CEDD NEC Playbook (Construction)

Version 1.0

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Appendix A - Internal procedure for CE

Preface

Welcome to the CEDD NEC Playbook (Construction). This playbook is designed to provide project teams with useful tools to overcome challenges and streamline operation, by offering practical know-how and best practices related to the NEC contract and addressing misconceptions in the operation and management of NEC contracts.

CEDD is responsible for taking forward a huge volume of construction works in the years ahead. The need for effective collaboration to ensure that our projects can be completed on time, within budget and safely, becomes more critical than ever. Balancing ambitious project goals with limited resources requires a strategic approach that prioritises collaboration and the utilisation of NEC principles to enhance project outcomes.

Collaboration stands as the cornerstone of the NEC contract. Nurturing an environment of mutual trust, cooperation, and knowledge exchange is crucial for cultivating a collaborative ethos that propels best project success with effective management.

Our goal is to drive success in project delivery through cultivating a culture of mutual trust and cooperation. This collaborative endeavour not only benefits CEDD and the construction industry but also shapes the future of Hong Kong's infrastructure landscape.

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 (Construction) ("this playbook"), a collection of practical know-how designed for CEDD staff involved in CEDD NEC contracts. This playbook serves as a practical reference, offering valuable insights and know-how with examples to enhance your understanding and administration of NEC4 contracts in a collaborative manner. However, it should not be treated as a mandatory handbook nor a substitute of DEVB's Practice Notes for NEC ECC for Public Works Projects in Hong Kong. This playbook provides good practices to support your project setup and delivery. However, flexibility and professional judgement are essential in its application.

This playbook focuses on the administration of NEC4 Engineering and Construction Contract (ECC) main Options A to D and is based on

- the NEC4 ECC June 2017 version with amendments January 2023
- Development Bureau (DEVB)'s standard amendments to NEC4 ECC
- DEVB's standard additional conditions of contract

This playbook is intended to be a live document which remains current, dynamic, evolving and effective.

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) Collaboration: Strategies to foster effective teamwork, cooperation and communication among all stakeholders

2) Risk Management: Approaches to identify, assess, and mitigate risks throughout the project lifecycle

3) Programme Management: Best practices for planning, executing, and monitoring project schedules

4) Management of compensation events: Guidelines for effective management of compensation events to ensure fair and timely implementation / resolution

Each chapter contains the following sections:

- Introduction: Overview of the chapter's focus and how the contract should be operated
- Good practices and know-how: Illustration of good practices and know-how for the administration of the relevant subject matter
- Topical issues: Discussion of day-to-day issues faced by project team
- FAQs and examples: Frequently asked questions and real-life examples to illustrate key points when applying NEC principles

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 any 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:

- cDIA – Construction drainage impact assessment
- CDP1 – Contract Data part one
- CEDD – Civil Engineering and Development Department
- CE – Compensation event
- DEVB – Development Bureau
- DSD – Drainage Services Department
- ECC – Engineering and construction contract
- EOT – Extension of time
- EW – Early warning
- EWR – Early Warning Register
- GCC – General Conditions of Contract
- HKPF – Hong Kong Police Force
- MTRCL – MTR Corporation Limited
- NCE – Notification of compensation event
- PM – *Project Manager*
- PMA – *Project Manager*'s assessment
- PMD – *Project Manager*'s delegate
- PMI – *Project Manager*'s instruction
- PWDD – Price for Work Done to Date
- RSS – Resident site staff
- TD – Transport Department
- TTA – Temporary traffic arrangement

1 Collaboration

1.1 Overview

NEC4 clause 10.1 requires that the *Client, Contractor,* PM, and *Supervisor* act as stated in the contract. The effect of this clause is to make it mandatory for the *Client, Contractor,* PM, and *Supervisor* to do what the contract requires them to do – they shall act as stated – and they cannot choose to disregard an action required under the contract. Where an action under the contract is optional the word "may" is included in the clause.

NEC4 clause 10.2 requires the *Client, Contractor,* PM, and *Supervisor* to act in a spirit of mutual trust and co-operation. This requirement is complementary to, but does not overrule, the requirement in clause 10.1 and requires that the *Client, Contractor,* PM and *Supervisor* act in a spirit of mutual trust and co-operation when acting as stated in the contract. This clause creates an obligation for the *Client, Contractor,* PM, and *Supervisor* to try to help each other and not to hinder the others. They should be open and honest in their communications.

1.2 Good practices and practical know-how

1.2.1 Cultivating mutual trust and cooperative relationships

Acknowledging the advantages that NEC contracts bring to project delivery, the cornerstone of successful NEC management lies in fostering mutual trust and co-operation. This involves establishing strong partnering relationships among all stakeholders and channelling their efforts and aspirations toward a common goal.

Trust is nurtured through open communication, mutual respect, acknowledgment of weaknesses and mistakes, and an understanding of each other's needs. It is strengthened by recognizing and valuing each other's competencies and performance, especially when facing challenges together.

To cultivate a strong and collaborative team, CEDD, as the *Client,* shall proactively create the collaborative culture within the project team. Each individual must be willing to take a step forward, such as by taking on additional responsibilities for the team's success, taking calculated risks to innovate and focusing on the tasks ahead. Small acts of positivity from all team members can be more impactful than focusing solely on contractual obligations. A no-blame culture should be promoted, and a prospective project management approach should be emphasised, for instance, focusing on how a proposed cost-saving design can benefit the project.

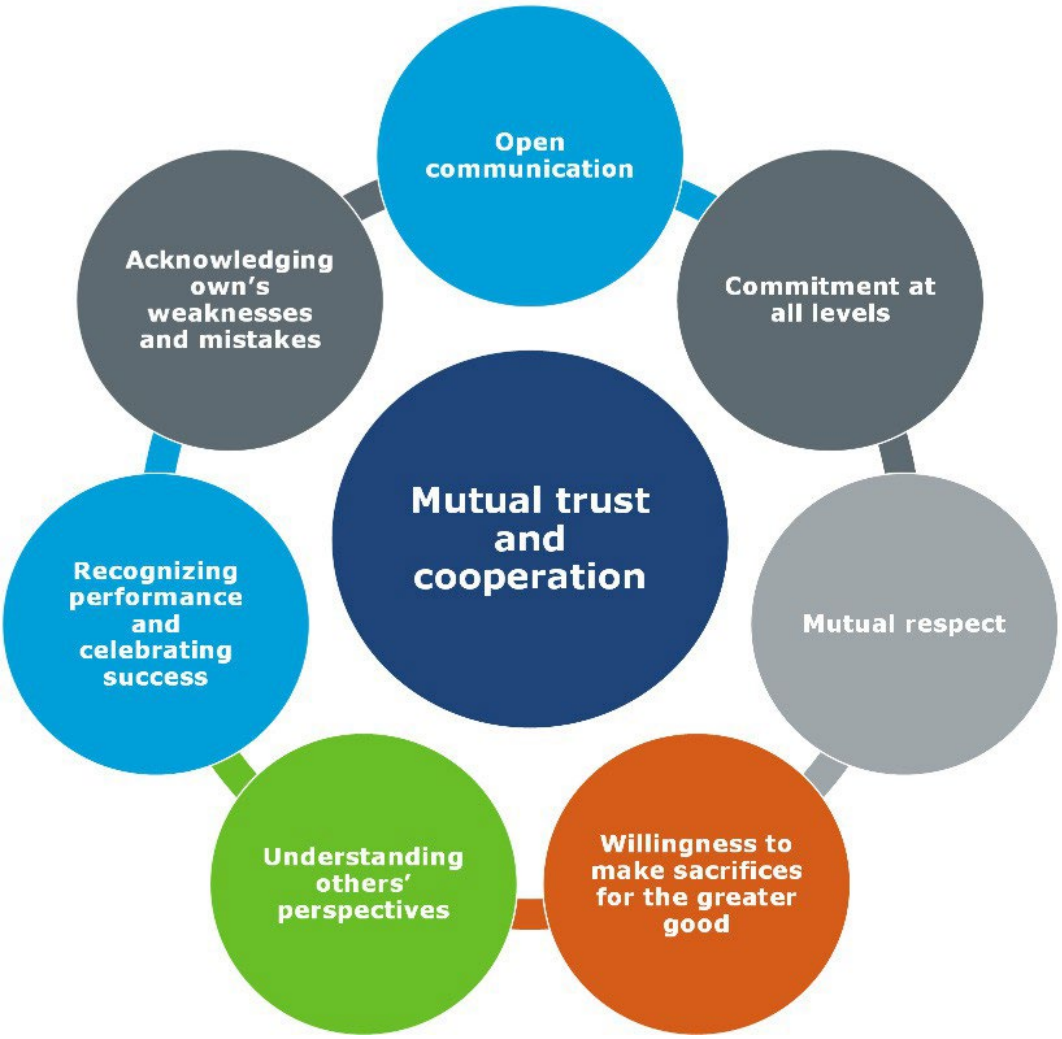


Figure 1: Positive behaviours and attitudes cultivating mutual trust and co-operation

1.2.2 Partnering workshops / meetings

1.2.2.1

To build a collaborative team with a unified goal, CEDD's project teams should organise partnering workshops and champion group meetings from the beginning of the contract, as far as practicable.

An overview of the flow of the workshops and meetings is shown below:

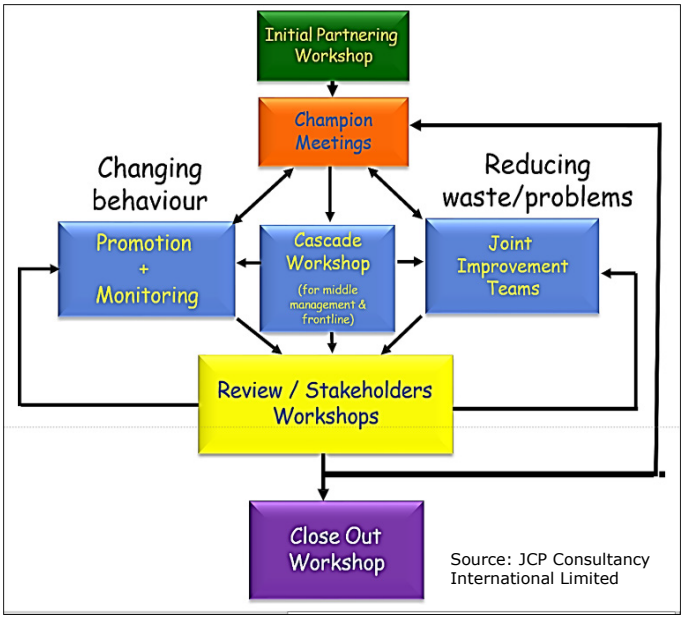


Figure 2: Overview of workshops and meetings

Workshops serving different purposes are scheduled at various stages of the project lifecycle to maximise their benefits and address needs throughout the contract. The relationship between the timing of the workshops and the level of team spirit is illustrated below:

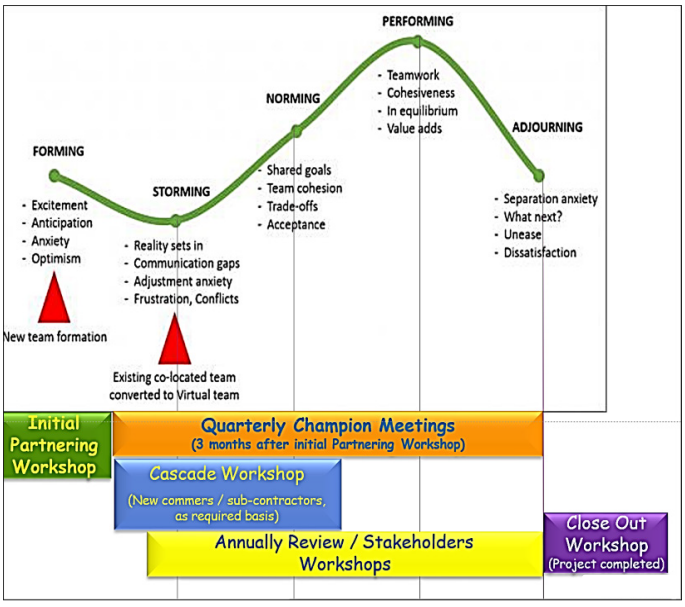


Figure 3: Relationship between timing of the workshops and level of team spirit

1.2.2.2

Partnering workshops and champion group meetings should be included in the contract provisions.

They aim to:

- Build a collaborative mindset with partners, including *Client,* Consultants, and *Contractor*
- Enhance the effectiveness and efficiency of communication so as to understand partners' needs and constraints and to show respect to their devoted efforts
- Share concerns about project challenges, identify mitigation measures and commit to deploying resources by all parties
- Brainstorm enhancement measures or cost saving designs, and set realistic targets along with ways to achieve them

CEDD shall take the lead in the partnering workshop held at the commencement of the contract with the key objectives to ensure building of a strong communication network among different parties, fostering mutual respect, cultivating a collaborative mindset, promoting the "think out of the box" approach, sharing initial views on potential project challenges and setting targets.

Champion group meetings should be organised quarterly to review relationship and communication effectiveness, reinforce collaboration, discuss the latest issues for management's commitment and direction, and reviewing the targets set.

Notably, champion group meetings serve as a valuable communication platform where team members at all levels can openly discuss their concerns, emerging project issues, and innovative ideas, ultimately benefiting the project implementation process. Through the steadfast commitment and prompt decision-making of senior management, project teams are supported in handling complex issues, thereby maintaining a high team morale.

1.2.3 Mission room meetings

The mission room meetings, normally led by Client (officer of D1 rank or above), are convened when projects encounter significant issues or emergencies that require crisis management.


Figure 4: Typical setting of a mission room meeting

Agenda

- Identify critical activities
- Set up targets for achievement with commitment from top management
- Monitor progress of works weekly
- Communicate directly to working levels
- Platform for contractor/ subcontractors to express their difficulties
- Discuss the solutions among project team
- Quick decisions to resolve problems timely

The objective of mission room meetings is to enable the project team to resolve site issues promptly, with the participation of senior management from the *Client*, PM, and *Contractor* including Subcontractor. The agenda and ground rules of the mission room meetings should include, but not limited to, the following:-

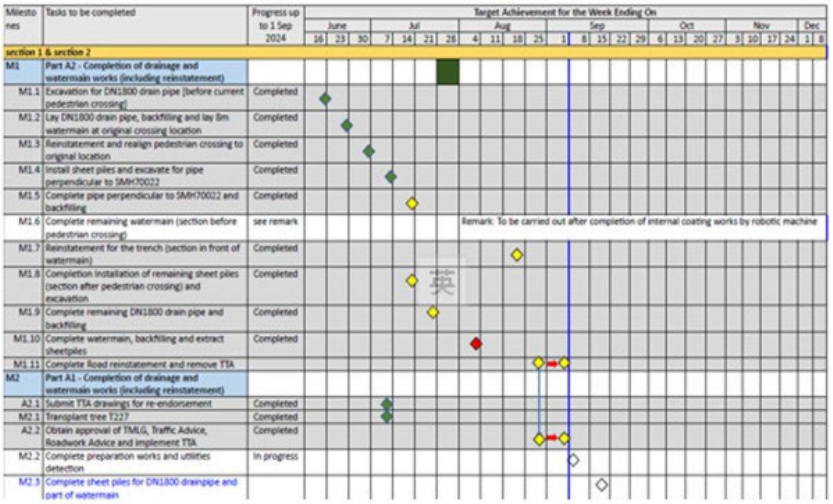


Figure 5: Example of works progress tracker discussed in the mission room meeting

Videos of typical mission room meeting

(CEO) (WDO)

Ground rules

- The mission room meetings are for solving problems
- People who know the most about an issue should actively participate
- Most urgent issues should be focused on

1.2.4 Lessons learnt / technical knowledge sharing

Project teams are encouraged to share lessons learnt with other CEDD projects facing similar difficulties. This exchange can offer insights into overcoming those similar challenges. Technical knowledge sharing on best practices should also be promoted with the aim of enhancing project management skills collectively and strengthening collaboration among teams.

