works | services | supply

nec

nec WHITE PAPER

The use of target cost contracts for building works in Hong Kong

October 2019

Discover more at **neccontract.com**

Contents

1 Introduction

This "white paper" has been produced to support users in Hong Kong in the adoption of NEC target cost contracts for building works.

The NEC has its origins in the infrastructure / civil engineering sector and it is this sector of the Hong Kong market that initially embraced the NEC forms of contract. However, the NEC has been designed to operate in any sector of the construction industry and beyond and there is no restrictions or reasons why it cannot be successfully used for building works. In countries like the UK where the NEC forms of contract have been operated for over 25 years it is used extensively in the building sector with clients like the National Health Service (hospitals etc.), schools, universities and local and central government making it their default contract.

Christie Proton Beam Therapy Centre

2 The NEC forms of contract

The NEC is a modern day family of contracts that facilitates the implementation of sound project management principles and practices as well as defining legal relationships.

The NEC was originally launched in the UK in 1993 and the 3rd edition of the contract (NEC3), was first used in Hong Kong in 2008. Since then the Government of the Hong Kong Special Administrative Region (Government) has encouraged and then mandated it use for all public sector construction procurement. NEC4 the fourth evolution of the NEC suite of contracts was released in 2017. The principles behind the NEC contract are as follows.

- They stimulate good management of the relationship between the two parties to the contract and, therefore, of the work involved in the contract.
- They can be used in a wide variety of commercial situations, for a wide variety of types of work and in any location.
- They are clear, simple and written in plain English, using language and a structure which is straightforward and easily understood.

This second bullet reinforces the fact that the NEC contracts are designed for delivering any type of work, including building works, in any location in the world.

Further details on the NEC forms of contract can be found at **www.neccontract.com**

Heathrow T2 & 5C

3 Construction 2.0

The construction industry in Hong Kong is crucial in supporting the continuing development of the city. This will become ever more critical over the next 10 years as the rate of investment in construction is predicted to materially increase. However, the industry is facing a number of challenges such as an increasingly ageing construction workforce, a tendency to lag in innovation and in the adoption of advanced technologies as well as being labelled one of the most expensive construction markets in the world.

In recent years the Industry has also witnessed a series of incidents related to certain high profile mega-projects. These incidents have included unsatisfactory cost performance, commissioning delays, site safety incidents and in a more recent case, alleged issues related to the quality of construction delivery. These events have led to heightened levels of media scrutiny, reduced levels of public confidence and challenges in recruiting the next generation of high performing talent. To address these challenges and ensure a bright and prosperous future, the Government is taking the initiative to be a leading agent for change.

This is presented in Construction 2.0 – an expression of the Industry changes required across three key pillars: **innovation, professionalisation** and **revitalisation.**

Reference: https://www.hkc2.hk/en/booklet-view.php

One of the ways in which the Government is addressing the issues raised in Construction 2.0 is through the adoption of the NEC forms of contract, which promote a more collaborative way of working, along with clarity, simplicity, prescribed project management and the incorporation of multiple options that allow the different approaches to be selected based upon the individual works, albeit based around a clear contractual structure.

The Government has also identified the use of target costs contracts which drive contractors to achieve good performance so as to deliver the project for a cost lower than the target cost and schedule by using pain / gain mechanisms that incentivise over performance and penalise under performance. The Government wishes to see the wider adoption of target cost contracts across all departments including those involved in the building sector where their use to date has been limited.

4 Target Cost Contracts

4.1 Benefits of target cost contracts

The principle benefit of target cost contracts is their ability to align the objectives of the parties, which helps to create a partnering environment. The contractor and client are both encouraged to work together to control costs through the sharing of the risk of over / under spend through a pain share / gain share mechanism. For example if the client helps the contractor to save money they will directly benefit from this, in the same way that if the contractor achieves a saving the client will directly benefit in this as well.

The open book approach helps to build trust between the parties through the sharing of actual cost information by the contractor giving visibility of the true cost of the project to the client.

A target cost contract is able to deal with post contract changes easier than other more traditional fixed price or remeasurement contracts, as the client has access to the contractor's accounts and records. When a contractor puts forward the price of a compensation event (commonly know as variations and / or claims in other forms of contract), the client will already have some knowledge of the actual cost the contractor is paying for the items being claimed. This process removes any concern that the cost might include unwarranted additional profit. It also makes it easier for the contractor to prove their costs and for the client to agree to them as they are evidenced by records.

It is important to stress that the access to the contractor's accounts and records make it easier to agree the cost of change, but it does not remove the age-old tension between two parties with divergent objectives the client wanting to minimise the cost of the work and the contractor to maximise profit and therefore debate can still occur over the value of change.

These factors also lead to a reduction in the potential for claims as the contractor will ultimately have to substantiate all costs claimed and get little benefit from claiming costs that cannot later be justified, when payment for them is made on an actual cost basis.

As the contractor is paid for work done on a cost reimbursable basis the amount they are paid at each assessment interval, commonly monthly, reflects their actual cash flow. This means that if there are disputes over compensation events this does not affect the amount the contractor is paid. They are paid what they spend whether this is on original or varied work up until the point when gain share / pain share is assessed. This reduces the pressure on the contractor cash flow and they do not to have allow for funding the works in their tender price.

The payment of the contractor on a cost reimbursable basis also encourages prompt payment to their supply chain as the contractor can only claim for costs they have or will shortly pay. Therefore the sooner the contractor pays their subcontractors or suppliers the sooner they can claim this cost from the client and the associated fee, which includes, amongst other things, overheads and profit.

