ALLIANCE CONTRACTS – THE BRITISH NEW ENGINEERING CONTRACT (NEC)

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ABSTRACT: Alliance contracting has emerged as an effective alternative to traditional construction procurement models, particularly for complex and high-risk infrastructure projects. The New Engineering Contract (NEC), widely adopted in the United Kingdom, provides a contractual framework that promotes collaboration, transparency, and proactive risk management through its target cost and early warning mechanisms. This paper examines the principles, structure, and operational features of NEC target cost contracts and explores how they reduce contractual asymmetries between clients and contractors.

The study outlines the evolution of the NEC contract and explains its key financial and procedural mechanisms. Emphasis is placed on the Early Warning process, which obliges all parties to identify, communicate, and mitigate risks and opportunities at the earliest possible stage. This process fosters collective problem-solving, encourages innovation, and supports value engineering, leading to improved cost control and programme certainty.

A detailed case study of the Grain to Tilbury (TKRE) power transmission tunnel project is presented to demonstrate the practical application of the NEC alliance model. The case study illustrates how early contractor involvement, collaborative risk management, and joint decision-making resulted in substantial programme acceleration, cost savings, environmental benefits, and reduced carbon emissions.

The findings indicate that alliance contracting under the NEC framework offers significant advantages over traditional contracting approaches, particularly in projects characterised by technical complexity, regulatory constraints, and high uncertainty. The paper concludes that NEC target cost contracts provide a robust mechanism for delivering enhanced value, reduced disputes, and more predictable project outcomes, supporting their continued and expanded adoption in major infrastructure delivery.

1. INTRODUCTION

In traditional contracts, several asymmetries exist. The client usually holds information relating to planning, stakeholder relationships and accumulated risks, while the contractor typically holds information about construction methods, potential value engineering opportunities, and any errors identified in the client's contract documents. In addition, both parties often have a skewed perception of risk and tend to overestimate unlikely but well-understood risks.

Alliance contracts aim to reduce these asymmetries by aligning the interests of the client and the contractor through the establishment of a joint objective.

There are, however, limitations to the use of target cost contracts. These forms of contract require substantial information sharing, such as open-book accounting, and therefore carry a significant administrative burden. Under normal circumstances, they are consequently only used on large projects (typically greater than £50 million).

There is also reduced value in adopting a target cost contract if a project is already in its late planning and design stages. Target cost contracts are therefore best employed during early project definition stages, where several project parameters remain undefined or subject to negotiation, such as incomplete or early-stage design development, or restrictions imposed by planning authorities that have not yet been fully resolved.