Knowledge-sharing sessions and workshops on enhancing NEC project delivery should be organised from time to time. By leveraging project experiences, CEDD teams can optimise current processes and improve implementation strategies for future projects, ideally contributing to enhance project efficiency, cost-effectiveness, and quality outcomes.

1.2.5 Co-location of project teams

CEDD shall strive to pursue co-located site office whenever feasible. Co-location of the project team of the *Client*, the PM, and the *Contractor* team, can significantly enhance team dynamics and productivity by fostering communication, collaboration, and synergy among team members. Physical proximity encourages face-to-face interactions and teamwork, making it easier for team members to work together on tasks, share ideas, and solve problems collectively. Additionally, communication delays and barriers can be greatly reduced, facilitating quicker decision-making and prompt information exchange.

Project teams can design the co-located workspace. This can promote a collaborative and inclusive atmosphere at an early stage when contract starts. In addition, project teams can co-locate and establish an "NEC corner" featuring comfortable common areas and facilities. This setup can facilitate constructive interactions among team members and enhance overall team cohesion.

1.3 Topical issues

1.3.1 General issues

In general, CEDD projects face several challenges related to collaboration, as summarised below:

1.3.1.1 Behaviour and attitudes towards the partnering approach

Project teams are accustomed to and experienced in project management using the GCC approach. Not all parties believe in the concept of "partnering" rendering collaborative efforts ineffective. Some project teams exhibit signs of mutual mistrust among members and a lack of a win-win attitude.

Certain ambiguous phrasing such as “no objection in principle, acceptance subject to the following conditions” is often used by the PM yet it sidelines the perspectives and needs of other parties. This will also lead to mistrust and lack of confidence in the *Client*/PM (or vice versa) by the *Contractor*.

1.3.1.2 Diverse cultures and perspectives

Project teams often comprise individuals from various organizational cultures, each bringing unique experiences that shape their attitudes. These differences can sometimes lead to conflicts, particularly when team members have different priorities or communication styles.

A lack of effective communication in the early stages hampers the development of trust and collaboration within the project. It can also be challenging to engage all parties in future target-setting and decision-making process to ensure buy-in and consider diverse perspectives.

1.3.1.3 Role of Project Manager / Project Manager's delegate

The PM/PMD is perceived as not acting impartially when decisions and actions favour one side over another without justifiable reasons. This perception can lead to resentment and alienation among the rest of the team, damaging collaboration and resulting in withholding of constructive feedback. Consequently, project outcomes may be negatively impacted, leading to imbalanced resource allocation, overlooked risks, and missed opportunities for innovation.

1.3.1.4 Managing partnering activities

Some project team members might doubt the effectiveness of the partnering workshops, champion group meetings, mission room meetings, and similar activities, viewing them merely as an addition to their workload. They may also have different opinions on the program and venue arrangements, which are often difficult for all parties to agree on. Additionally, project teams are concerned that the established targets may not be achievable.

In contrast, experience shows that the partnering activities help promote collaboration to a certain extent.

1.3.2 Issue no. 1 – why partnering

1.3.2.1 ***Description***

When transitioning from the GCC contract to NEC contract, project teams shall adopt a mindset shift in their contract approach, placing greater emphasis on driving by positive behaviours to cultivate mutual trust and co-operation among all parties.

Project teams, as both the drivers and users of the NEC ECC, need to recognise that the approach to contract administration differs from that under traditional forms of GCC. Key features in adopting NEC are as follows:

- Proactive management and timely decision-making
- prospective assessment of change
- Regular acceptance of detailed programmes with reasonable engineering assumptions
- The requirement to act in a spirit of mutual trust and co-operation
- The PM and *Supervisor* have a dual function to act as the *Client's* agent and as impartial decision makers under the contract. When making decisions they must act in accordance with the contract (Clause 10.1). When acceptance of the *Contractor's* submission is required, the *Contractor* is protected from the PM's failing to make a decision in accordance with the contract as, if the PM does not accept a submission for a reason that is not stated in the contract, this constitutes a CE.

1.3.3 Issue no. 2 – partnering activities

1.3.3.1 ***Description***

There is tension between the desire to enhance partnering efforts and the challenge of achieving alignment among all parties involved, each with differing perspectives and expectations.

It is essential to understand the effective management and utilization of various types of partnering activities that fit the project teams' needs and expectations.

1.3.3.2 ***FAQ***

How do we identify the needs for partnering activities? How do we better engage all parties in partnering activities? How do we ensure the intended outcomes are achieved?

Partnering workshops and champion group meetings should be organised as far as possible. Other partnering activities are organised as needed and it should be discussed and agreed among the parties involved. When identifying the needs for partnering activities, the following factors should be considered:

- Alignment of partnering activities with project objectives
- Project team expectations – understanding the key outcomes that the project team aims to achieve
- CEDD senior management's support – consider the need for involving senior management as necessary
- Available resources – time, budget, venue, and personnel required to support the activities
- Communication and collaboration opportunities – ensure a fair and open communication environment
- Consistent follow-up – maintaining progress and demonstrate commitment to the partnership
- Feedback mechanism – continuously assess the effectiveness of partnering activities and adjust accordingly

What are the facilitator's roles? What are the requirements for nominating a facilitator?

The facilitator is expected to:

1) Provide independent advice in workshops and meetings, and can arrange ad-hoc meetings to facilitate the discussion
2) Arrange a joint pre-meeting with representatives from each party before workshops or meetings to understand the relationship within the project team
3) Communicate with each party separately before the workshop to gather more details on disagreed issues so as to trigger parties' creative thinking for win-win solutions
4) Devise partnering exercises / games in the initial partnering workshop, or champion group meetings if necessary
5) Distribute a questionnaire to both the "champion group" (management level) and "pioneer group" (frontline level) before champion group meetings, in order to collect their performance scores on several attributes
6) Establish ground rules and actively engage the participants in the workshops and meetings
7) Summarise each party's contributions, commitments, and the agreed targets set or reviewed during workshops and meetings, and provide a summary report

The parties should jointly agree on the nomination of the NEC facilitator based on the following considerations:

1) Experience in arranging partnering workshops and champion group meetings
2) Cohesive strength to facilitate the formation of one team with one goal
3) Coaching skills to promote effective communication
4) Open-mindedness to facilitate brainstorming innovative solutions
5) Mediation and negotiation abilities to reconcile differing views
6) Analytical ability for identifying hidden agendas, uncovering essential issues for discussion, and concluding concisely

Who pays the costs for organizing partnering activities?

The costs associated with partnering workshops and champion group meetings are incurred to facilitate team building and project delivery. It would be reasonable to regard it as Defined Costs for target cost contracts if these requirements have already been included in the contract provision. If they are not included in the original Scope, the cost should be shared between the *Client* and the *Contractor*.

The parties should jointly select the venue for the partnering workshops and champion group meetings and keep a written record on the justifications / considerations of the recommendation such as:

- Reasonable rental cost compared to several options
- Sufficient space and table settings for group discussions and partnering exercises or games
- A relaxing and enjoyable atmosphere outside working offices to facilitate free and open discussion
- Sufficient space for casual conversations during refreshment or tea breaks
- Location in the vicinity of the site areas, etc.

Other partnering workshops and mission room meetings typically take place in office meeting setting, and it is expected that no additional costs would be incurred.

The *Client* shall clarify and provide guidance on managing partnering activities and the budget if the project team has any doubts.

1.3.4 Issue no. 3 – partnering workshops

1.3.4.1 ***Description***

In the early stages of the project, project team members are often unfamiliar with one another, which can make it challenging to engage them in partnering workshops. This difficulty is amplified when project team members are resistant to the concept of collaboration and question the workshops' effectiveness.

Partnering workshops are often perceived as adding extra workload for participants and wasting resources when the intended outcomes are not achieved. There are also concerns about the facilitator / organisers' quality, as some of them may not seem to deliver helpful input.

1.3.4.2 ***FAQ***

What are the key factors to be considered for organizing the partnering workshops?

Objectives	▪ Build relationships with collaborative mindset ▪ Enhance communication skills and introduce a "think out of the box" approach ▪ Share initial views on contract challenges at an early stage ▪ Set targets (e.g. early completion, cost saving, number of awards or appreciation obtained, etc.)
Participants	Management and frontline level. Involvement of *Client,* Consultants and *Contractor*, and potentially main Subcontractor(s)
Timing	Held at contract start. The project team jointly arranges the first partnering workshop within three months of contract commencement.
Venue	A location with an enjoyable atmosphere outside traditional office settings
Duration	Half a day to one day
Content	General issues and contract-related issues / concept more focus on building relationship / setting achievable targets and goals

What is a typical rundown for the partnering workshop / partnering review workshop?

A typical rundown of the partnering workshops:

1) Setting ground rules
2) Top management's expectation for the workshop and encouragement to participants for active involvement
3) Discussion on partnering relationships with the indicators of partnering performance scores, reasons for the trend, and improvement measures
4) Overview of project scope, latest situation after follow-up and potential challenges
5) Group activities such as partnering exercise or games
6) Sharing case studies related to effective and ineffective NEC contract administration practices
7) Group brainstorming on potential enhancements, cost-saving designs, and mitigation measure, with reference to participants' experience in other projects
8) Agreement on common goals, followed by each participant signing a partnering charter
9) Establishment of joint task teams or a risk-to-opportunity group consisting of representatives from each party to achieve common targets and follow up on potential enhancement or mitigation measures
10) Concluding remarks from top management about what they have learnt from the workshop and their commitment to enhance project delivery

1.3.5 Issue no. 4 – champion group meetings

1.3.5.1 ***Description***

The champion group meetings often face several challenges that undermine their effectiveness: (i) insufficient follow-up action to achieve established targets, (ii) inadequate meeting duration, limiting focus on valuable topics and (iii) conducting these meetings years after the project's commencement, which is perceived as too late to have a meaningful impact.

1.3.5.2 ***FAQ***

What key factors should be considered for organizing the champion group meeting?

Objectives	▪ Review relationship and reinforce collaboration ▪ Review communication effectiveness ▪ Discuss the latest risks and technical issues for management's direction and commitment ▪ Review established targets
Participants	Management level. Involvement of *Client,* Consultants and *Contractor,* and potentially main Subcontractor(s)
Frequency	Quarterly; after the initial partnering workshop, the project team jointly arranges champion group meetings in a regular interval of approximately 3 months. The project team can increase the frequency or arrange other associated workshops as needed.
Venue	More formal, typically at site offices
Duration	Usually less than two hours
Content	Specific issues requiring top management's commitment and directives

What is a typical rundown for the champion group meeting?

Champion group meeting follows the typical rundown similar to that of a partnering workshop detailed in Section 1.3.4.2. Activities for the meeting can be tailored for projects leading to effective problem-solving and decision-making within the project context.

What are the partnering performance scores? What should be done if a project team has low partnering performance scores in different attributes?

A questionnaire will be distributed to all participants before champion group meetings, in order to collect their performance scores on various attributes. These attributes include time saving, cost saving, spending on works, quality, safety, environmental impact, public recognition, trust, and cooperation. The scores reflect the partnering relationships and the collaborative performance of the project team, and will then be discussed in champion group meetings.

The trend of the scores is more important than their absolute values and scores with a continuous upward trend indicate improvement. To enhance performance, the project team usually needs to consider:

- The root causes of a decline in scores, such as an incident leading to a suspension of works, or a continuous worsening relationship affecting the morale and works efficiency
- The potential implications for the project if the situation remains unchanged
- The facilitator's intervention to rebuild team spirit and morale and re-establish an effective communication network
- Brainstorming of mitigation measures and future improvement

1.3.6 Issue no. 5 – mission room meetings

1.3.6.1 ***Description***

Risks or site issues often have a significant impact on the contract. It is uncommon to see that a risk or site issue is left unresolved for a prolonged period of time. However, considerable time is often spent debating who should take the liability of the risk. These risks and site issues often cannot be resolved by the working level of the teams and therefore if such issues are not escalated to the senior management for action in a timely manner, they can cause a significant delay to the Completion and will result in significant time and cost implications.

1.3.6.2 ***FAQ***

When a mission room meeting is required and who should join the meeting?

Mission room meetings may be organised when the project team determines that there are risks and issues that require immediate attention and decisions from the senior management of the *Client*, PM and *Contractor*. The mission room meeting will usually be held once a week or scheduled on an as-needed basis with participation from the senior management of the *Client* (i.e. D1 grade or above), PM and *Contractor*. Major Subcontractor(s) may also be invited to the meeting to facilitate direct communication between the working level and the top management.

2 Risk management

2.1 Overview

Effective risk management with clear risk allocation is key to successful and collaborative project delivery. The allocation of risk is determined by the terms of the contract at the time of its establishment.

The NEC requires early notification of a potential risks identified during construction stage through the early warning process (clauses 15.1 – 15.4), with the logic that the earlier a risk is identified and addressed, the greater the potential to reduce or possibly avoid the impact of the event. The early warning process starts even before the Contract Date allowing both parties to include items in the initial EWR within the Contract Data.

2.2 Good practices and practical know-how

2.2.1 Allocation of risks (pre-contract)

Possible and known risks are addressed and allocated under the contract. The *Contractor* is expected to have accounted for all risks in their tendered price and program, except those identified as CEs.

The *Client* may include additional CEs in Contract Data part one such that tenderers will be able to realistically price their tender by understanding the project risks and the *Client's* risks.

During the construction stage, some events that have not been clearly outlined in the tender documents might materialize that the *Contractor* may not have priced them appropriately. Certain risks and requirements might not have been adequately detailed in the tender or contract document, making it difficult to determine whether the *Contractor* should bear the risk. The *Client* should provide its perspective at an early stage and collaborate with the PM to assess the allocation and contractual obligations of a risk and collaborate with PM when assessing the allocation / contractual obligation of a risk on whether an experienced *Contractor* could be able to foresee the risks during the tender stage. The early warning process is an essential and effective risk management tool for the *Client,* PM and *Contractor* to identify potential problems or risks to the project in early stage. Early warnings should be notified by PM or *Contractor* of any event that may occur and if it could have the potential to affect time, cost or quality.

The early warning process is about issues that could affect the project instead of fault finding. The parties should focus on dealing with the problems to collectively avoid / minimise the effects that the event could incur.