4.2 Target Cost Contract Options in the NEC

The NEC is a suite of contracts and most of the full contracts contain at least one target cost option. In the NEC Engineering and Construction

Contract (ECC) there are two target cost options, Option C a target contract based on an activity schedule and Option D a target contract based on a bill of quantities.

The client decides which option to select prior to tender.

The two options operate in the same way in terms of how the contractor is paid for work done which is on a cost reimbursable basis plus a fee. The NEC has a defined term which identifies what actual costs are reimbursed to the contractor – "Defined Cost" - with other cost being recovered by the contractor through the "Fee". The Fee is a percentage which is applied to the contractor's Defined Cost to cover overheads, profit, risk and any other contractors costs that are not recovered as part of Defined Cost. The two options also feature a share mechanism to determine a gain share or pain share between the client and the contractor. The main differences between the two options relate to how the target cost is set and how it is changed post contract.

Under Option C the target cost is set based on an activity schedule which is a breakdown of the work the contractor has to undertake into a series of tasks which reflect the contractors methodology for the construction of the works. The tenderers are required to create and price the activity schedule which is in effect a series of lump sum prices. Often a client will provide an outline or high level activity schedule at tender stage that the tenderers must comply with, but which they can break down into more detailed activities to match their approach to providing the works. This provides a basis for the client to compare different tenders to each other and to any pre-tender estimate it may have produced. The activities in the schedule are inclusive of all the costs of providing the works including direct and indirect costs, overheads, profit and risk. The sum of the activities is the target cost value. The tenderer will have to measure the quantities of work required for each activity and the risk of any change in quantity will be shared by the parties through the gain share / pain share as the activity schedule values are only subject to change as a result of a compensation event. The activity schedule is not used post contract to determine the amount of payment due to the contractor, which is made on the basis of Defined Cost plus Fee. The activity schedule can be used as part of an earned value reconciliation to determine the value of work complete compared to the Defined Cost plus Fee which aids in forecasting the final outturn cost for the contract including an assessment of gain share or pain share.

Under Option D the target cost is set based on a bill of quantities. The bill of quantities will be produced in accordance with a method of measurement which is stated in the contract. The client will produce the bill of quantities and the tenderers will be required to include rates and prices for the bill items as part of their tenders. The client takes the risk of any errors in the bill of quantities, for substantial changes in quantities and for a change in quantities that causes delay as these are all grounds for a compensation event.

The rates and prices in the bill of quantities are fixed and will only be subject to change as a result of a compensation event, however, the quantities of work are not fixed and will be subject to remeasurement to reflect the actual quantities of work done. This means that the target cost under Option D will change as a result of both compensation events and changes in quantity and so the client carries both of these risks both positive and negative. As with Option C the bill of quantities is not used post contract to determine the amount of payment due to the contractor, which is made on the basis of Defined Cost and Fee. The bill of quantities can be used as part of an earned value reconciliation to determine the value of work complete compared to the Defined Cost plus Fee which adds in forecasting the final outturn cost for the contract including an assessment of gain share or pain share.

4.3 Setting a Target Cost

A target cost can be set via a competitive tender process or negotiation. Setting a target cost via a competitive process operates in exactly the same way as setting a contract price under a traditional fixed price or remeasurement contract. The client will produce an invitation to tender document and the bidders will tender their target cost values for the project. As with a traditional contract the bidders offer is the total cost they would expect to deliver the project based on the requirements of the tender documents including allowances for the risk the contractor will carry post contract and the recovery of overheads and profit.

In addition to the target cost value the tenderers will also submit various pricing information for use with the "Schedule of Cost Components", which is a part of the NEC contract that determines in detail what the contractor will be paid as Defined Cost. The pricing information will be used to determine how much the contractor is paid for certain cost components and it is also used in the assessment of compensation events, which themselves are based upon Defined Cost plus Fee.

A target cost can be tendered on the basis of a full client design or on a design and build basis. Where there is an element of contractor design the tenderer will need to make an assessment of the risk and opportunities that will exist post contract as a result design development and allow for this in their tender price.

4.4 Tender Assessment

Tender assessment is an area that will need more consideration under a target cost contract than a traditional fixed price or remeasurement contract.

The first part of the tender assessment, comparing the target cost values bid by the tenderers should be straightforward and follow the same process as adopted for a traditional contract where each tender price is compared, analysed and the verified lowest cost identified. As with any competitive tender bid process there is a risk that a tenderer may try to "buy" the works and so bids should be checked to make sure they are not abnormally low as part of the tender assessment process.

Once the target cost values have been compared a client will then need to consider the interaction between the target cost value and the Defined Cost plus Fee that will be paid to the contractor for delivering the works and the resulting gain share / pain share calculation that will take place at completion. This is necessary, as depending on the tender assessment model, there is a risk that a tenderer may offer a low target price, but include relatively high prices for use with the Schedule of Cost Components and / or a high Fee. The low target price would help them win the work, but then they will over recover cost paid for the actual work done. This will may lead to a pain share to the contractor, but which is offset by the profit recovered through the over recovery of cost.

In order to address this, clients can include a predetermined allowance for compensation events in the assessment of the target cost value, to which the rates for use in the Schedule of Cost Components and the Fee can be applied to give a more balanced view of the tenderers offer. Another approach can be to put an element of the financial scoring against the prices for use in the Schedule of Cost Components and the Fee and to give this sufficient weighting that the tenderer will need to be competitive in their pricing of these elements.

