manual inspections or paper records, reflecting **digital-first** and **cost-conscious mindsets**.

These practices can reduce transaction costs by:

- Reducing the need for manual record-keeping;
- Lowering supervision overhead;
- Speeding up decision-making;
- Enhancing transparency and collaboration.

Examples of digital site management include:



Contract Payment e-Check System (CPECS)



Smart Eye 2.0



Digital Project Delivery System (DPDS)



Asset Management System (AMS)



Subcontract Rate Database



Integrated Capital Works Platform (iCWP)

6.3.4 Issue no. 4 – Driving efficient contract management

Leveraging AI-enabled tools can significantly streamline contract administration by automating routine tasks, such as PMI/CE justification, programme analysis, payment verification and other document-heavy processes. These tools help project teams quickly interpret contract clauses, analyse time-related impacts, flag inconsistencies and process e-payments with greater accuracy. By reducing manual checking and paperwork, AI supports more consistent decision-making, shortens administrative cycles, and allows RSS and engineers to focus on higher-value technical and supervisory responsibilities, reflecting **digital-first** and **facilitator mindsets**.

These practices can reduce transaction costs by:

- Lowering manual paperwork and administrative effort;
- Shortening payment and approval cycles;
- Minimising disputes and clarifications;
- Reducing repeated follow-up works.

The CEDD AI Assistant can be utilised, which has three modules that can drive efficient contract management. AI can be used to prepare Line-To-Take documents and Q&A materials with reference to previous consultation meetings.



General Application Module can answer general questions, search PAH, draft and refine documents, understand uploaded documents and provide summaries, and compare uploaded documents and identify differences



Tender Documents Module can be an effective tool to assist reviewing clauses in tender documents.



NEC Module can answer NEC4-related questions, provide a response to scenario-based questions, and provide evidence-backed response with citations.

6.3.5 Issue no. 5 – BIM and CAVE for conflicts and inspections

Using BIM supports better design coordination by allowing project teams to visualise and resolve issues before construction. Tools such as clash detection and CAVE systems help identify conflicts early and enable virtual walkthroughs with all parties, improving understanding of the design and construction sequences. When BIM is also required contractually and carried through from design to construction and O&M handover, it ensures that the information delivered is consistent, complete and directly usable by operations teams, reflecting **digital-first** and **facilitator mindsets**.

These practices can reduce transaction costs by:

- Reducing design conflicts by identifying clashes early through coordinated BIM models;
- Minimising on-site rework by resolving issues virtually before construction begins;
- Facilitating virtual inspections using CAVE and other visualisation tools, reducing repeated site visits and clarifications;
- Improving O&M readiness by providing accurate, structured BIM data directly usable for handover and asset management.

6.4 Summary of reduction of transaction costs through digital applications

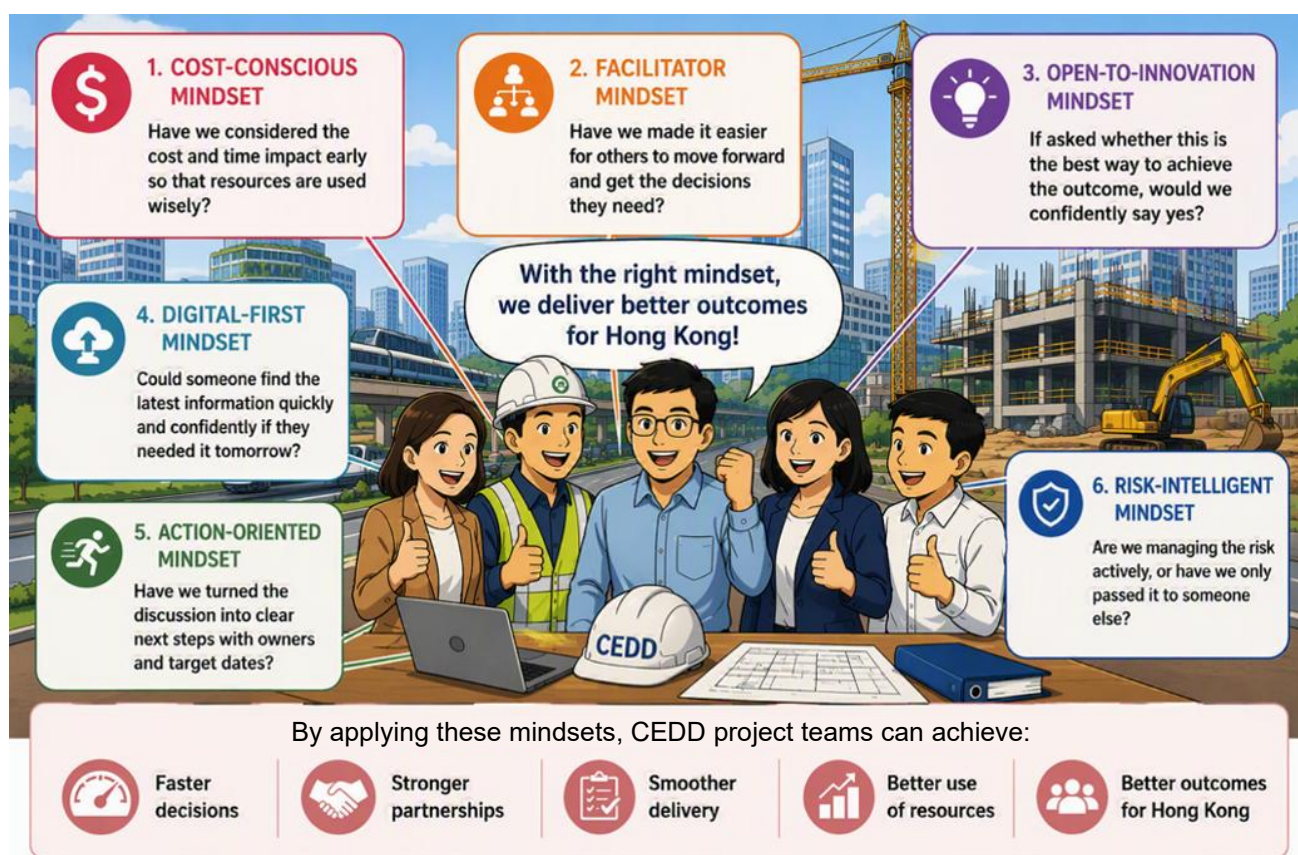
Item No.	Procedure	Reference
1.	OVERALL	
1.1	Contractually binding BIM	Sec. 6.3.1
1.2	Adopting common data environments for centralised data and knowledge management	Sec. 6.3.2
1.3	Digital site management	Sec. 6.3.3
1.4	Driving efficient contract management	Sec. 6.3.4
1.5	BIM and CAVE for conflicts and inspections	Sec. 6.3.5

7 Conclusion

Reducing transaction costs is not about removing necessary governance, checking or contract administration. These activities remain important to effective public works delivery.

The aim is to reduce avoidable effort by working in a more coordinated, practical and outcome-focused way. Small improvements in how project teams share information, make decisions, manage risks and resolve issues can make a real difference across the project lifecycle.

The six mindsets in this playbook drive us to think and work in a more cost-efficient manner. By applying them consistently, CEDD can optimise resources and improve delivery confidence, thus create more value for the community.





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