The early warning process with actions required is illustrated below:

2.2.2 Early Warning

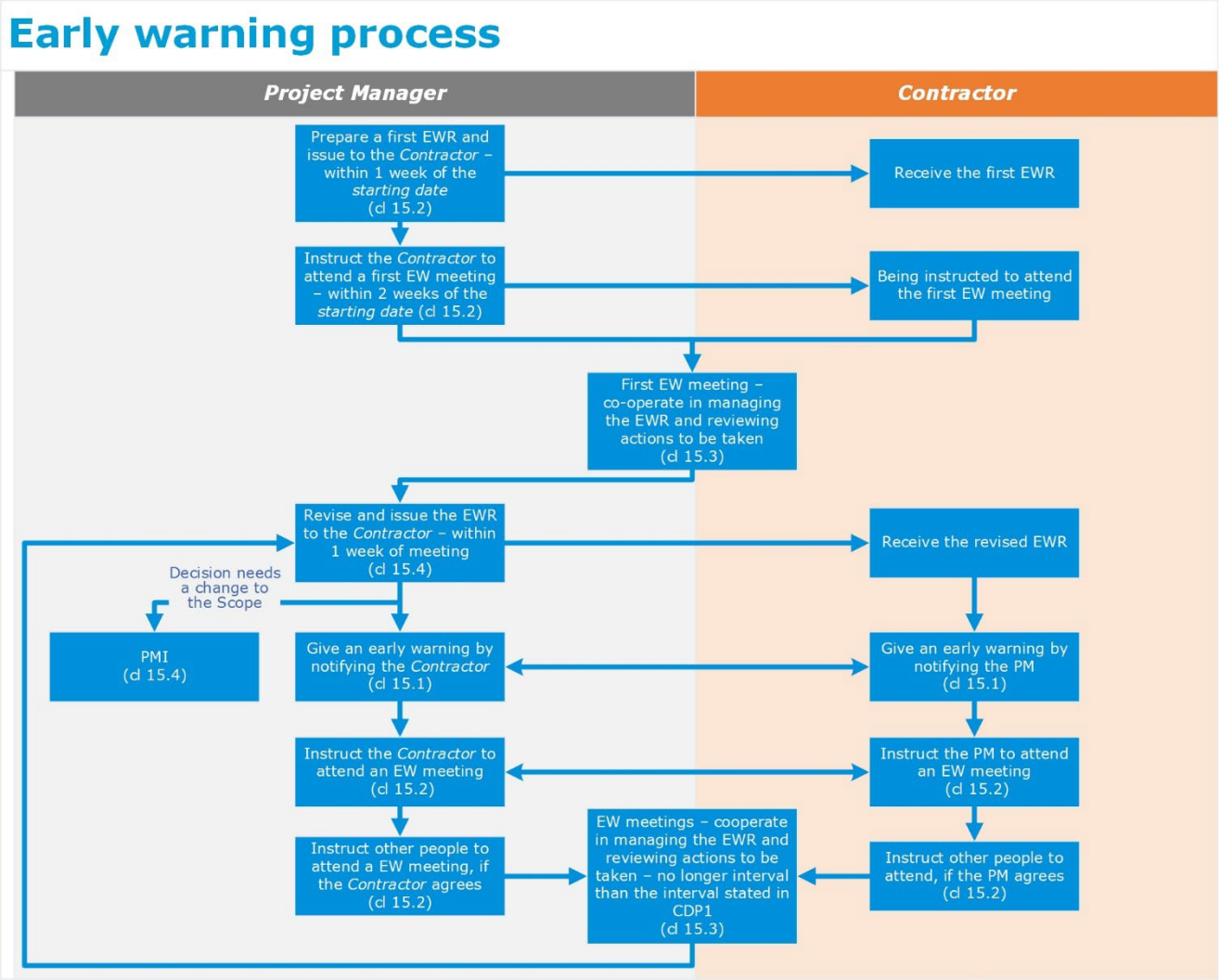


Figure 6: Early warning process

The EWR should be reviewed and updated at each early warning meeting and events that have been addressed (for example, progressed to a notified CE or Defect) or that have not occurred should be removed (or greyed out or lined through).

Notification of an early warning does not constitute notification of a CE. Notification of a CE must be submitted separately in accordance with relevant clauses of the contract.

2.2.3 *Client's* involvement

The *Client* (i.e. CEDD officer) should take a proactive role in the early warning process (although not explicitly an obligation of the *Client* as stated in the contract), and its involvement is considered vital in dealing with potential risks, as sometimes the *Client* is the best party to manage the risk, irrespective of who the risk owner is.

It is crucial for the *Client* and PM to prioritise high-consequence risks and issues that have been left unresolved for an extended period. Taking proactive measures is essential to mitigate financial impacts, maintain stakeholder relationships and prevent project delays.

On certain occasions, risks cannot be solely managed by the PM and the *Contractor*, these risks include but are not limited to:

- Underground utilities
- Approval from authorities (i.e. DSD, HKPF, MTRCL, etc.)
- Unforeseen ground conditions
- Late possession of the Site
- Additional requirements from stakeholders and members of the public
- Amended or new requirements from authorities

These risks require active *Client's* involvement, such as liaising with the relevant parties to "get the ball rolling fast".

It is not uncommon for risks to remain unresolved for months due to delayed decision-making. To prevent this, the *Client* should take the lead in implementing appropriate actions to address these issues. Indecision and no action are likely to increase the risk.

2.2.4 Managing high risk items & risk items being unresolved for over three months

Sometimes, risk items may not be resolved promptly, even with the early warning process is in place. The project team should consider escalating these issues to the senior management (i.e. D2 / D3 level for *Client*) within a reasonably short period of time, with an aim to securing directives from senior management before "it is too late".

The senior management should decide on whether PMI should be given to the *Contractor* to mitigate or minimise the risks in a timely manner.

A risk that persists for months typically incurs greater costs than mitigation measures implemented at an earlier stage.

Timeline for escalation of issues to senior management:

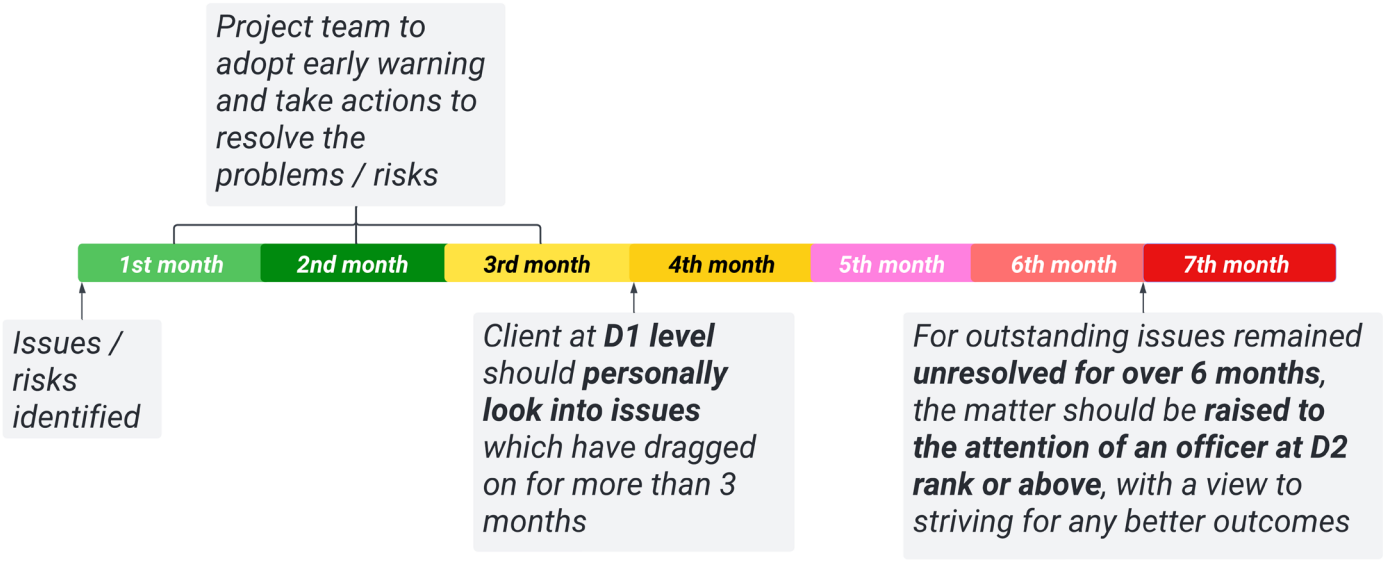


Figure 7: Timeline of issue escalation

(refers to the requirements of DEVB's health check)

2.3 Topical issues

2.3.1 General issues

Risks commonly found in CEDD projects are late possession of land or sites, interfacing issues with stakeholders (i.e. MTRCL, utilities undertakers, etc.), lengthy approval processes from authorities (e.g. cDIA from DSD, TTA from TD and HKPF), uncharted utilities, and unexpected underground conditions. Those are the risks that may not be fully apparent to tenderers in the short tendering period and therefore they may not be able to adequately price the risks, leading to potential underpricing of the works.

It is always challenging for the project teams to deal with changing or additional requirements from the interfacing parties or stakeholders, as those requirements may not be fully or adequately stated in the contract and therefore it may lead to debates (whether the *Contractor* should be compensated) once the risks are materialised.

2.3.2 Issue no. 1 – identifying risk and risk assessment

2.3.2.1 ***Description***

Risks commonly encountered in CEDD projects are related to limited or partial access to the project site, land ownership issues, uncharted underground utilities and unexpected underground conditions.

2.3.2.2 ***FAQ***

What risks should be identified as early warning?

The EWR in the ECC is a specific register related to matters notified as early warnings under the contract and therefore limited to matters that may affect time, cost or quality as detailed in clause 15.1 and secondary Options X10, X12 and X29 if these Options are included in the contract.

Matters notified as early warnings need to be specific and actionable in the early warning meeting and not too vague or remote. They should also not be notified for risks that are already known unless pertinent situation has changed. The government imposes new regulatory requirements or standards on utility re-location works specified in contract and it causes impact on the *Contractor's* ability to complete the works within planned resources and time and would be valid matters to notify as an early warning. When stakeholders introduce additional requirements, it should also be identified as an early warning. An example is that the *Contractor* undertakes a one-off road repair for the village entrance as required in the contract but the villagers request for regular road maintenance after the one-off road repair, until the completion of the works by the *Contractor*.

An uncharted underground utility is found during the excavation for bridge foundation works. What actions should be taken by the *Client,* PM and the *Contractor*?

Early warning should be adopted to manage the risk in a timely manner. *Client,* PM and the *Contractor* should take appropriate actions according to clauses 15.1 - 15.4.

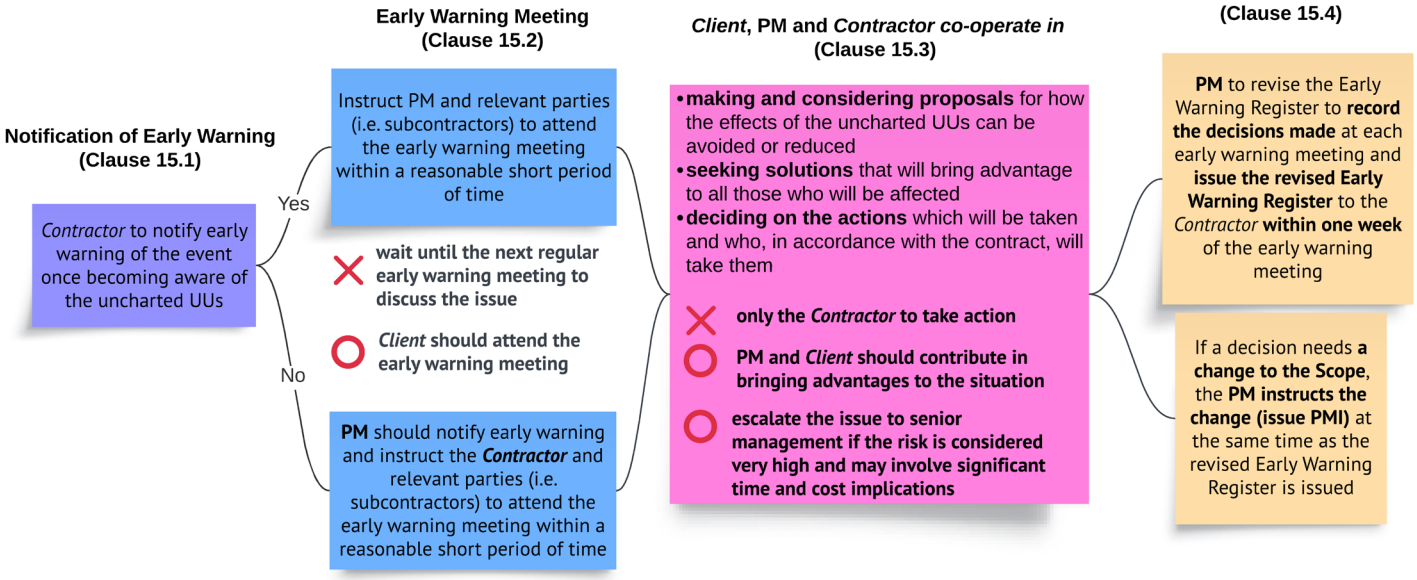


Figure 8: Early warning process for handling uncharted underground utility

When to assess early warning and how should they be presented?

In practice the register will contain a numbering system, a date of notification, description of the risk, its likelihood, consequences, proposed actions, action parties, and any other relevant details to better inform the risk status based on project requirements.

It is noteworthy that the risk should be collectively managed and addressed, and the register is not for identifying the “owner” of the risk. Additionally, the values shall not be included in the register since it will have absolutely no bearing on the assessment of the *Contractor’s* entitlement which will be separately assessed in accordance with the CE mechanism if applicable.

2.3.3 Issue no. 2 – early warning management

2.3.3.1 ***Description***

When an early warning is notified, either the PM or *Contractor* may instruct the other to attend an immediate early warning meeting and the matter should not wait until the next scheduled early warning meeting to be addressed. These urgent ad hoc early warning meetings can be relatively informal and could take place via online conferencing platforms / software. Provided any actions that are agreed upon are captured in accordance with the communication requirements in the contract (clauses 13.1, 13.2, etc.). Early warning meetings are not restricted to the PM and the *Contractor.* For CEDD projects, the *Client* should participate as far as practicable, and other relevant parties, like Subcontractor(s), should be invited to participate if their involvement would enhance the process.

While the PM should be competent in carrying out their duties, the C*lient's* direct involvement in meetings or discussions remain crucial during critical situations or when specific advice is needed.

At an early warning meeting, a mitigation strategy, actions with pros and cons, and time and cost for each early warning requires consideration. If the risk is eliminated or reduced to a significantly low level and there is no further action required in relation to that event, this should be agreed and the matter removed on the register. If mitigation can be implemented, this process should start as soon as possible and can be reviewed and updated at each subsequent early warning meeting.

It should be noted that the early warning process is separate and distinct from the CE process and that notification of an early warning does not act as a notification of a CE. If an early warning is notified but then the event is not notified as a CE within eight weeks, this will mean the matter will be timed barred, even if it is, in fact, a CE as stated in clause 61.3.

2.3.3.2 ***FAQ***

What are the practical ways in managing the early warning process?

At an early warning meeting, the early warnings that have been notified since the last meeting should be reviewed first, in a chronological order of when they were notified and added to the EWR. Following this, any early warnings with outstanding mitigation measures should then be reviewed.

In some cases, early warning matters may need to be addressed in follow-up meetings specific to the matter. Any agreements (e.g. proposed actions, mitigation measures, etc.) about early warning matters should be recorded in EWR, even the agreements are reached subsequent to the EW meetings.

When is an early warning closed?

There is no formal contractual process to "close out" an early warning. All early warnings should be added to the EWR and addressed in a subsequent early warning meeting. Once the early warning has been reviewed and any mitigation measures agreed, implemented, and risks eliminated or reduced to a low level, it could potentially be removed from the EWR. If, however, the matter is still ongoing, or the mitigation measure is ongoing, it may be kept live for review and update at the next early warning meeting.

In practice, early warnings are not normally physically removed from the EWR but are "greyed out" or lined through.