The client can also assess individual rates and prices submitted by the tenderers for the Schedule of Cost Components by applying them to an assumed value, level of resource or cost. For example if a bidder provides rates for specialist equipment these can be multiplied by an allowance for the duration for which the equipment will be required and then the resulting

price compared against prices provided by other bidders for similar equipment and / or against the market price

Once these calculations have been made, a series of models can be run based on a range of estimated final Defined Costs plus Fee that a contractor may incur compared to a range of final target cost values to test different potential gain share / pain share scenarios that could occur, depending on which tenderer is selected. Clearly such an approach is in part subjective and needs to be considered as such and, no doubt, these financial calculations will form part of a broader assessment involving qualitative as well as quantitative measures.

If clients still have concerns over the risk of tenderers submitting high rates prices and / or Fee they can state maximum prices that tenderers can bid for these items in the instruction to tenderers, however, in order to do so the client needs to have good market knowledge in order to set reasonable maximum values.

4.5 Maintenance Of The Target Cost

A target cost is subject to change, both positively and negatively. The grounds for changing the target cost are stated in the contract.

Under Option D the target cost can change due to compensation events and the remeasurement of the actual quantities of work done. Under Option C the target cost only changes due to compensation events.

Under the NEC the effect of changes to the target cost value due to compensation events is evaluated based on actual or forecast Defined Cost plus Fee. There is also the option, if both parties agree, to assess the effect of changes to the target cost using rates and prices.

It is essential that a target cost is 'maintained', that is changes are agreed as soon as they occur, if not in advance. This enables the target cost to remain reflective of the current scope of works and allows the pain share / gain share calculation to remain valid.

If change is not proactively managed and agreed contemporaneously with the events there is a risk that the target cost will become so disconnected from the actual works on site that it will become ineffectual in driving the contractors performance. What often happen in these situations is that the parties struggle to retrospectively price each compensation event individually and instead look for a simple way out which commonly results in the target cost value being changed to match the actual Defined Cost plus Fee expended by the contractor.. This is often seen as an easier, non-confrontational solution than to go back and agree the cost and time effect of each change as the contract envisages. The parties can at least take some comfort in the fact that the client is paying what the project actually costs, and not an excessive amount.

However, this approach removes any incentive for efficiency from the contractor and eliminates cost and time certainty for the client and should be strenuously avoided.

4.6 Cost Reimbursement

Under target cost contracts the contractor is paid for work done on a 'cost' reimbursable basis. However, it is important to understand that the client does not pay the true cost of construction – it is very difficult, if not impossible, to calculate the total actual cost incurred by the contractor in delivering a project. The only way you would be able to determine this would be to set up a contracting business with its own bank account to undertake the project. Clearly, this is not a sensible or efficient way to operate and contractors will normally have multiple projects underway at any one time.

To deal with this situation target cost contracts contain a set of rules over what 'costs' can be claimed as direct cost.

In the NEC contracts the 'costs' the contractor can claim for payment as direct costs are covered by the definition Defined Cost. All other costs the contractor incurs in providing the works are covered by the Fee.

4.7 Defined Cost & Disallowed Cost

The definition of Defined Cost differs between the main options. In NEC4 for the target cost options C and D it is "the cost of the components in the Schedule of Cost Components, less Disallowed Cost".

The Schedule of Cost Components is part of the contract that provides further detail over what constitutes Defined Cost. It is split into 8 components and amounts can only be included in one cost component and only if they are incurred by the contractor in providing the works.

Any of the contractor's costs that do not fall within the definition of Defined Cost are treated as being included in the Fee. These costs will include the major elements of head office overheads and profit.

Disallowed Cost is a defined term in the NEC and covers costs which the contractor may have incurred, and which fall within the definition of Defined Cost, but which the client does not have to pay for under the contract. These are normally costs which the contractor either cannot prove or has only incurred due to some failure or negligence on its part.

Disallowed costs are therefore costs borne entirely by the contractor.

4.8 Pain / Gain Mechanism

The pain / gain mechanism is at the heart of target cost contracts and forms the key driver in aligning the objectives of the parties to work together to create efficiency and reduce costs.

There is no right or wrong pain / gain mechanism and in fact there are a myriad of different mechanisms that can be used.

Pain / gain mechanisms work on the basis of a percentage split of overspend or savings between the contractor and client. The split itself is often "banded" based on the percentage of overspend or savings made compared to the target cost.

The simplest pain share / gain share allocation is a straight 50:50 split of all over and under spend.

This method is often seen as the most equitable because both parties equally share the risk and this helps develop partnering behaviours. This approach is also less likely to encourage the contractor to drive up the target cost value or maximise the value of change.

However, there is no cap on the client's pain share and there may be a concern that the contractor will have less incentive to mitigate cost as the client will contribute towards any level of overspend, but in reality the potential of the contractor paying half of the overspend and losing 50% or more of the cost should provide this, as no contractor will want to lose money.

The simple 50:50 model is often altered to allow a sliding scale of percentages to be used whereby the client allocates increasing or decreasing percentages of pain share / gain share between the parties. There can be a number of different versions of this model.

A common option is for the client to split the first 20% of over and under spend equally between the parties but to then alter the allocation above and below these percentages.

Normally the client will increase the pain share percentage in the bands above 120% to give the contractor a greater share of the overspend and similarly the client will decrease the percentage gain share to the contractor below 90% of the target cost.