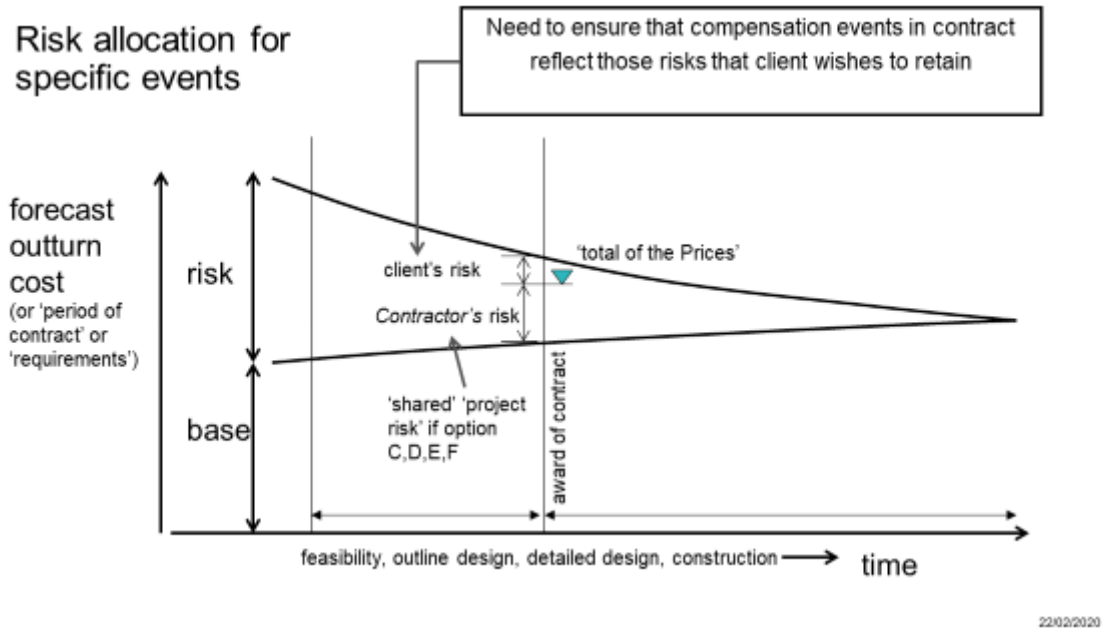

Fig 1: When to use Target Cost contracts

1.1 THE NEW ENGINEERING CONTRACT

1.1.1 Evolution of the NEC Target Cost Contract

The first edition of the New Engineering Contract (NEC) was published in March 1993. Rather than building upon existing standard forms the NEC adopted a new simple and direct drafting approach (plain language) focusing on strong project management principles (contractual procedures within the contract with defined maximum response times).

During this time Sir Michael Latham was carrying out his review of procurement in the UK construction industry. In his final report "Constructing the Team", he recommended that the NEC should set the national standard in not just the private but also the public sector. (LATHAM, 1994).

Partly as a result of the Latham Report, and some general tidying up of the drafting, the NEC was re-branded as the "Engineering and Construction Contract" and issued as a second edition in November 1995. The publisher was in effect attempting to make it clear that the contract was equally applicable to the wider construction industry, rather than just the engineering sector.

In 2005 the Institution of Civil Engineers in the UK published the NEC contract in its third edition, introducing Target Cost contracts. In the NEC Target Cost contracts, the joint objective is achieved by using a project price, called a Target Price or Target Cost, which is calculated by the contractor by calculating his costs, the impacts of potential risks and by a markup, called the Fee, to pay for overheads and profit.

1.1.2 Mechanics of the NEC Target Cost Contract

In the NEC Target Cost contract, the actual payment a contractor receives is calculated by using the actual cost the contractor has incurred and the applying the Fee to that cost. This payment to the contractor is called the Price for Work Done to Date (PWDD).

Costs which can be paid, are defined in the Schedule of Cost Components as follows:

Key Cost Categories (SCC):

People: Wages, salaries, and related costs for staff working in the Working Areas.

Equipment: Costs for hiring or owning equipment used for the works.

Plant and Materials: Physical items incorporated into the works.

Subcontractors: Costs incurred from subcontractors.

Charges & Design: Specific charges for support, design, and manufacturing.

Disallowed Cost: Costs which are not related to the works, not justified by records or not incurred in the working area or incurred because the contractor did not provide best value for money.

While continual cost management, is, of course, one of the main ongoing tasks for the duration of any construction contract, in simple terms, on completion of the contract, the Target Cost and the PWDD are compared. The difference between the two is split between the client and the contractor. If the PWDD is below the Target this is called Gain. If the PWDD is above the Target this is called Pain (or Loss). While contractors don't receive all the cost savings on the contract, they will also not have to incur all the cost overruns either.