Early warnings can be closed out for a variety of reasons including the following:

- The matter did not occur and is not going to occur due to the change in the situation
- The matter has been notified as a Defect
- The effects of the matter have been avoided or mitigated to such an extent that the matter will not have any effect
- The matter has been addressed under another contractual process

If a risk is materialised to become a CE, should the *Contractor* take any action as part of the solution derived from the early warning meeting, and vice versa? Would taking any action change the risk / liability allocation of the Parties?

If a matter notified as an early warning and later becomes a CE, it should be notified as such. At this stage when no mitigation has been initiated, all of the effects of the matter will be addressed as part of the CE process.

In some cases, the action agreed at the early warning meeting may be the cause of the CE, for example an instruction to change the Scope issued by the PM. In this case all the effects of the CE will be addressed as part of the CE process.

In many cases when an early warning matter is discussed during an early warning meeting, it will be possible to determine whether the event is a CE or not, prior to any mitigation measures taking place. Alternatively, if the occurrence of the event is uncertain, it may or may not happen, then no mitigation may be instigated at least initially.

Where a matter may or may not be a CE but the attendees at the early warning meeting have agreed on mitigating actions, then these actions should be allocated in accordance with the contract i.e. the person responsible for that action should take it.

If the mitigation undertaken has a time or cost effect, then this would have to be considered if the event subsequently became a CE. The mitigating actions are to proceed as agreed, but the time and cost effect of the mitigation may form part of the CE quotation.

A *Contractor* may be prepared to instigate some mitigation measures where they take the view that the event may or may not be their risk under the contract, on the basis that if they fail to do so and the event occurs is not their risk, then they will have missed the opportunity to mitigate the effect of the event. Another risk for the *Contractor* would be the application of clause 63.9 and the requirement for the *Contractor* to react competently and promptly to the matter with any time and cost effects reasonably incurred. It may be that the failures of the *Contractor* to undertake mitigation measures could be seen as a failure to comply with this clause and such cost should not be covered in the compensation.

2.3.4 Issue no. 3 – contract set up

2.3.4.1 ***Description***

Contract risk management begins with how risks and liabilities of the Parties are allocated when the contract is established and how they are clearly set out or identified in the tender documents. Post-contract disagreements, claims and disputes often occur as a result of inequitable allocation of risks or liabilities and unclear drafting of such allocation. The project team may be unfamiliar with the good practice in such allocation in pre-contract stage.

2.3.4.2 ***FAQ***

How risks and/or liabilities are allocated under NEC4 ECC?

The allocation of risk can be altered by the *Client* if they wish when they are assembling the contract. The *Client* can choose to include additional CEs or *Client's* liabilities in Contract Data part one.

In addition, risk can be reallocated via the *additional conditions of contract* as referred to under Z clause, and this could lead to additional CEs or the *Client's* liabilities being included in the contract or existing CEs or the *Client's* liabilities being deleted, which would have the effect of transferring that risk to the *Contractor.*

Risk can also be changed via the selection of secondary Options, for example the inclusion of secondary Option X2 in the contract will introduce a CE for a change in the law after the Contract Date.

The allocation of financial risk can also be altered by the selection of main and secondary Options.

In main Options A and B, the *Contractor* assumes the financial risk of its own performance as these are fixed priced contracts and the *Contractor* bears the risk of any under or overspend against the total of the Prices.

In main Options C and D, the *Client* will share in the *Contractor's* financial performance through the gain-share or pain-share mechanism, subject to any caps on gain or pain share.

If secondary Option X1 is selected, the *Client* will share the risk of inflation.

In addition, risk can be allocated by the Scope or the Site Information via a stated assumption or action. For example, the Scope could contain a statement that the *Contractor* must allow 4 weeks for an action of the *Client* in their programme. If the *Client* takes a longer period than 4 weeks this will be a CE. Another example could be a situation where there is a lack of Site Information, for instance, no data in relation to any contaminated material within the Site, publicly available information referred to in the Site Information, information obtainable from a visual inspection of the Site and other information which an experienced contractor could reasonably be expected to have or to obtain. If contaminated material is then encountered, this may constitute a CE.

How should the Parties use the early warning table in Contract Data? What risks should be included there?

There is an option in Contract Data part one for the *Client,* if they wish, to include matters in the first EWR that will be issued after the contract is awarded. There is also a similar opportunity for the *Contractor* to do the same in Contract Data part two.

The intention of these provisions is to allow for early warning matters to be notified at the earliest possible opportunity during the tender process.

If an entry is included, the matter will have no impact on the allocation of risk under the contract which is already fully addressed in the contract. It is merely a way of notifying an early warning during the tender process that will be included in the first EWR issued by the PM, and discussed at the first early warning meeting. These matters are treated in the same way as any other early warning notified after the Contract Date.

2.3.5 Issue no. 4 – mitigating risks

2.3.5.1 ***Description***

The primary purpose of the early warning process is the early identification and mitigation of risk, and this process is discussed in detail above. Challenges for some project teams stem from lacking confidence or proficiency in approaching a risk, as well as in implementing the necessary mitigation measures.

The PM and the *Contractor* can agree on the attendance in an early warning meeting, and this would allow for any third parties affected by or involved in the early warning matter to be engaged in determining how the matter should be addressed.

The *Contractor* has a duty to mitigate delay under clause 32.1 and must react competently and promptly to a CE, with any time and costs reasonably incurred (clause 63.9).

2.3.5.2 ***FAQ***

Who is responsible for and takes the financial risk of taking actions agreed in an early warning meeting?

Any actions agreed in an early warning meeting should be carried out by the Party responsible for that action under the contract. The contract allocates the financial risk between the Parties, and this is not changed by the decisions taken at an early warning meeting. If the action results in a CE i.e. an instruction to change the Scope, this will be addressed under the CE process in the contract.

Can the PM instruct the *Contractor* to take action to mitigate risks?

The PM and *Supervisor* can issue instructions in accordance with the contract which the *Contractor* must obey (clause 27.3). Clause 15.3 states that those who attend the early warning meeting co-operate in making proposals to reduce the effects of risk and deciding on the actions to be taken. However, there is no specific power for the PM to instruct implementation of mitigation measures in relation to an early warning. Mitigation measures would either be mutually agreed by the PM and the *Contractor*, and instigated without the need for an instruction or instigated by the PM with issuing of an instruction in accordance with the contract i.e. an instruction to change the Scope (clause 14.3), an instruction of how to deal with an act of prevention (clause 19.1) or an instruction to suspend the works (clause 34.1) etc.

What is the role of the Client in the early warning process?

The *Client* should actively participate in the risk management process, even though the PM manages the contract, including the early warning process, on behalf of the *Client*. The *Client* should be informed of the relevant matters and be invited to attend an early warning meeting (clause 15.2) and may be delegated powers to notify early warnings or take actions in the early warning process under clause 14.2. When risks are associated with obtaining approval from authorities, the *Client* could assume a role in optimising the process by collaborating and liaising closely with other departments or bureaux, based on their expertise in statutory protocols and procedures.

Some of the options proposed in the early warning meeting may involve considerable time and cost implications, and therefore the participation of *Client* in the early warning process will expedite the decision-making process.

2.3.6 Issue no. 5 – unforeseen ground conditions

2.3.6.1 ***Description***

Under ECC, unforeseen ground conditions are addressed as CEs under Clause 60.1(12). This clause states that a CE occurs when the Contractor encounters physical conditions within the Site that are not weather-related and that an experienced contractor would have judged, at the tendering stage, to have such a small chance of occurring that it would have been unreasonable to allow for them.

The term “physical conditions” is broad, and some of the conditions could include various ground conditions, obstructions, pollutants, and contaminants, both above and below ground. When such unforeseen conditions are encountered, the *Contractor* must notify the PM, who then determines whether the conditions meet the criteria for a CE. This process can sometimes be subjective and complex, as it involves assessing whether the conditions were foreseeable and if they should have been accounted for in the *Contractor’s* tender. In this connection, the *Client* should offer its view at an early stage for the PM's consideration in determining the Contractor’s entitlement.

The ECC aims to share risks equitably between the *Client* and the *Contractor*, ensuring that the *Contractor* is not unduly burdened with unforeseen conditions that could not reasonably have been anticipated. However, the practical application of this principle can be challenging, requiring clear communication and thorough documentation to support claims and assessments.

Common unforeseen ground conditions in CEDD projects include uncharted underground utilities, presence of boulders that require specialised excavation techniques or equipment, deeper rockhead beyond expectations, and so on.

3 Programme management

3.1 Overview

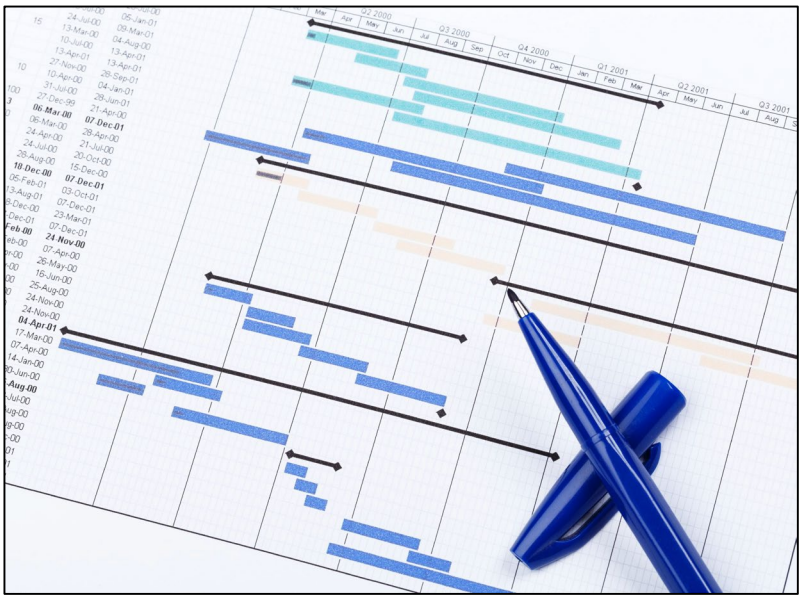
NEC contracts promote the importance of time, as the management of time equates to the management of cost. The programme is at the heart of an NEC contract and is a joint management tool, covering both the work of the *Contractor* and any interfaces or actions of the *Client* and Others necessary for the *Contractor* to Provide the Works.

Many of the procedures and provisions set out in the contract rely on an up-to-date and realistic Accepted Programme, which is then used by the *Contractor* and the PM in joint decision-making.

Primary functions of the programme are to:

- Monitor works progress
- Identify risks to time or potential delaying events and develop mitigation strategies
- Forecast final PWDD
- Assess CEs with a delay or disruptive effect

All programmes have a very short useful life, because events occur, and they regularly become out of date. The contract requires the programme to be updated regularly.



3.2 Good practices and practical know-how

Acceptance of a programme, unlike acceptance of the *Contractor's* design, is not a condition precedent to the *Contractor* proceeding with the work. Failure to accept the first programme does not prevent works commencement. Failure to accept a revised programme does not require the *Contractor* to stop work.

Acceptance of a programme that shows a planned Completion Date later than the Completion Date, or planned achievement of a Key Date later than the Key Date, does not operate to extend the Completion Date or any Key Dates, respectively.

When reviewing a programme for acceptance, the PM should remember that the programme is only a forecast or a statement of intent by the *Contractor* of how they intend to Provide the Works, and it is very likely that the actual delivery of the works will vary from the programme due to the reality of what is encountered on Site i.e. risk events occurring, progress being better or worse than forecast etc. Whilst programming is a specialist skill, it is still only a forecast and not an exact science.

To assist in getting a programme submitted by the *Contractor* accepted by the PM, it is suggested that, rather the *Contractor* issues a copy via the designated communication system, the *Contractor* presents their programme to the PM (and their team) with the presence of key personnel, including the programmer. This allows the *Contractor* to articulate their logic and to highlight any changes since the last Accepted Programme. It also allows the PM to challenge the programme and identify any concerns they may have in a more proactive manner. The actual acceptance of the programme may take place after the meeting, if the PM would like to perform any further check they required. Accepting a programme which complies with the requirements stated in the contract with assumptions and forecasts, is far better than having no programme accepted at all.

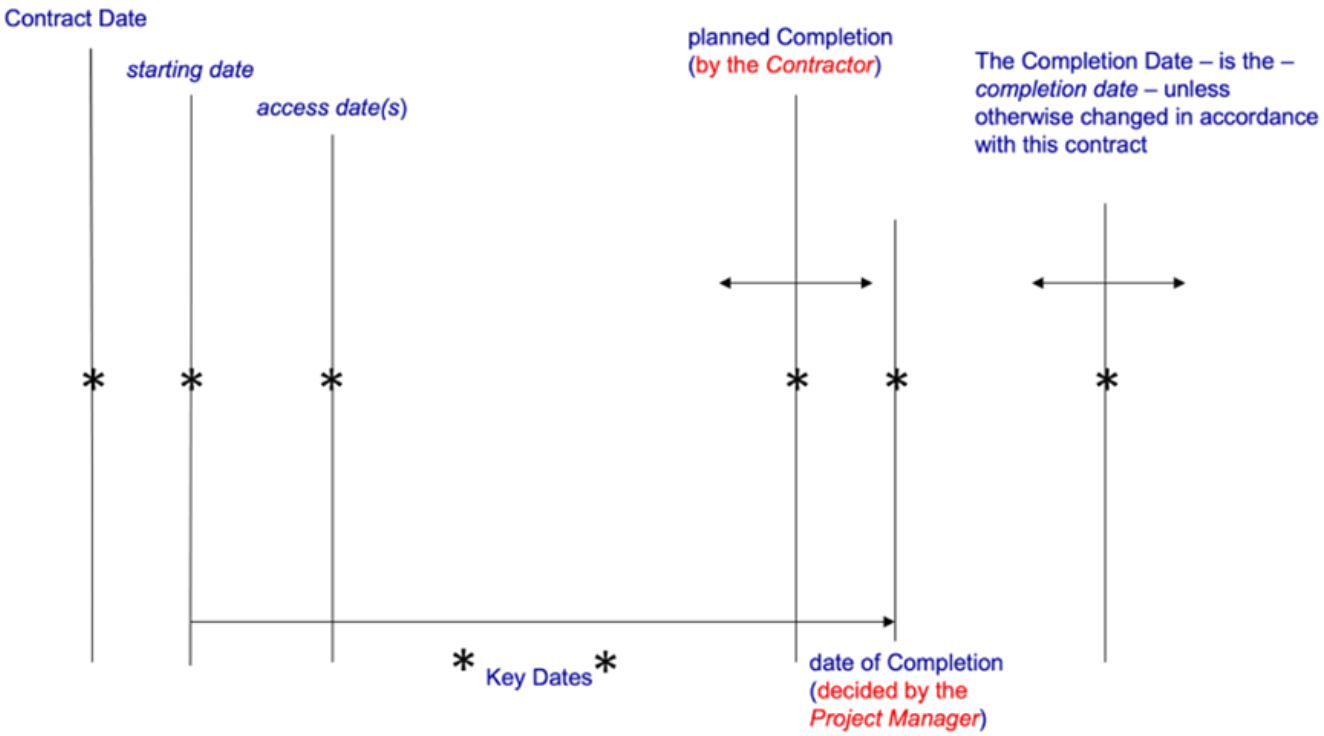


Figure 9: Illustration of dates in NEC contract in relation to programme management

Figure 9 illustrates the various dates which the programme should include. For ease of reference, the dates are elaborated as follows:

- **Contract Date** – the date when this contract came into existence (clause 11.2(4))
- ***starting date*** – the earliest date from which the *Contractor* starts Providing the Works, to be identified in Contract Data part one
- ***access date*** - the earliest date from which the *Contractor* can start work on the Site, to be identified in Contract Data part one
- **Key Date** - the date by which work is to meet the Condition stated (clause 11.2(11)), *key date* and *condition* to be stated in Contract Data part one
- **Completion** - when the Contractor has completed all the work which the Scope states is to be done by the Completion Date and correctly notified Defects which would have prevented the *Client* from using the works or Others from doing their work (clause 11.2(2))
- **Completion Date** - the *completion date* unless later changed in accordance with the contract (clause 11.2(3)) to be stated in Contract Data part one
- **planned Completion** – it reflects when the *Contractor* believes the date of Completion would be and it is shown on each programme submitted by the *Contractor* for acceptance (clause 31.2)
- **date of Completion** – it is the actual date of Completion which is decided by the PM, who certifies within one week of the date (clause 30.2)

3.3 Topical issues

3.3.1 General issues

In general, CEDD projects face several challenges relating to programme management as summarised below:

3.3.1.1 Resource issues

There is a lack of sufficient resources to deliver the required outcomes and benefits. This shortage extends to the preparation, revision, review, and acceptance stages of the programme. Often, RSS needs to share information such as up-to-date site progress with the *Contractor* because some *Contractors* do not have enough planners on-site. Additionally, some of the planners (in particular the junior ones) in the market lack a good understanding of construction aspects, which hampers their ability to review, assess, and comment on the programme effectively.