Some clients have reversed this approach and have actually increased their exposure to pain share in increasing overspend brackets (i.e. over 120%) and decreased their percentage of any under spend (i.e. below 80%). The rationale for such an approach is that certain clients are better able to carry the financial risk of overspend against the target cost, particularly on high risk projects, and so would rather carry this risk than allocate it to the contractor.

Similarly by increasing the percentage gain share to the contractor this will motivate the contractor to mitigate cost and create gain share as they will receive increased benefits the greater the savings made.

The sliding scale of pain share / gain share is often extended to provide a cap on the clients potential gain share and pain share payments. The client will at a certain level allocate 100% percent of overspend and 0% of under spend to the contractor. This reduces the financial exposure to the client and conversely increases the financial risk to the contractor. However such an approach may lead to high target cost values and encourage the contractor to try to maximise change to recover a loss making position, particularly on projects with a high degree of risk. It also cuts across the principle of a target cost contract where good and bad performance should be shared, particularly if the levels at which the caps apply are low as this will make the contract operate more like a traditional fixed price arrangement.

The key factor in the choice of pain share / gain share model is the potential behaviours it will drive in the parties.

The client needs to review a number of factors before settling on a pain share / gain share model: -

- Experience of the parties
- Method of setting the target cost - negotiated, competitively tendered etc.
- Accuracy of the scope of works and therefore accuracy of target cost
- Potential for changes

Wits University

5 Specific considerations for building projects and how to successfully manage these

A number of specific concerns have been raised by users in the building sector in relation to the use of NEC target cost contracts. Some of the issues raised are not actually specific to the building sector and are general issue to consider in the use of target cost contracts. Each of these issues is examined below and responses and solutions provided.

5.1 Selection and interface management of multiple subcontractors and suppliers

Clients will normally require some level of visibility over the contractors supply chain even under traditional contracts and this is provided for in NEC contracts, which require the project manager to accept both subcontractors and their terms and conditions of contract prior to their appointment.

However, under a target cost contract a client has a greater interest in the supply chain and will normally want more involvement in the process as whatever the contractor pays to its subcontractor and suppliers will then be paid by the client as part of Defined Cost plus Fee.

The risk and liabilities in respect of the selection, appointment and performance of a subcontractor or supplier is actually the same under a traditional and target cost contract. The contractor remains liable for selecting the appropriate subcontractor / supplier and for their performance in terms of quality of work, delay etc.. The only difference is in respect of the financial risk of the subcontract which will be shared via the gain share / pain share mechanism. If the cost of the subcontract increase beyond the expected level at tender / subcontract award then, assuming such an increase is justified under the subcontract, the client will normally share this increase via the gain share / pain share mechanism. However, if the costs reduce then the client will share in any savings made resulting in a lower amount paid by the client than they would under a fixed price contract.

A concern that has been raised in relation to building work is that the number of specialist contractors that are required, such as MEP, fit out and finishes, building control systems etc. and the interface risk in managing and coordinating them will create a greater risk for the client under a civils contract.

The interface / coordination risk of multiple subcontractors and suppliers will exist regardless of contract form and the contractor will need to allow for it as part of their tender price.

The concern is therefore not about the existence of the risk but who is best placed to hold it. If the financial risk is shared through a target cost contract the contractor still has the same incentive as under a fixed price contract to effectively manage the interfaces, if they do not the actual costs will exceed the target cost and pain share will occur. It does not make contractual sense for a contractor to want to lose money and even if the client contributes 50% of the overspend costs the contractor will still lose 50% which will be far greater than the profit margin they will make on the works.

A further benefit a target cost contract provides in relation to this risk is visibility of the amounts the contractor pays to subcontractors and for what reason. This will allow the client to see what costs, if any, are paid to subcontractors or suppliers due to poor interface or coordination management. This means the contractor will not then be able to try to

recover this costs as part of claim for an unrelated compensation event.

In some ways the approach adopted under a target cost contract is similar to that of a construction management contract where the contractor engages key subcontractors to undertake work as and when the design is sufficiently developed and / or the subcontract works are required. The subcontractors can be selected on a competitive basis and engaged on a fixed price, remeasurement or target cost contract. However, a target cost approach also has the benefit of allowing the contractor to self perform elements of the work and to provide an incentive mechanism through the gain share / pain share mechanism to drive efficiency in delivery.

5.2 Value for money in the supply chain

Under a target cost contract, there is a need to drive efficiency in the contractor and their supply chain as what the contractor pays their supply chain will be paid by the client plus Fee, subject to any Disallowed Cost.

The key driver for ensuring that the contractor is efficient is the pain share / gain share mechanism, which will align the interests of the parties to achieve value for money in the supply chain. Neither will want to pay too much for subcontracted works as this will reduce gain and / or lead to pain.

However, a client may still have a concern that a contractor may not seek best value in all situations and particularly when it comes to the forecast Defined Cost of compensation events as the more that is paid to subcontractors and suppliers the more Fee the contractor will receive as this is a percentage applied to these costs. This concern can be further exacerbated where the subcontractor or supplier is owned in whole or in part by the contractor or the contractors parent company. In this situation there may be concern of inflated profit being recovered by the subcontractor that can be used to offset gain share / pain share under the main contract.

There is a requirement at clause 52.1 of the NEC ECC that "Defined Costs includes only amounts ….. at open market or competitively tendered prices". This creates a requirement for the contractor to ensure that any cost they claim as Defined Cost is reasonable when compared the market price of similar goods and services and that the client does not have to pay any amounts that are above the market price.

One way for a contractor to demonstrate the price they are paying a subcontractor or supplier is an open market price would be to competitively tender. However, this is not necessary if the contractor can demonstrate value by going to a single source supplier.

Some client may wish to add further requirements over the selection of subcontractors and suppliers by including additional processes in the Scope or through a Z Clause The Development Bureau (DEVB) in Hong Kong offers guidance on this in their Practice Notes for use with NEC3. These requirements include the clients' project manager being given oversight of the contractors supply chain management process and making it a mandatory requirement to seek a minimum number of competitive tenders for contracts over certain value thresholds.

When adopting a competitive process and / or demonstrating the price is an open market price this should not necessarily mean lowest cost and may instead be based on best value where a combination of quality and cost is considered. Consideration also has to be given to the impact it can have on the contractor's pre-existing supply chain arrangements. Many contractors already have preassembled supply chains and / or framework agreements with the key sub-contractors / suppliers and a reason why contractors are engaged is for their skill and ability in creating and managing an effective supply chain. Therefore, creating a requirement to competitively tender all elements of the supply chain may well conflict with these existing arrangements.

Again it should be noted that the involvement of the client or the project manager in this process will not

change any allocation of liability in the contract and the contractor will remain liable for the performance of their subcontractors and suppliers.

5.3 Preselection of suppliers

Another issue that needs consideration in relation to subcontracting is the pre-selection of subcontractors and suppliers by a contractor at tender stage. At tender stage a contractor bidding for work may start to assemble part of its supply chain, particularly for important elements of a project such as design, pilled foundations, curtain walling, mechanical, electrical and plumbing etc. and enter into precontract agreements with these key suppliers that they will be appointed if the contractor's bid is successful. These preselected subcontractors may also form part of the tender assessment by the client who will then want these subcontractors to be used post contract. Under the NEC every subcontractor has to be put forward for acceptance post contract even any which have already been included in the tender. However, this should be a simple process if the subcontractor is one which the client wants to be used or has no objection to being used post contract.

There may be situations however, where the contractor wants to preselect internal or affiliated companies at tender stage and / or other companies as subcontractors and suppliers that the contractor has a working relationship with but over which the client has concerns as to whether they offer value for money. Again these subcontractors as all subcontractors will need to be put forward for acceptance post contract at which point the project manager can validate whether the prices for these works represent an open market price, which will protect the client from inflated prices.

In reality the fact that the contractor won the competitive tender process demonstrates that their bid represented best value and therefore, by virtue of their inclusion within this the subcontract costs must represent value and so it should be relatively straight forward for the contractor to demonstrate this.

5.4 Provisional Sums

A relatively common feature of traditional building contracts is provisional sums which are used when an element of work may not be fully designed or specified at the time of tender. Provisional sums are not included in the NEC forms of contract due to the uncertainty they can create in terms of time and preliminary / attendant costs. A client can choose to amend the standard NEC target cost contracts to include provisional sums, but care would need to be taken to ensure the drafting was consistent with the other clauses in the contract and that the gain share / pain share mechanism still worked effectively. However, there are better ways to deal with the issue of work that is not completely defined at tender stage.

One option would be to exclude the work for which a provisional sum would be used and add this in when the design or specification is complete as a change to the Scope and therefore, a compensation event.

Another approach would be to include an outline or assumed description of the work that would normally form part of a provisional sum in the Scope and then issue an instruction to change the Scope to match the final design or specification once complete, which again would constitute a compensation event.

In both instances the process to follow would operate in a very similar way to how provisional sums are evaluated under a traditional contract. In NEC contracts compensation events are evaluated based on a forecast of Defined Cost plus Fee. Defined Cost would include any subcontractor or supplier quotations and any attendant cost that the contractor will incur in undertaking the work. Any delay to the Completion Date would also be assessed if the work required would cause a delay to planned completion.

5.5 Payment of forecast Define Cost

In the NEC target cost contracts the amount due to the contractor at each assessment date is the Defined Cost which the contractor has paid by the assessment date and a forecast of Defined Cost that

the contractor will pay by the next assessment date plus the Fee. As each payment under the contract is cumulative if there are any differences between the forecast and actual payment of Defined Cost this will be corrected in the following payment.

Some clients have concerns over paying an element of Defined Cost plus Fee on the basis of a forecast and amend the contract to remove this element. However, such an approach can cause major cash flows issues for the contractor as the date payment is actually made to the contractor will normally be 21 days after the assessment date and often longer. This means the contractor has to fund works for this period. If a client has concerns over paying on a forecast basis they would be better advised to make payment as the standard contract requires but to ensure that they have sufficient security in place to deal with any potential risk of overpayment in a situation where the contractor becomes insolvent and / or refuses or is unable to continue with the works. Such security can be in the form of retention, an ultimate holding company guarantee or a performance bond. If a client still has a concern that overpayment may occur they can amend the contract and introduce a clause that will allow the client to withhold payment prior to the date payment is made, subject to giving notice, if at the date of actual payment to the contractor the contractor is in default.

As previously noted one of the benefits of paying the contractor on the basis of the Defined Cost they have or shortly will pay to their subcontractors and suppliers encourages prompt payment by the contractor. This can lead to reduced costs and improved performance from the supply chain.