3.3.1.2 Site access

Delays are frequently caused by issues related to site access and land availability, which affect subsequent operations. There are also problems with partial access to various parts of the Site, further complicating the situation.

3.3.1.3 First programme challenges

Preparing the first programme within the 14-day timeframe is challenging, often resulting in rough submissions. The lack of continuity between the tendering team and the delivery team means the delivery team must reschedule the project from scratch. From the *Contractor*'s perspective, the requirement to include resources in a programme is relatively complicated. There is also uncertainty about whether the bid programme should be treated as the first programme.

3.3.1.4 Assessing delay

Using the Accepted Programme for delay assessment is challenging, especially when accounting for events between the Accepted Programme and the dividing date. To align with the NEC approach, the Accepted programme current at the dividing date is required.

3.3.1.5 Programme preparation and revision

On some occasions, the *Contractor* may take a long time to submit revised programmes of low quality, due to lack of adequate planning support. The PM also takes a long time to review and accept programmes. Frequent submissions and review cycles create timeline issues, and "subject to" comments are often included in programme acceptance. Monitoring progress is difficult without revised programmes, and there is uncertainty about including changes or logical sequences in revised programmes. The traditional approach to programme updates and delay assessments raises concerns about actual delays and costs. Determining acceptable programme details is subjective, and there are challenges in accepting programmes with planned Completion later than the Completion Date. Insufficient details in programmes make review difficult, and the introduction of 3-month rolling programmes raises questions about their acceptability. When delays occur, the programme revision and acceptance processes will often break down.

3.3.1.6 *Programme submissions*

There are issues with duplicated and overlapping works arising from the requirements of the ECC and the Particular Specifications. For instance, an updated programme is required to be submitted by the *Contractor* monthly, developed based on GCC, which causes confusion that both updated and revised programmes with different requirements are required to be submitted.

3.3.1.7 *Revising and accepting programmes for CEs*

It is unclear to some people what should be included in revised programmes related to CEs, particularly when the event has not yet been implemented. RSS is often reluctant to accept CE-related programmes before the event is clear, fearing *Contractor*'s claims.

3.3.1.8 *Delay prevention or mitigation / recovery measures*

To catch up delays, methods such as increasing resources (e.g. more personnel, overtime work) are considered. However, there are disputes on how to assess the compensation to the *Contractor* and the contractual mechanisms to use for this purpose.

3.3.2 Issue no. 1 – partial site access

3.3.2.1 ***Description***

It is common that the Site is divided into different portions with different *access dates* which are stated in Contract Data part one.

Due to various reasons (which could be results of *Contractor's* faults or *Client* / others' inability to provide access), the *Client* may not be able to provide the *Contractor* access to some or all portions of the Site by the respective *access dates*. Partial access to the portions of the Site may be available.

It is likely that as a result of the delayed access to the portions of the Site, the *Contractor's* planning of works and actual progress of works may be impacted, even if access is partially available.

3.3.2.2 ***FAQ***

What can the project team do if only partial access to the portion of the Site is available by the *access date*?

Either the PM or the *Contractor* should notify an early warning as soon as possible and seek to mitigate the effects of the issue timely. This will likely result in a CE, but the effect of the event may be mitigated as a result of actions taken following an early warning meeting, such as providing access to other areas of the Site or the *Contractor* reprogramming their works.

When the programme is revised for acceptance, it would be desirable for the project team to discuss and agree on how best the potential delays due to partial access of the Site could be mitigated and how the potential delay be reflected in the revised programme. It should be noted that if in reality, part of the Site may not be required by the *access date* then the later actual date required for access of that part of the Site can be stated in the revised programme which would supersede the relevant *access date* when the programme becomes an Accepted Programme for the purposes of assessing whether or not it is a CE under clause 60.1(2). When applicable, this would be a collaborative way in managing the programme and access requirements.

3.3.3 Issue no. 2 – first programme

3.3.3.1 ***Description***

Under the NEC4 ECC contract, there are detailed requirements of what needs to be shown on each programme submitted for acceptance, and that includes the first programme.

The *Client* decides whether the first programme is submitted by the *Contractor,* either as part of the tender submission, or as a post-contract submission. The CEDD's Contract Data part one usually stipulates that the *Contractor* submits a first programme for acceptance within two weeks of the Contract Date.

3.3.3.2 ***FAQ***

Whether any programme submitted as part of the tender can be treated as the first programme and by accepting the tender whether such programme can be treated as the first Accepted Programme?

In order to allow a tender programme to become the first Accepted Programme, it has to be included (or referenced) in Contract Data part two. The *Client* should decide whether they are willing to accept a tender programme when they put together the contract documents, prior to contract award, and should exclude from Contract Data part two any programme they do not wish to be identified as the first Accepted Programme. Even if a first programme is accepted by virtue of its inclusion in Contract Data part two, the PM can instruct a revised programme to be issued immediately after the Contract Date.

Whether the first programme needs to be accepted by the PM to avoid the application of clause 50.5?

Clause 50.5 will not apply if a first programme has been included in Contract Data part two.

A *Contractor* will have met the obligation under clause 50.5 once they have submitted a first programme for acceptance, not when it is accepted. However, the programme submitted will have to contain all the information the contract requires and the PM will determine if this is the case.

Given the challenges in preparing for the first programme, what are the practical considerations project teams can take to ensure a first programme can be prepared and accepted?

Project teams are encouraged to consider or make reference to the tender information submitted by the Contractor in tender stage. That information can be reviewed by the PM and / or their delegates involved in reviewing a programme submitted for acceptance, and they should engage with the members of the *Contractor* who will produce the first programme to share any feedback on tender information and to use it to develop the first programme for acceptance.

3.3.4 Issue no. 3 – assessing delay

3.3.4.1 ***Description***

NEC4 ECC sets out a prospective approach requiring a contemporaneous programme as the baseline for assessment. Clause 63.5 sets out the assessment of the period of "a delay to the Completion Date" (i.e. EOT) is based on:

- A particular CE
- A delayed planned Completion as a result of the particular CE
- The Accepted Programme current at the dividing date
- Any delay caused by the CE already in the Accepted Programme
- Events which have happened between the date of the Accepted Programme and the dividing date.

It is not uncommon in practice that:

- The Accepted Programme is rather outdated in relation to the dividing date
- Whether project delays are caused by a particular CE or by *Contractor*'s risk events is unclear
- The critical path may have changed over time

3.3.4.2 ***FAQ***

What is "the Accepted Programme current at the dividing date"?

The dividing date is detailed in clause 63.1 and, put simply, is the date a CE is notified or should have been notified by the PM, but they failed to do so. The Accepted Programme current at the dividing date will be the latest Accepted Programme in existence at the date the CE was notified, or should have been notified. This will commonly be the latest Accepted Programme.

What is the "delay caused by the CE already in the Accepted Programme"?

It may be that when, a CE is notified, some of the delay due to the event has already been incurred or has been forecast to occur, resulting in a delay to planned Completion. This delay to planned Completion may have been included in a revised programme and may have subsequently become an Accepted Programme.

For example, the *Contractor* may encounter uncharted underground utilities. It may take several weeks for the *Contractor* to establish the extent and determine the event is a CE (note they have up to eight weeks to notify). Once the *Contractor* has notified the event as a CE, the PM has one week, or a longer period to which the *Contractor* and PM have agreed, to decide if the event is a valid CE and should proceed to the quotation stage. If a quotation is instructed, the *Contractor* has three weeks to provide it. At any point during this process the *Contractor* may be required to submit a revised programme for acceptance. The submitted programme will have to reflect any delay that the event has caused, even prior to the effect of the CE being implemented, and any ongoing effect the event may have. This may well result in planned Completion being delayed to a later date because of the event.

3.3.5 Issue no. 4 – preparing and revising programme for acceptance

3.3.5.1 ***Description***

Under the NEC4 ECC contract, there are detailed requirements for what needs to be shown on each programme submitted for acceptance, including each revised programme.

CEDD's contracts usually require the *Contractor* to submit revised programmes for acceptance monthly. Clause 32.2 also requires the *Contractor* to submit a revised programme for acceptance within the *period for reply* after the PM has instructed the *Contractor* to or allows the *Contractor* to submit a revised programme for acceptance when the *Contractor* chooses to.

The project teams may find it difficult to comply with the programme revision requirements, given the level of information required in and the frequency of the submission of a revised programme for acceptance.

In practice, there are several challenges for the project team:

- It may take longer than the contractual timeframe to revise and programme and/or accept a revised programme
- The *Contractor* may need to revise a programme when a prior version of a revised programme is still being assessed by the PM for acceptance which could create confusion as to which programme is actually current
- The Particular Specification may have additional requirements relating to programme update, which have been carried over from previous non-NEC contracts
- It is likely that the PM and the *Contractor* would have different views on what and how information should be shown in the revised programme, particularly on future operations
- There may be differing views on whether the *Contractor's* plan has shown the information required by the contract and is practical, realistic, and complies with the Scope

Any programme requirements stated in the Scope should be considered in the context of the NEC4 ECC contractual requirements and amended or simplified as necessary. As the PM has the power to change the Scope, requirements related to the programme in the Scope can be changed after the Contract Date. These changes could be to simplify the information the *Contractor* has to show on a programme submitted for acceptance and / or to revise or clarify the information the *Contractor* must provide. Such a change in Scope will be a CE, however this could potentially be of negative value if it reduces the *Contractor's* Defined Cost or of no cost effect if the *Contractor* already has supplied the information.

The decision on whether the *Contractor's* submitted programme meets the requirements of the contract is, as with nearly all decisions in the contract, for the PM to make. The PM should try to work with the *Contractor* to reach agreement regarding a submitted programme in line with clause 10.2. However, if there is a disagreement, the PM will have to make a decision and that decision under the contract will be final.

The *Contractor* will have to accept the decision and submit a revised programme for acceptance. If the *Contractor* disagrees with the decision, whilst they can challenge it under the dispute process in the contract, they must comply with it. If through the dispute process it is determined that the PM*'s* decision of not accepting the programme was incorrect, then this will lead to a CE under clause 60.1(9). However, it will not require the submitted programme be accepted but instead it would compensate the *Contractor* for the cost or/and time of having to resubmit a revised programme.

3.3.5.2 ***FAQ***

What level of information and/or precision should a revised programme be achieved for it to be accepted by the PM?

The level of information should be as stated in the contract, including any requirements stated in the Scope. In terms of precision, the as-built record captured in any revised programme should be factually correct whereas the programme for the remaining work will be a best estimated by the *Contractor.* The PM must recognise that planning / scheduling is not an exact science but rather a best estimate of what is expected to occur. Very often the *Contractor* would make assumptions on the programme, and it is just a statement of intent by the *Contractor*. The programme can and will change as the works progress and there may be differences in opinion on how long certain operations will take or how they are interlinked, but the PM should take a sensible and pragmatic view when considering a programme for acceptance.

Can the PM accept a revised programme with a list of assumptions in the reply?

The PM may accept a revised programme with a list of assumptions. The assumptions should be practicable, reasonable and based on best information available at that time. Contractually the PM is required to either accept or not accept the programme submitted by the *Contractor*. However, this sometimes does occur in practice on the basis that it is better to have a programme accepted with assumptions than have no accepted programme at all.

Is the *Contractor* in breach of contract if it submits a revised programming showing the date of planned Completion later than the Completion Date? Can the PM accept such programme? What is the implication if such programme is accepted?

The *Contractor* will not be in breach of contract if it submits a programme showing the date for planned Completion later than the Completion Date. The *Contractor* will be in breach of contract if they fail to actually achieve Completion on or before the Completion Date, and such a breach of contract will be addressed through the application of delay damages. If a programme is submitted that shows the *Contractor* planning to complete the works late, then this should be challenged, as the *Contractor* has an obligation to recover any delays so as to achieve Completion on or before the Completion Date. However, if this may not be possible and the reality is that the *Contractor* is going to finish late then this must be shown in the programme and that programme should be accepted, as long as none of the reasons for non-acceptance in clause 31.3 apply. In fact, if a programme submitted for acceptance showed planned Completion on or before the Completion Date but this could not be achieved, then the programme would have to be not accepted as it would "not represent the *Contractor's* plans realistically".

In accepting a programme showing planned Completion later than the Completion Date, the PM is in no way accepting or forgiving the delay, nor changing the Completion Date to match the date of planned Completion. If the *Contractor* fails to achieve Completion on or before the Completion Date, delay damages will be payable in the next assessment after the Completion Date has passed.

The Completion Date is a milestone date that is not related to the activities of the *Contractor.* Only the PM has the power to change the Completion Date through the implementation of a CE or a mutual agreement with the *Contractor* to accept a Defect or to accelerate in accordance with clause 36.

Can the future operations in the revised programme contain different logical sequence, methodology of works, critical path, etc. compared with the last Accepted Programme?

Yes, they can and almost certainly will as things are unlikely to go exactly as planned. Due to factors such as weather, productivity, disruption, delays to Plant and Material deliveries etc. ,whether due to *Contractor* or *Client* risk events, actual progress will be different from planned progress. The *Contractor* is also at liberty to change the order and sequence of the works as long as they comply with any requirements and constraints stated in the Scope.

3.3.6 Issue no. 5 – revising and accepting programme relating to CE

3.3.6.1 ***Description***

As the project progresses, various events happen which may or may not be a CE. If an event has been accepted to be a CE, it may or may not be implemented at the time a programme is revised. It may be unclear whether an event being considered as part of the CE process should be included in a revised programme for acceptance.

A CE is implemented when:

- The PM notifies acceptance of the *Contractor's* quotation
- The PM notifies the *Contractor* of an assessment made by the PM
- A *Contractor's* quotation is treated as having been accepted by the PM

3.3.6.2 ***FAQ***

What a revised programme should show in relation to an event which is being assessed

- **whether it is a CE, and**
- **the time effect if it is a CE but have yet been implemented**

A revised programme submitted for acceptance must capture all issues that have or will affect progress. Therefore, it will need to reflect the actual progress achieved to date and forecast or re-forecast all remaining work. In doing so, it will have to reflect any delay caused by any event whether a *Contractor's* risk event or a CE, even if the validity or impact of the CE is still being assessed.

As an example, it may be that the *Contractor* encounters rocks in an excavation. The *Contractor* may not initially be sure if this is an unforeseen physical condition and if so, it is a CE. It may take several weeks before the *Contractor* establishes the extent and type of rock and determines the event is a CE (note they have up to eight weeks to notify). Once the *Contractor* has notified the event as a CE, the PM has a week, or a longer period to which the *Contractor* and PM have agreed, to decide if the event is a valid CE and should proceed to the quotation stage. If a quotation is instructed, the *Contractor* has at least three weeks in which to provide this. At any point during this process, the *Contractor* may be required to submit a revised programme for acceptance. The programme submitted will have to include any delay caused by the event, which should be a factual record of delay actually incurred and / or a forecast of any future impact of the event.

Acceptance of the programme does not imply PM's acceptance of the CEs. Whether the event is a CE is irrelevant in respect of the revised programme submitted for acceptance. Separately, through the CE process, it will be determined if the event is a CE, if the *Contractor* will be entitled to be compensated as result of and the impact of the event in terms of time and cost.

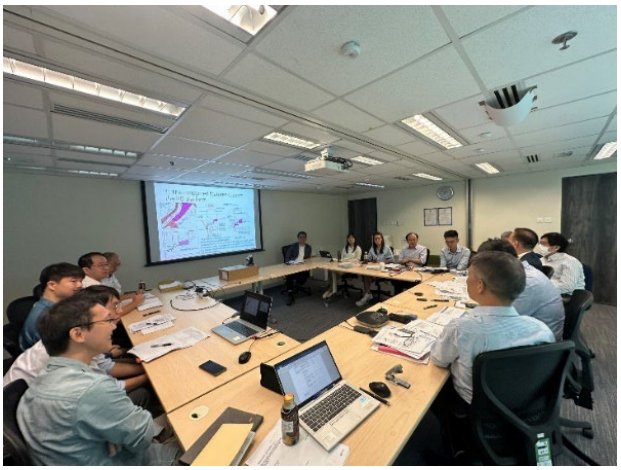
4 Management of compensation events

4.1 Overview

The intent of the NEC4 ECC is to drive the proactive management of change so that the effects are assessed and agreed contemporaneously with the event arising and ideally, before the event occurs.

CEs should be assessed using a forecast approach for works not yet done or the full effect of the CEs is not materialised after the dividing date as far as practicable, with elements such as risk allowances to be allowed for. Timely implementation of CEs is crucial and is beneficial to all parties involved and for the overall success of the project.

The NEC4 ECC focuses on the importance of collaborative working, relationships, and management procedures. One of the key benefits of the CE procedure is that project issues are resolved contemporaneously and not saved up for protracted debate at the final assessment stage.



4.2 Good practices and practical know-how

A CE should be assessed by using a forecast approach as soon as possible after the dividing date. Although it may not be easy to achieve in reality, the PM and the *Contractor* are encouraged to work collaboratively in an attempt to have the quotation accepted in a timely manner so that the *Contractor* remains motivated to beat the accepted quotation by working efficiently to achieve cost saving.

The PM and the *Contractor* should meet and openly discuss for the potential risks of the works under the CE and preferably, to start discussing the *Contractor*'s risk pricing before the issuance of the instruction. By knowing the potential risks involved, the PM may state assumptions about the CE, in particular for risks that are hardly to be agreed so that the *Contractor* no longer needs to worry about the inclusion of such risk allowances in the quotation.

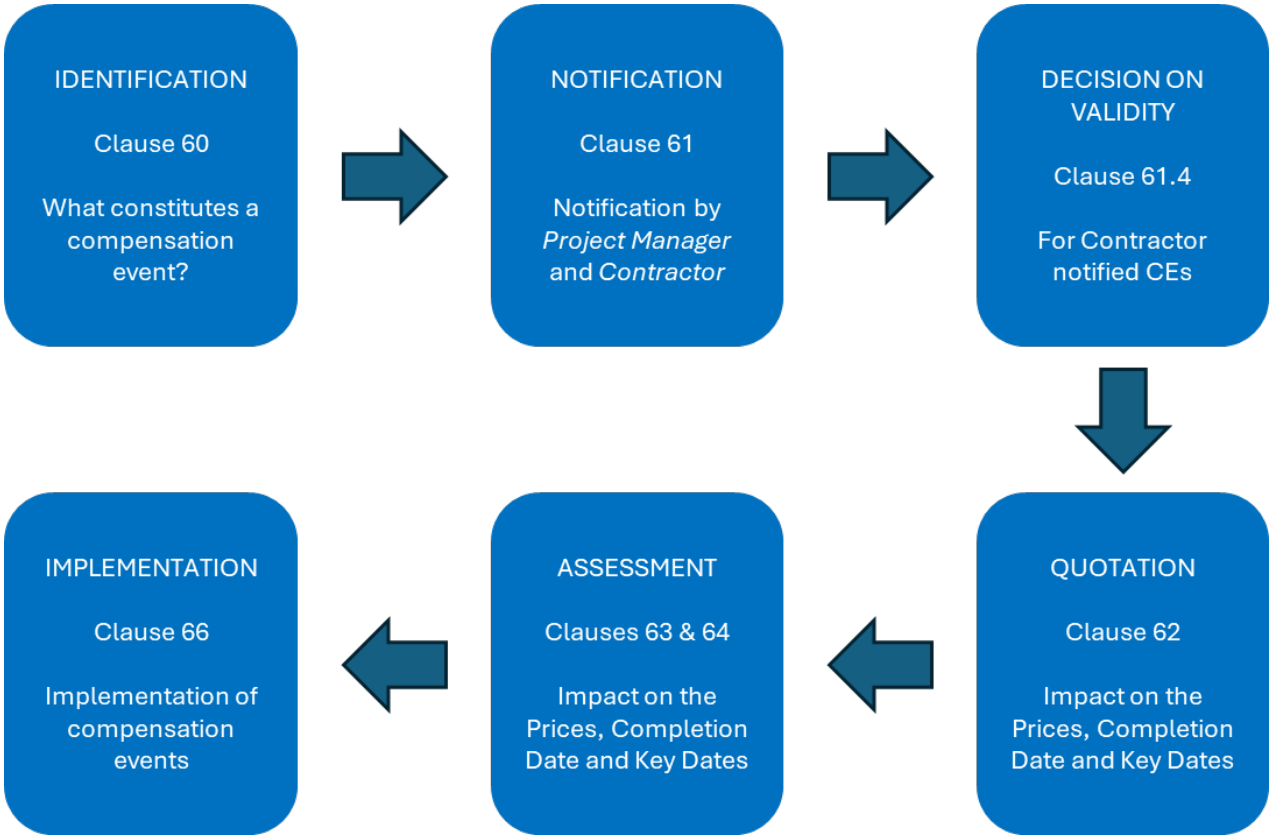


Figure 10: Flowchart on CEs by NEC clause

4.2.1 Variation and Claim

As variation and claim require different approval procedures, the PM should determine which category the CE belongs to. The figure below shows the typical CEDD categorization of variation and claim for CE by NEC clauses for CEDD's contracts.

Variation	Variation / Claim	Claim
Clause 60.1 (1)	Clause 60.1 (4) Clause 60.1 (7) Clause 60.1 (8) Clause 60.1 (10) Clause 60.1 (15) Clause 60.1 (17) Clause 60.1 (21)	Clause 60.1 (2) Clause 60.1 (3) Clause 60.1 (5) Clause 60.1 (6) Clause 60.1 (9) Clause 60.1 (11) Clause 60.1 (12) Clause 60.1 (13) Clause 60.1 (14) Clause 60.1 (16) Clause 60.1 (18) Clause 60.1 (19) Clause 60.1 (20) Clause 60.4 Clause 60.5 Clause 60.6

Figure 11: Typical categorisation of variation and claim for CEs by NEC Clauses

Whether the CE is a variation (refer to CEDD Technical Circular No.02/2023) or a claim for the purposes of the government's internal requirements, it should be determined by the PM, subject to *Client*'s agreement when needed.

4.2.2 Internal procedure for compensation events

Refer to the flowchart in **Appendix A.**

4.2.3 Dividing date

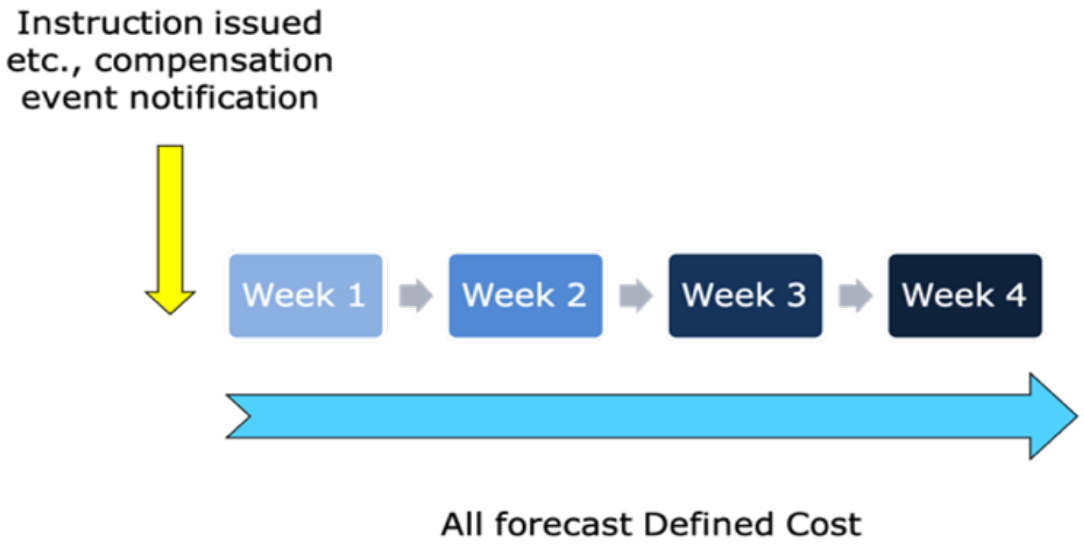


Figure 12a: Timing of notification of CE – before CE occurs

If the dividing date for a CE precedes the event's occurrence, then the assessment of the change to the Prices is made entirely on the basis of a forecast of the Defined Cost plus Fee to be incurred by the *Contractor*.

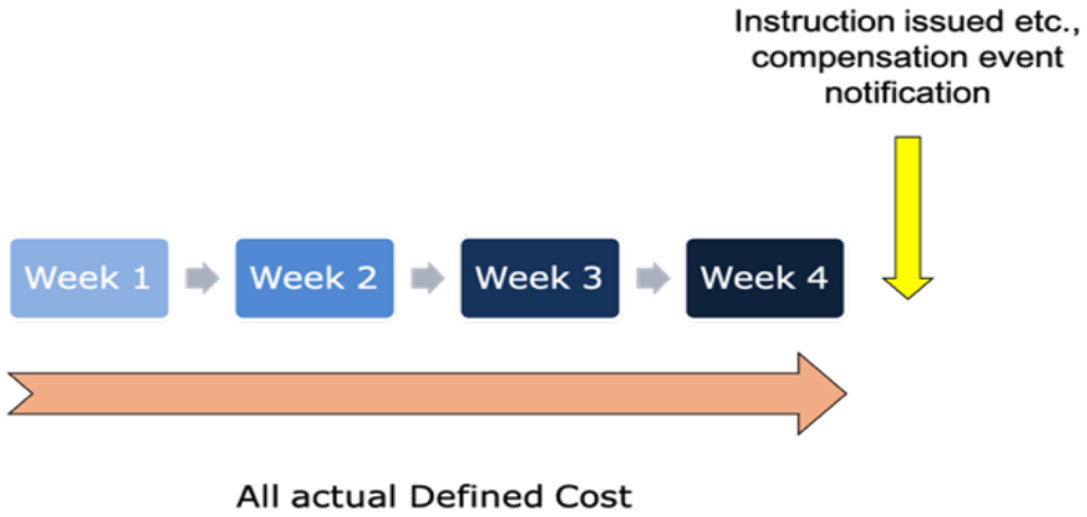


Figure 12b: Timing of notification of CE – after CE occurs

If the dividing date of a CE is after the event occurs and all relevant Defined Costs are already incurred, then the assessment of the change to the Prices is made entirely based on the actual Defined Cost, plus Fee incurred by the *Contractor* as evidenced by their accounts and records.

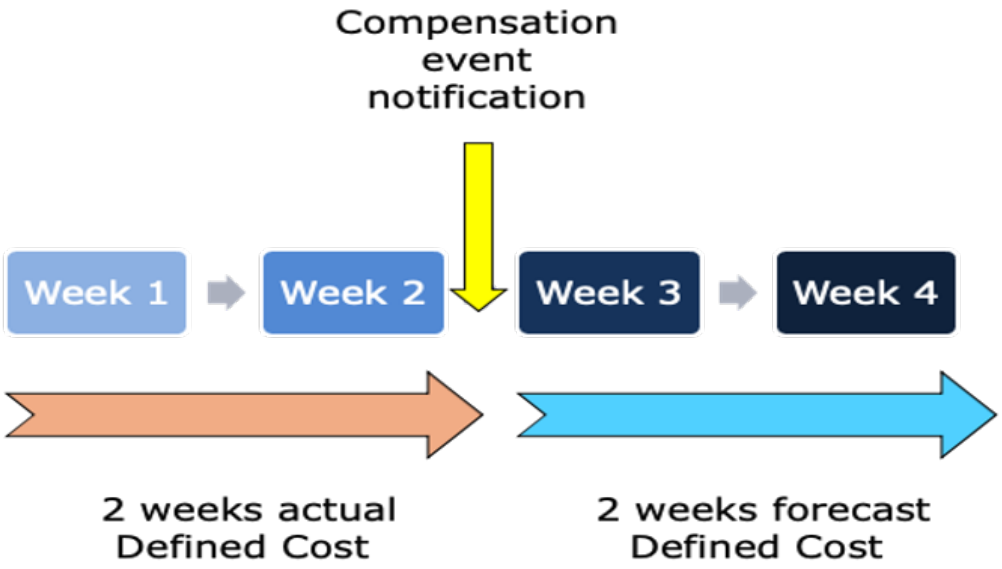


Figure 12c: Timing of notification of CE – partway through CE occurs

If the dividing date of a CE is partway through the occurrence of the event, and the relevant Defined Costs are partially incurred, then the assessment of the change to the Prices is made:

- based on the actual Defined Cost, plus Fee incurred by the *Contractor*, as evidenced by their accounts and records, up to the dividing date
- a forecast of the Defined Cost, plus Fee to be incurred by the *Contractor* for the remaining work

The first diagram shows a practical issue that can occur in the assessment of a CE where the dividing date is before any work on the CE commences but, by the time the quotation is produced by the *Contractor* the work is complete. Even in this situation, the contract requires that the assessment of the CE has to be on the basis of the forecast Defined Cost assessed at the dividing date, and hindsight cannot be used. It is inevitable that the forecast component of a quotation may be influenced by the cost already incurred. Timely submission and assessment of a CE quotation should be pursued as far as practicable so as to align with the principle of using actual and forecast Defined Cost respectively.

The intent of the process is that CEs are not cost-reimbursable, but are assessed on forecasts made by the *Contractor*. This approach provides an incentive for the *Contractor* to be efficient in undertaking the work so as to deliver them for a lower cost than in the quotation and also provides the *Client* with greater cost certainty, knowing that the CE value will not be revised even if the actual costs to the *Contractor* are greater. This same approach is applied to the assessment of time implication.