5.6 Level of risk during construction (below ground / above ground)

Target cost contracts were originally developed for contracts that had a high degree of risk particularly in relation to works below ground. This causes some people to question their use for building works where the ground risk is more limited and once the foundation and / or basement works are complete the ground risks will be minimal. This is an interesting line of logic and one that in some ways conflicts with other comments that those in the building sector make in relation to the risk and complexity in the use of multiple subcontractors and suppliers and the interfaces between them that need to be managed.

Risk is risk whether it is above or below ground and in all construction work there is the potential for problems as each project is in effect the building of a one off prototype in an open air factory.

A target cost contract allows risk to be better shared between the parties. Under a fixed price or remeasurement contract the contractor will take the majority of the financial risk and will have to allow for this risk in their price. If the contractor does not allow sufficient money for risk in their tender price, for example where they take an aggressive view on pricing in order to win the contract, and / or other events occur that mean the job starts to make a loss they will try to recover these losses elsewhere through variations and claims, which are often overstated to cover other losses. This can also lead to a reduction in the quality of construction and / or delay completion of the works. If the risk is not realised or costs are saved in other areas of construction the contractor will take all the benefits of these. Under a target cost arrangement the risk of overspend and the benefit of savings is shared. The client is given visibility of the contractors costs to know if and how they are making or losing money. The contractor can take a different view on risk where at least a part of any overspend against risk will be recovered.

This approach, as noted above, will also lead to a substantial reduction in the potential for claims and disputes under target cost contracts.

5.7 Verification of Defined Cost

Staff costs

The verification of staff costs can be an issue as some contractors do not charge the real, actual cost of staff to projects. Often a contractor's internal costing system will allocate staff costs on a pro-rata or salary costing rate basis. This is often due to the sensitivities of displaying to their own staff the salary details of other staff members.

Another issue is that certain costs paid to staff members, such as bonuses, occur on an annual basis and other costs cannot be determined in advance or even in the month in which they are incurred, such as mobile phone charges or the cost of cars or fuel cards.

This has led some contractors to move away from allocating the real actual cost of staff to projects to some form of annualised cost based on estimates supported by historic data.

This approach is at odds with the contract and clients will need to consider whether they will pay for staff on actual cost basis as per the standard Schedule of Cost Components or amend this to allow for the contractor to charge for staff on the basis of a schedule of rates. If a schedule of rates is to be used then these rates will need to be validated to make sure they represent value for money. This can be done by requesting the rates at tender stage and using them in the tender assessment and / or auditing these rates post contract against the actual salary costs paid to a sample of staff.

Discounts and rebates

An issue that can occur in respect of Defined Cost is in relation to discounts and rebates that a contractor may receive from their supply chain. NEC require that the contractor gives the benefit of any discounts and rebates to the client in full, however, in order to ensure this happens the client needs to be aware of the discounts. This issue is exacerbated when volume type discounts are recovered by the contractor across multiple contracts on a periodic, commonly annually, basis with the savings credited at a corporate as opposed to a contract level as the client may not have visibility of these credits. It is worthwhile clients engaging with their supply chain to address this issue and to seek confirmation from the contractor as to whether any such discounts or rebates occur.

Value for money

One key aspect of the verification exercise on cost reimbursable contracts that is often over looked by clients is a review of the resources on site and material deliveries to ensure that these are correct and not excessive. Simply checking that the costs have been incurred is a relatively straight forward exercise, a greater challenge is making sure the costs should have been incurred in the first place and that they represent value for money.

The client and their site team should be proactively reviewing what resources the contractor has on site to make sure this are still required and not excessive and where necessary engaging in discussion with the contractor to make sure that Defined Cost is being saved wherever possible.

5.8 Payment of Defined Cost v Disallowed Cost

Some users have concerns that in paying the contractor's Defined Cost plus Fee the client may be required to, at least in part, pay costs incurred by the contractor in error or through a lack of efficiency in how they provide the works.

This is issue is addressed in the NEC through Disallowed Cost, which are costs which the contractor either cannot prove or has only incurred due to some failure or negligence on its part and that the client does not have to pay to the contractor. Disallowed costs are therefore costs borne entirely by the contractor.

Some Disallowed Costs are relatively simple to define and apply in practice such as:

- resources not used to provide the works,

i.e. a piece of construction equipment that is no longer required but which is still being charged to the contract

- Plant and Materials not used to provide the works, i.e. materials ordered in excess of that required to complete the works, after allowing for reasonable wastage.

However, some Disallowed Costs are much more subjective and difficult to accurately define, identify and capture. The main issue concerns situations where, in the client's view, the contractor has been inefficient, negligent or simply made mistakes. Most clients would not expect to pay for such failings but depending on the nature of the cost they may have to. The reason is that it is very difficult to frame words that can cover the wide variety of events that could lead to such costs and also the resulting behaviours this will drive in the contractor.

Under the NEC there are no general grounds for disallowing costs incurred due to the contractor's inefficiency or negligence and limited and specific reasons are provided for disallowing costs in the contract. This reflects the fundamental nature of a target cost contract where the risk of good performance by the contractor is shared via gain share and poor performance shared via pain share. If a client seeks to change this approach and only share in the good performance and is not prepared to contribute to poor performance then a target cost contract should not be selected.

One area that creates considerable debate, in relation to Disallowed Cost is the cost of rectifying defects.

The cost of rectifying defects after completion of the works is normally easy to identify and deal with and the NEC makes this cost disallowable.

However, what should happen to the costs of defects which are identified and rectified prior to completion. Should these costs be disallowable?