4.2.4 *Project Manager's* assumption (Clause 61.6)

- When the effect of a CE is too uncertain to be forecast reasonably, Clause 61.6 allows the PM to state assumptions about the CE in the instruction to the *Contractor* to submit quotations
- If the assumption is found to be wrong, then the PM should notify a correction to that assumption. The correction of a CE itself is a CE under clause 60.1(17)
- The intent of the PM's stated assumptions is to deal with uncertainty in the effect of a CE, and to allow quotations to be provided in advance of the works taking place or as soon as possible after they have commenced
- The *Contractor* will be able to prepare the quotation based on the stated assumptions and is likely to provide greater certainty to both parties about what is expected due to the changes
- This can avoid retrospective assessments being made based on actual cost or delay as this creates uncertainty over the impact of a matter until it is finished, which removes the incentive for the *Contractor* to be efficient in the delivery of the works
- The PM*, Contractor* and preferably with the *Client,* should discuss the scope, planned construction method, and relevant risks to decide whether assumption(s) should be stated in the CE
- Common assumptions may include ground condition, i.e. range of ratio of hard and soft materials to be excavated

4.2.5 Risk allowance (Clause 63.8)

- Allowance for risks should be included in the forecasts of Defined Cost, in the same way that the *Contractor* should allow for risks when pricing the tender
- Risk allowance for both cost and time can be allowed for risks which have a 'significant chance of occurring' in the assessment of the effect of a CE
- For assessment based upon the actual Defined Cost of the work already done, risk allowance should not be allowed
- For assessment based upon the forecast Defined Cost of the work, the risk allowance should be applied to the activity that may be affected. A broad-brush allowance across all activities is not appropriate
- Common risk allowance may include weather events, such as rain (only for weather events which do not constitute CE)

4.2.6 People Cost (full-time staff cost)/ Indirect Cost for CEs

- Since the *Contractor* has deployed manpower resources to deal with the original scope of works, whenever there are changes to the scope, the *Contractor* may require additional resources (i.e. site management staff) to deal with it, and it should be compensated via CEs
- It is challenging for the *Contractor* to demonstrate the additional people cost involved, as there may not be additional staff employed, but with the existing staff spending extra time / effort in handling the CE related issues such as preparation of submission, method statement, programme, payment, subcontracting, etc.
- The PM and *Contractor* should agree on the baseline of the manpower resources for the original scope of works at an early stage, such that the assessment of the subsequent additional manpower resources may be assessed more reasonably

The following figure demonstrates the possible people cost involved in a CE:

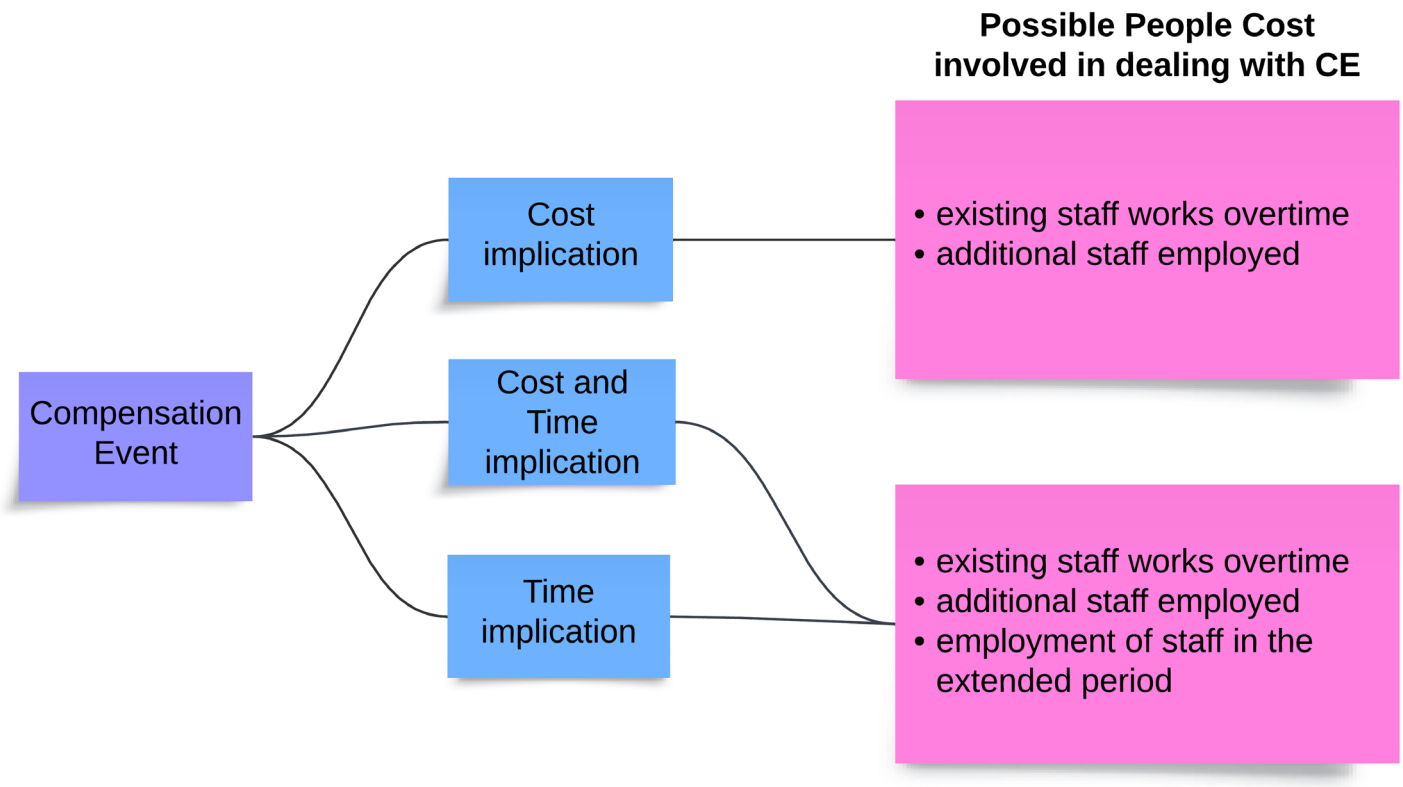


Figure 13: Illustration of possible people cost in CEs

- The people cost should be assessed by using the forecast approach, and should not be affected by the actual staff arrangement, as the *Contractor* is incentivised to reduce people cost by enhancing the productivity of the existing staff such that no additional staff is required to be employed or to minimise the overtime work by the existing staff to reduce the Defined Cost

4.3 Topical issues

4.3.1 General issues

Common challenges faced by CEDD projects relating to the management of CEs are summarised below:

4.3.1.1 Assessing the validity of CEs

There are allegations that on some occasions, *Contractors* notify too many CEs without sufficient supporting documents and elaborations. The PM usually has to check relevant records for confirmation of the validity and assess the full effect of the NCE. Sometimes the PM is required to seek *Client*'s view before further processing, which makes it difficult to meet timeframes.

4.3.1.2 Malpractice of CE assessment

- *Contractors* are often confused about the dividing date and submit poor-quality quotations
- *Contractors* are not allowed to include risk allowances based on forecast approaches, and effects are usually assessed retrospectively. This feedback indicates limited adoption of forecast approaches in reality
- Assessments may take the actual Defined Cost approach, even if a forecast approach should be adopted. Forecast amounts require supporting quotations, but traditional approaches continue which cause delays
- Quotations are often retrospective, and RSS requests records to justify the costs. There are various options to deal with a CE, and the PM should determine the best approach for the project

4.3.1.3 People cost / indirect cost for management of change

When there are many CEs, it is difficult for the *Contractor* to demonstrate additional people costs involved. The baseline resource level is unclear, and the effects may be cumulative from multiple CEs. Debating over this wastes time. An experienced *Contractor* should account for resources to manage changes and claims, but it is unclear to what extent this becomes unreasonable and whether it should be included in the Fee.

4.3.1.4 Risk allowance

NEC adopts a prospective approach in determining risk allowance. Including risk allowances as part of the forecast requires examples and clarification on reasonable levels of risk. If risk allowances are not included, the *Contractor* bears the risk when it materialises and the *Contractor* may not have priced for it in the tender.

4.3.1.5 Making PM's assumption

PM may not make assumptions during the notification of CE, even when the effect is uncertain, given the fact that the inclusion of PM's assumptions will be beneficial in the CE assessment process.

4.3.2 Issue no. 1 – internal procedure

4.3.2.1 ***Description***

Like many client organisations, CEDD has internal procedures for approval of change to the Prices and / or Completion Date. In addition, there are different procedures for dealing with different reasons for the change, e.g.

- Change of Scope (i.e. variation) initiated by the *Client*
- Other CEs (i.e. contractual claims) impacting the time and/or cost

The extent and / or level of delegation of authority to the PM may not allow for timely compliance of the contractual procedures.

4.3.2.2 ***FAQ***

Should the effect on time and/or cost of a potential CE (notified by *Contractor*) be assessed first before the PM*'s* confirming the validity of a CE?

Handling of NCE comprises two stages. The first stage is to determine whether the event is a valid CE, and if a quotation should be instructed. The second stage is to determine the time and cost effects of the event.

A CE will arise when one of the events listed in the contract as a CE occurs. If the event does occur, the *Contractor* will be entitled to be compensated for the effects of the event regardless of what the effect on the time or the cost will be, except that the event arises from a fault by the *Contractor* or if the event has or will not have any impact on the Defined Cost, Completion or meeting a Key Date.

It is not possible to deny the *Contractor* their contractual entitlement, and the *Client* will have to compensate the *Contractor* even if this means the *Client* may have to seek additional budget or omit Scope to be able to pay any additional cost.

Once it is confirmed that the event is a CE, the next stage in the process is to determine the compensation to which the *Contractor* will be entitled. Any such compensation will be based on the actual or forecast effect on the *Contractor,* which may be none. In addition, alternative ways of dealing with the event can be considered, such as mitigating time at the expense of cost or vice versa.

Whether the PM needs to seek approval (or pre-approval for that matters) from the *Client* before confirming the validity of a CE?

As noted above, the *Contractor's* entitlement to a CE will be a matter of fact and will not be affected by the approval or not of the CE by the *Client.* PM should inform *Client* of the implication of the CE and *Client* should offer its view for PM at an early stage for timely response to *Contractor* based on the information and assessment presented by the PM.

4.3.3 Issue no. 2 – people and indirect costs for management of change

4.3.3.1 ***Description***

Where there is a CE, the *Contractor* is normally required to use its resources to deal with it. Such resources may include additional Equipment, Plant and Materials, and people. It is often unclear as to whether the *Contractor* is entitled to be compensated for "indirect" people costs for the management of CEs and the related procedures (including notification and preparation of quotation). Those indirect costs of people may relate to:

- Site management staff
- Site engineers, planners, quantity surveyors, foremen, etc.
- Administrative support staff

Whilst it could be relatively straightforward to assess these additional costs of people for major CEs, it could be less obvious how, if any, additional indirect cost of people and/or their effort could be assessed.

4.3.3.2 ***FAQ***

What is the baseline resource level?

The baseline resource level will be the level of resources the *Contractor* requires to deliver the *works* prior to the occurrence of the CE. This should be determined from information provided at tender stage, the Accepted Programme, and from site records. For the baseline to be used, it should ideally be set and agreed at the start of the contract and to be reviewed at reasonable intervals so as to avoid disputes in subsequent assessment.

Where there is a cumulative effect from multiple CEs, it is as part of the CE when the cumulative effects manifest themselves, that the extra over cost will be recovered as illustrated in the diagram below. In this example, additional resources could be included in CE no.3 as part of the assessed effect incurred by CE no.3.

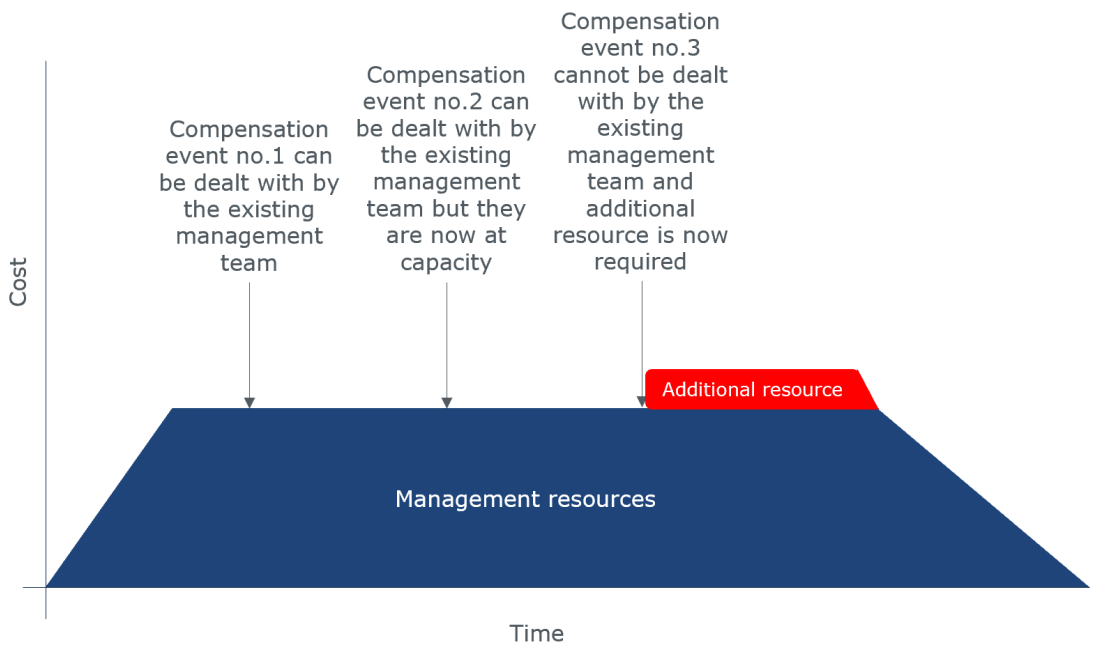


Figure 15: Extra over cost recovery for cumulative effect of CEs

Even if there is no apparent increase of *Contractor's* direct resources to deal with the volume of CEs, the *Contractor*'s staff may need to work "harder" or even overtime and/or its support staff based at its head office would have additional works. How could the Contractor be compensated for these additional efforts?

If there is an increase in the *Contactor's* Defined Cost due to a CE, the *Contractor* will be entitled to recover this as part of the CE assessment. However, as noted above, the *Contractor* will need to demonstrate this. If the *Contractor's* staff are working additional hours due to a CE and, importantly, they are being paid for this overtime work by the *Contractor.* The *Contractor* could recover this cost as part of Defined Cost in the assessment of a CE. However, any such people costs would need to comply with the rules in cost component 1 of the relevant schedule of cost components in relation to where the person is based and / or working, and whether this is within or outside the Working Areas.

Any costs not recovered as Defined Cost are treated as included in the Fee. As the Fee is calculated by applying the *fee percentage* to the total Defined Cost, Defined Cost increases the level of the Fee recovered by the *Contractor* will increase.

Instead of spending a disproportionate amount of time for the project team to prove and check additional resources are actually used by the *Contractor* for Providing the Works, and the relevant Defined Cost as a result of a large number of CEs, are there any practical ways CEDD could consider to fairly compensate the *Contractor* based on simple assessment approaches?

In accordance with clause 63.2 it is possible for the PM and *the Contractor* to agree to use rates and lump sums in the assessment of a CE. There are no restrictions on rates and lump sums being calculated using a percentage, or for rates and lump sums to be used for only a part of the assessment.

4.3.4 Issue no. 3 – assessing the effect of CE and dividing date

4.3.4.1 ***Description***

There is a need to clarify the concept of the dividing date, as it remains unclear to some people. Typically, effects are assessed retrospectively, similar to traditional approaches, using actual effects as the basis for assessment. Feedback from various teams suggests that forecast approaches are not commonly adopted in practice. Additionally, there is a consideration of whether assessments can include actual costs even if a forecast approach is used from the dividing date.

In many cases, quotations are retrospective, and the PM requests relevant documents to justify costs, leading to the use of actual costs instead of forecasts from the dividing date. There are multiple options to handle a CE, each leading to different effects. It is crucial for the PM to adopt the best approach for the project rather than adhering to a single method proposed by the *Contractor*.

4.3.4.2 ***FAQ***

What should be the basis of a quotation of a CE?

When a quotation for a CE is instructed, the PM should, in accordance with clause 62.1 discuss with the *Contractor* any alternative approaches in dealing with the effects of the event that are possible. However, this can only occur when the effect of the CE has not yet occurred or is still ongoing and the response to the event can still be changed.

The intent of the process is to allow the PM, on behalf of the *Client* to determine the best way to address the event as the *Client* will be liable for the time and cost effects of the event.

For example, an instruction to change the Scope has been issued by the PM and this will introduce additional work into the contract. The *Client* may wish to mitigate, as much as possible, any delays that the event will cause and so the PM could discuss with the *Contractor* on how to mitigate such delays, perhaps through the application of recovery measures e.g. additional shifts of work or longer working hour, increasing resources, etc.

On the other hand, if the additional work is not on the critical path, the discussion would focus on minimising costs rather than delays.

It should be noted that the *Contractor* is able to include time and cost risk allowances for events which have a significant chance of occurring in their quotation, which are not part of the works for the CEs (clause 63.8).

What is the dividing date?

The purpose of the dividing date is to determine when, in assessing the effects of a CE, the Parties should move for an evaluation, based on the actual impact of the event to a forecast of its future impact. The date for this change is referred to as the dividing date.

The dividing date is defined in clause 63.1 and is the date when the compensation is notified or should have been notified by the PM, but the PM failed to do so.

The PM is required to notify those CEs that arise from the PM or the *Supervisor* giving an instruction or notification, issuing a certificate or changing an earlier decision as refer to clauses 60.1(1), (4), (7), (8), (10), (15), (17) and (20).

How should effects of a CE be assessed in respect of actual / forecast approach?

"Prospective" assessment of anticipated effects of a CE from the dividing date is key to the ethos of the NEC to proactively manage the effects of change and to allows the *Client* to participate in the change control process through the PM. Failing to follow this process would undermine the incentive for good contract management.

The intent of such an assessment of cost and delay is to create a target for the *Contractor* to try to achieve or exceed when they undertake the work required as result of a CE. It also provides the *Client* with a certainty of the CE as the effect of the event is not subject to reassessment later on a retrospective basis as confirmed in clause 66.3.

There is no provision in the contract that allows for the forecast to be changed based on the actual effects of the event, as this would render the process of forecasting the effect of the event in clause 63.1 ineffective.

In support of a "prospective" assessment the contact includes clause 61.6 which allows the PM to state assumptions on which the prospective forecast of a CE is to be based if the effects of a CE are too uncertain. If the assumption stated by the PM proves to be incorrect, this will lead to a new CE arising under clause 60.1(17).

In addition, clause 63.8 allows the *Contractor* to include in the forecast, time and risk allowances for matters that have a significant chance of occurring. This clause reflects the fact that the assessment made after the dividing date is based on a forecast and therefore needs to consider risk and uncertainty involved.

4.3.5 Issue no. 4 – risk allowance

4.3.5.1 ***Description***

It can be challenging to reach an agreement on risk allowances, as risk by its nature is associated with uncertainty. One way to deal with mitigate the uncertainty is to state the assumptions. For example, if there is concern about encountering rock during an excavation, a stated level of rock can be allowed for the tendered price and programme, with anything substantially deviates from the stated level being addressed as a compensation. This type of risk allocation can often be addressed by making statements in the Scope or Site Information. Another example is that weather events which would not be compensated (e.g. Amber Rainstorm Signal, Strong Wind Signal No.3, etc.) but could occur, such as in the summer of Hong Kong, they could be risk allowed in the assessment of relevant CE if they fall within the concerned period.

If the assessment of a CE is made on a retrospective or actual cost basis then there should be no risk allowance to be allowed. If there is a difference of opinion in relation to risk allowances in a CE quotation, these can be addressed via the use of a PM-stated assumptions issued under clause 61.6. The assumption can be used to remove or limit the risk by stating an expected outcome, which if proves incorrect will result in another CE for the difference (clause 60.1(17)).

4.3.5.2 ***FAQ***

In case of forecast approach, what risks can be allowed for in the effects? To what extent should risks be allowed for in the assessment of the effects of a CE?

A risk allowance can be included in assessments made on a forecast or prospective basis only. For example, a risk allowance in terms of additional time could be included when an excavation works could be delayed due to a high risk of adverse weather in summer and rain season such as strong wind signal No.3 and amber rainstorm signal.

4.3.6 Issue no. 5 – making PM's assumption

4.3.6.1 ***Description***

The contract does not allow the Parties to disagree in relation to the evaluation of a CE. Where there is a difference of opinion between the *Contractor* and *the* PM, a decision has to be made as to the assessment of the CE and this decision rests with the PM through the use of a PMA. The Parties can continue to negotiate and can agree to change the assessment of a CE, even after a PMA has been issued, through either an amendment to the contract under clause 12.3 or an agreement as part of the dispute resolution process in the contract, rather than revising the implemented CE.

4.3.6.2 ***FAQ***

In practice under what circumstances would the PM be best to make assumption for CE assessment?

The intent of the PM*'s* stated assumptions is to deal with risk and uncertainty in the effects of a CE, and to allow quotations to be provided in advance of the works taking place or as soon as possible after the works have commenced. The key objective is to stop retrospective assessments being made based on actual cost or delay, as this creates uncertainty over the impact of a matter until it is finished and removes the incentive for the *Contractor* to be efficient in the delivery of the works. In addition, it creates the potential for differences of opinion over how the event should have been dealt with, and whether the cost and time impact was reasonably incurred.

For example, a PM*'s* assumption would be needed when the *Contractor* is instructed to undertake excavation in an area of the Site for which no Site Information was provided. To allow a quotation for the excavation to be provided in advance of the works taking place, as required by the contract, it will be necessary to state assumptions regarding the expected physical conditions to be encountered. An assumption could be stated that there is no rock present or no contaminated material. If either of these are then encountered this will allow for another CE to be notified to address their effect, but still allow the quotation for the original CE to be issued in advance of the works taking place.

Whilst the PM-stated assumptions can be very helpful in dealing with risk and uncertainty, they should only be used when necessary. The expectation when assessing the effect of a CE in advance is that the *Contractor* will take some risks in the quotation, in the same way that they took risk in their original tender. In the example above, a stated assumption of physical condition would seem sensible. However, assumptions should not be made in relation to the *Contractor*'s performance. For example, assumptions of the time that the *Contractor* can complete the works of the CE should be avoided. This is because the *Contractor* may lose the incentive to be efficient in delivering the works as the longer they take, the more time they will be entitled to in the CE that addresses the correction of the stated assumption.

The PM*'s* assumptions should only be used when absolutely necessary, and only for matters that are outside the control of all parties but not for matters such as the *Contractor's* productivity.

Can the *Contractor* make such assumption in preparing for the quotation?

Only the PM has the power under clause 61.6 to state a PM*'s* assumptions, and these stated assumptions that will generate a new CE if they prove incorrect under clause 60.1(17). Any assumptions or caveats included in *Contractor*'s quotations will have no contractual effect. Even if they prove to be wrong, the quotation will not be subject to any change.

In practice, *Contractor* normally adopts a worst-case scenario in preparing their quotation, which in turn, may lead to conversations between the PM and the *Contractor* as to what assumptions should be made to devise a more reasonable quotation.

At what point and how the PM should make such assumption during the CE process?

The PM should state any assumptions upon which the *Contractor's* quotation is to be based when they instruct the quotation to be provided in accordance with clause 61.2 or 61.4. Often, it is sensible for the PM to approach the *Contractor* to learn about their uncertainties in relation to the CE quotation. The PM can state additional assumptions or change previously stated assumptions when revised quotations are instructed.

Appendix A

Legends:

- Action by *Client*
- Action by *Project Manager*
- Action by *Contractor*

Notes:

1. Cost estimates ≠ Compensation event quotations:
The *Project Manager* should prepare the cost and time estimate with reference to the Accepted Programme and cost data readily available.

2. Refer to ACC III:1 – The amount which the *Project Manager* may give an instruction to increase or decrease the Prices under the contract without the need to obtain confirmation from the *Client* if the value of such instruction is less than HK$1.4M.

3. Refer to Stores and Procurement Regulations (SPR), CEDD Technical Circular No. 02/2023 for the limits of compensation event amount by different approving officer ranks, **(it is also applicable for variation that results in savings or has no cost implication.)** and Library of standard *additional conditions of contract* for NEC ECC HK Edition Section III:1 .

4. The *Project Manager* should strive to agree the quotation or revised quotation submitted by the *Contractor*. *Project Manager*'s assessment should be used as a last resort.

Flow Chart – NEC4 Compensation Event (CE)
[For Consultants- managed contracts]

Project Manager to determine (consult *Client* if needed) whether the CE is a variation or a claim

Variation

Cl. 14.3
Cl. 65.2

Project Manager's Instruction (PMI) to change the Scope

Cost / Time Estimate
(Notes 1 & 2)

1. Cost estimate ≤ HK$1.4M
and
2. **NO** delay to planned Completion Date / Key Date

1. Cost estimate ≤ HK$1.4M
and
2. Delay to planned Completion Date / Key Date

1. Cost estimate > HK$1.4M
or
2. Cost estimate > HK$1.4M & Delay to planned Completion Date / Key Date
(Note 3)

Prepare Request for Authorization (RFA)

Cost estimate > HK$7M

Cost estimate > HK$4M and ≤ HK$7M

Cost estimate > HK$1.4M and ≤ HK$4M

Obtain *Client's* confirmation of no objection

Obtain views from PSGO and Obtain *Client's* approval (D6)

Obtain views from PSGO and obtain *Client's* approval (D2)

Obtain views from PSGO and obtain *Client's* approval (D1 or above)

Claim

Cl. 61.3

Notification of Compensation Event (NCE) by *Contractor*

Cl. 61.3

Contractor **MUST** notify *Project Manager* **within 8 weeks**. If not, *Contractor* loses his entitlement to time and cost.

Yes

No

Cl. 61.4

Project Manager decides if the event notified by *Contractor* is valid

Yes

No

Cl. 61.4

Project Manager notifies the *Contractor* that the Prices, the Completion Date and Key Dates are **NOT** to be changed

≤ total contract value

> total contract value and ≤ plus 20% of the original contract value or plus 150% of the quotation limit, whichever is the greater

> plus 20% of the original contract value or plus 150% of the quotation limit, whichever is the greater

Obtain *Client's* approval (SE level or equivalent)

Obtain *Client's* approval (D1 or above)

Obtain approval by (D6)

Cl. 14.3
Cl. 61.4

1. Issue PMI / CE
2. Reply to NCE & instruct *Contractor* to submit quotations

Cl. 62.3

Contractor to submit quotations **within 3 weeks**

The *Contractor* does **NOT** submit the quotation within 3 weeks

3 weeks

Cl. 62.3
Cl. 63

Project Manager replies (assess quotation) **within 2 weeks** of the submission

Is the quotation considered reasonable?

No

Cl. 62.4

Project Manager instructs the *Contractor* to submit a revised quotation with reason

Cl. 62.3

Yes

Cl. 64

Project Manager notifies the *Contractor* that *Project Manager*'s own assessment (Note 4)

Cl. 66.1

Project Manager notifies of acceptance of the quotation
Implementation of Compensation Event

Notes:

1. Cost estimates ≠ Compensation event quotations:
The *Project Manager* should prepare the cost and time estimate with reference to the Accepted Programme and cost data readily available.

2. Refer to ACC III:1 – The amount which the *Project Manager* may give an instruction to increase or decrease the Prices under the contract without the need to obtain confirmation from the *Client* if the value of such instruction is less than HK$1.4M.

3. Refer to Stores and Procurement Regulations (SPR) and CEDD Technical Circular No. 02/2023 for the limits of compensation event amount by different approving officer ranks. **It also applicable for variation that results in savings or has no cost implication.**

4. The *Project Manager* should strive to agree the quotation or revised quotation submitted by the *Contractor*. *Project Manager*'s assessment should be used as a last resort.

Legends:

Action by *Client*

Action by *Project Manager*

Action by *Contractor*

Flow Chart – NEC4 Compensation Event (CE) [For in-house contracts]

Project Manager to determine whether the CE is a variation or a claim

Variation

Cl. 14.3 Cl. 65.2

Project Manager's Instruction (PMI) to change the Scope

Cost / Time Estimate (Notes 1 & 2)

(Note 3)
1. Cost estimate **> HK$0**
or
2. Cost estimate **> HK$0** & Delay to planned Completion Date / Key Date

Delay to planned Completion Date / Key Date with no cost implication

Cost estimate **≤ HK$1.4M**

Cost estimate **> HK$1.4M and ≤ HK$7M**

Cost estimate **> HK$7M**

Cost estimate **≤ authority limit of PM's delegates**

Obtain *Client's* confirmation of no objection (**D2**)

Obtain views from PSGO and obtain approval by (**D6**)

Obtain views from PSGO and obtain approval by (**D2**)

Obtain approval by *PM* (**D1**)

Obtain approval by (**SE**)

Cl. 14.3 Cl. 61.4

1. Issue PMI / CE
2. Reply to NCE & instruct *Contractor* to submit quotations

Cl. 62.3

Contractor to submit quotations **within 3 weeks**

The *Contractor* does **NOT** submit the quotation within 3 weeks

Cl. 62.3 Cl. 63

Project Manager replies (assess quotation) **within 2 weeks** of the submission

Is the quotation considered reasonable?

No

Project Manager instructs the *Contractor* to submit a revised quotation with reason

Cl. 62.4

3 weeks

Cl. 62.3

Yes

Cl. 66.1

Project Manager notifies of acceptance of the quotation
Implementation of Compensation Event

Cl. 64

Project Manager notifies the *Contractor* that *Project Manager*'s own assessment (Note 4)

Claim

Cl. 61.3

Notification of Compensation Event (NCE) by *Contractor*

Cl. 61.3

Contractor **MUST** notify *Project Manager* **within 8 weeks**. If not, *Contractor* loses his entitlement to time and cost.

Yes

No

Cl. 61.4

Project Manager decides if the event notified by *Contractor* in valid or not

Yes

No

Cl. 61.4

Project Manager notifies the *Contractor* that the Prices, the Completion Date and Key Dates are **NOT** to be changed.

≤ total contract value

> total contract value and **≤** plus 20% of the original contract value or plus 150% of the quotation limit, whichever is the greater

> plus 20% of the original contract value or plus 150% of the quotation limit, whichever is the greater

1) If amount **≤** authority limit of PM's delegates, obtain approval by **SE**
2) If amount **≤ HK$1.4M and >** authority limit of *PM*'s delegates, obtain approval by PM (**D1**); or
3) If amount **> HK$1.4M,** obtain *Client*'s confirmation of no objection (**D2**)

Obtain approval by (**D1 or above**), or obtain *Client*'s confirmation of no objection if amount **> HK$1.4M (D2)**

Obtain approval by (**D6**)

土木工程拓展署
Civil Engineering and
Development Department