An immediate response from a client may well be "yes" as why should they pay for the contractor's mistakes? However, the reality is not so simple as the cause of the defect has to be ascertained and the conduct of the contractor examined. The client would also need to mobilse sufficient resources to be able to identity any defects and to record the work involved in their correction in order for the cost to be subsequently disallowed. This in turn would increase the cost of project delivery to the client.

A client also has to consider the behaviours they will drive in the contractor if they make such costs disallowable; for example, the contractor may be tempted to hide defective work rather than rectify it at their own cost. Also, if you do allow such costs to be recoverable prior to completion but not post completion this will drive the contractor to rectify defects prior to completion, meaning that there will be minimum snags at handover, often seen as a real benefit by clients.

Under the NEC the costs of rectifying defects prior to completion will be an allowable cost unless the costs was only incurred because the contractor did not comply with a constraint on how it was to provide the works stated in the Scope. (the document that specifies what work the contractor has to do and any constraints on how they do it including standards, specifications etc.) For example not letting a concrete slab set before starting to build on top of it.

It has be kept in mind that even if the contractor is able to recover the Defined Cost plus Fee incurred in rectifying defects before completion they will still not want such defects to occur as they will still lose money in the form of lost gain share / increased pain share as the target cost will not increase to cover the Defined Cost plus Fee incurred in rectifying the defect. Also the contractor will not be able to claim an extension to the completion date for the works as a result of defect rectification and so may suffer delay damages if the works are finished late.

5.9 Forecasting Outturn Cost

The forecasting of the final outturn cost of a project is an issue that needs to be considered under a target cost contract.

The reality of such arrangements (and perhaps true of all contracts, at least from the contractor's perspective) is that the actual cost of the project will not be known until the project is completed, and often not until several months later when all the accounts in the supply chain have been settled.

Unlike fixed price or remeasurement contracts where the client has a running final account based on the original contract value plus or minus agreed changes and / or remeasurement of work complete, under a target cost contract the contractor is paid their Defined Cost on an emerging costs basis as the works progresses.

In order to assess the final outturn cost, under a target cost contract, the contractor and client will need to determine what the Defined Cost plus Fee to date is and then add to this a forecast of the Defined Cost plus Fee that is likely to be expended in completing the works. This final forecast of Defined Cost plus Fee will then need to compared to the forecast final target cost value to determine an expected level of gain share / pain share which will then be added or deducted from Defined Cost plus Fee to determine the final outturn cost.

Difficulties can arise around forecasting Defined costs where accurate records of costs that have been committed to but not yet invoiced are not kept. Even more difficult is forecasting costs not yet ordered or agreed or reviewing and revising the amount of money to be held for contractor's risks. This is then further complicated by the need to reconcile the costs expended to date compared to the value of work done. It may be that for example a project is 50% complete in terms of physical progress but that 75% of the costs have been incurred. Does this mean that the project will overspend or it simply that the more expensive elements have been completed and in fact the project should have expended 85% of the costs by this stage and so in fact a gain share should be predicted?

In order to deal with these issues it is recommended that some form of earned value analysis is undertaken which overlays progress of the physical works with the costs incurred to work out a value of work done to be compared to the cost of work done to determine current financial performance and to forecast future financial performance. Under the NEC ECC Option C the activity schedule can be used to support this calculation and the bill of quantities under Option D.

5.10 Period for reply

Some users have expressed concern over the "period for reply" in the contract and the fact that a failure to respond to communications from the contractor in accordance with the timescales in the contract can lead to a compensation event. In particular users are concerned about the need to deal with internal governance and approval issues before they can respond to the contractor. This is not a specific issue with target cost contracts but a more general concern expressed in relation to NEC contracts

The first point to note is that the "period for reply" for general communication is determined by the client. So the client can make this period suit their internal timescales. A period of 2 weeks is given as an example in the user guides and many people seem to think this is the timeframe that should be used. However, there is no requirement to do so. A longer period can be used and, whilst we would recommend a shorter period as possible so as to aid proactive communication, the period for reply is a maximum period and so if a longer period is stated the response can be made sooner if achievable. Of course any extended period will be taken into account by the contractor when they price the project as this may impact the progress of the works and yet not entitle them to a compensation event.

In NEC4 there is also the option for different periods of reply to be given for different types of communication and so for those that need some form of internal approval a longer time frame can be set.

There are also certain timeframes set out in specific contract clauses in contract for things such as responses to notifications of compensation events and for quotations for compensation events. Some clients have concerns over these timescales and look to amend these however, the contract already allows for the time periods in the contract to be extended by the mutual agreement of the parties. The fact that the agreement of the contractor is required before the periods can be extended may again cause concern for a client however, in practice this is not normally an issue. As if the project manager needs more time to make a decision and the contractor will not agree to extend the period their only response will be to not accept the compensation event / quotation which will not be either parties interests if the issue still needs further investigation. This could then lead to a formal dispute but common sense almost always prevails and the parties meet to agree how best to move matters forward rather then enter into a formal dispute.

Also, whilst a failure to reply to a communication as required by the contract and / or the withholding of an acceptance for a reason not stated in the contract is grounds for a compensation event the contractor will have to demonstrate the actual effect it will have on Defined Cost and time as a result. This may be negligible where the event has occurred and is being dealt with and it's just some of the paperwork that is in delay.

The contract contains default acceptances in relation to compensation events and the programme and these can be another area of concern for clients. The reasons for these default acceptances is to drive proactive project management, one of the cornerstones of the NEC contracts and a benefit specifically highlighted by Construction 2.0. These default acceptances will only take effect when the project manager has failed to fulfil their duties not just once, but twice and following a reminder from the contractor. So if the project manager does their job correctly there will be no default acceptance and even if this occurs, which is uncommon, then the acceptance whilst contractually binding is not final and the client can take the matter through the dispute resolution process in the contract to get it changed. Again common sense tends to prevail and if, for example, an incorrect quotation has been accepted by default, the client will challenge this with the contractor who will work with the client to resolve the issue rather than face going through a formal dispute process.

5.11 Lack of market experience in the operation of target cost contracts

One area that is identified as a concern in using NEC target cost contracts for building works is a lack of experience and expertise in the client and the supply chain in relation to both NEC contracts and target cost contracts. In particular there is concern around the work involved in and the skills required to manage the

- production and acceptance of programmes
- early warnings and compensation events.
- reconciling actual and forecast Defined Cost.

This is a common concern and one which has been encountered and overcome in those countries where the NEC forms of contract are now commonly used, including here in Hong Kong. Infrastructure clients such as Drainage Services Department (DSD) and the like had similar concerns when they first started using NEC contracts but have overcome these issues.

The way to resolve this issue is through training and the upskilling of staff with the competencies they need to effectively manage NEC contracts. NEC contracts are based on the principles of effective project management and so in learning the skills to use these contracts properly you are learning the skills to be successful project managers and contractors under all types of contract. This upskilling of the workforce and professionalisation is in direct alignment with the objectives of Construction 2.0 and should be embraced and not feared.

6 Jurisdictional specific issues

6.1 ICAC requirements

The ICAC have been closely involved with the adoption of the NEC and target cost contracts in Hong Kong.

They understand the contracts, how they operate and the inherent risks in a target cost contract.

They recognise that there is a risk in that paying the contractor on a cost reimbursable basis costs may be claimed in error and certified by a project manager on behalf of a client. However, they view such errors as being the fault of the contractor and not the project manager and as long as the project manager is fulfilling their duties they cannot be held responsible for any fraud in the supply chain. This is the same that is encountered under a traditional fixed price contract where claims for variations, delay and disruption and the like are settled based on a claim for actual cost submitted by the contractor and where again there is a risk of amount being claimed and certified in error.

Halley VI

7 NEC and modular construction

One of Construction 2.0 main initiatives is a move to offsite modular construction and NEC contracts are ideally suited to support this. The use of modular construction has huge potential in the building sector particularly due to the often repetitive nature of the work allowing standard designs and units to be created such as apartments, hotel rooms, classrooms in a school etc.

NEC contracts can be used to engage all the key members of the supply chain required for onsite and offsite construction on a consistent family of standard contracts at all stages in the design, construction and operation of an asset.

NEC has issued a free Practice Note explaining how the NEC4 suite of contracts can be used to support the use of offsite modular construction which can be downloaded at

https://www.neccontract.com/getattachment/c378614b-e70e-4e4b-957c-b399abd42bb8/Practice-Note-4_finalweb.pdf.aspx?lang=en-GB

The Hong Kong Academy

The Harbour Mental Hospital

7 APPENDIX: Building Project Case Studies

ECC Option C:

International Criminal Court Permanent Premises

Built in The Hague, Netherlands between 2012 and 2015 for €147 million, this is believed to be the first time that an NEC3 contract has been used in the Netherlands.

Halley VI

Halley VI is the latest British Antarctic Survey (BAS) research station located on the Brunt Ice Shelf in Antarctica to monitor the Earth's atmosphere.

Heathrow T2 and 5C

Heathrow Airport in London has completed a £812 million design and construction of a new Terminal 2 building under the NEC3 ECC contract.

Northampton Partnership Homes maintenance programme

In March 2017, Northampton Partnership Homes let a £160 million improvement and maintenance programme for social housing.

Nucleus (the Nuclear and Caithness Archives)

The extensive records of Britain's nuclear power industry are gradually being transferred to an NEC-procured archive building in Scotland.

The Christie Proton Beam Therapy Centre

The NEC-procured Proton Beam Therapy Centre at The Christie cancer hospital in Manchester is the first of its kind in the UK. Completed in October 2018, the £125 million centre provides proton beam radiotherapy.

The Harbour mental health hospital

The Harbour is a 154-bed mental health hospital situated just outside Blackpool, UK. The £39.5 million scheme was delivered for Lancashire NHS Foundation Trust in 2014.

Hong Kong Academy

In August 2013 the Hong Kong Academy moved to a new purpose-built campus at Sai Kung in the New Territories, marking successful delivery of Asia's first private-sector NEC project.

Wits University

In 2008 the university's campus development and planning team initiated a 6 year capital projects programme to improve existing infrastructure and construct new buildings. A total of over 1.5 billion rand (£80 million) was invested.

ECC Option D:

Community Centre

Located in Foxton, New Zealand, the NZ$6 million (£3.1 million) project involved extensive remodelling of an existing riverside warehouse structure, including inserting a new mezzanine floor.

NEC

1 Great George Street
London
SW1P 3AA
UK

E: **info@neccontract.com**
T: **+44 (0) 20 7665 2305**
W:**neccontract.com**

nec-contract
@nec_contracts
NEC Contracts

NEC is a division of Thomas Telford Ltd, which is a wholly owned subsidiary of the Institution of Civil Engineers, the owner and developer of NEC.