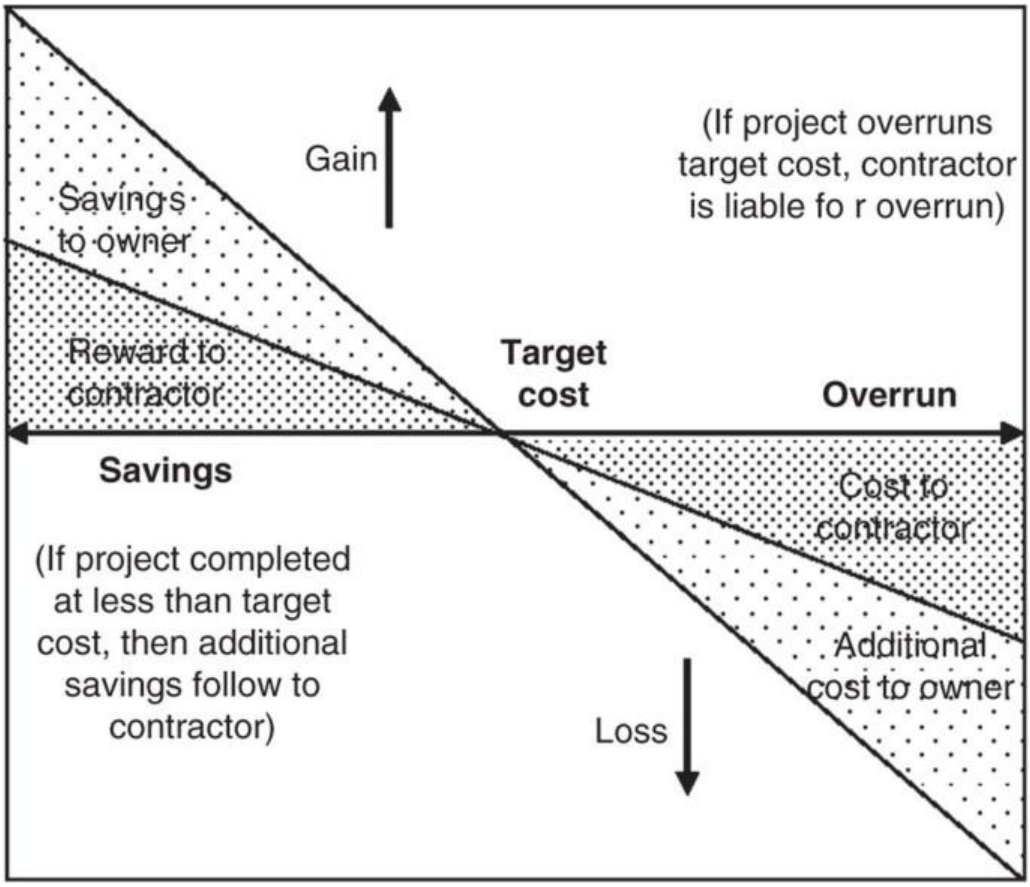

Fig 2. Pain/Gain Share Mechanism

As both contractor and client are bound together by project cost, from the moment the contract has been signed, both the client and the contractor will work together to reduce risks and costs to the best of their ability. For best alignment between the contractor and the client a 50/50 share split is recommended.

The is a formal contract mechanism for the collaboration called the Early Warning process, occasionally clients also introduce value engineering clauses in the contract. However, the principle remains the same.

A risk (or opportunity) is notified by any party to the contract. All parties have a duty to notify a new risk or opportunity as soon as they become aware of it. Withholding an Early Warning is principally a breach of contract. However, the contractor has an additional burden as not giving adequate Early Warnings can also reduce the contractor's entitlement to variation or claim monies.

The consequence of sending an Early Warning is that the contractor and the client's contract administrator call a meeting about the notified matter or matters and discuss how to deal with them. The focus is always to minimize the effects of the notified matter. Uniquely though, as both the contractor and the client have a joint interest through involvement of the client (or his administrator, the Project Manager) who will retain certain risks, for example those related to pre-contract agreements with third parties or public bodies, the number of possible solutions to resolve the matter cheaply, increases. All Early Warnings are recorded and placed on a register. Risk reduction meetings are held regularly with additional meetings as required. Closed matters are marked as closed.

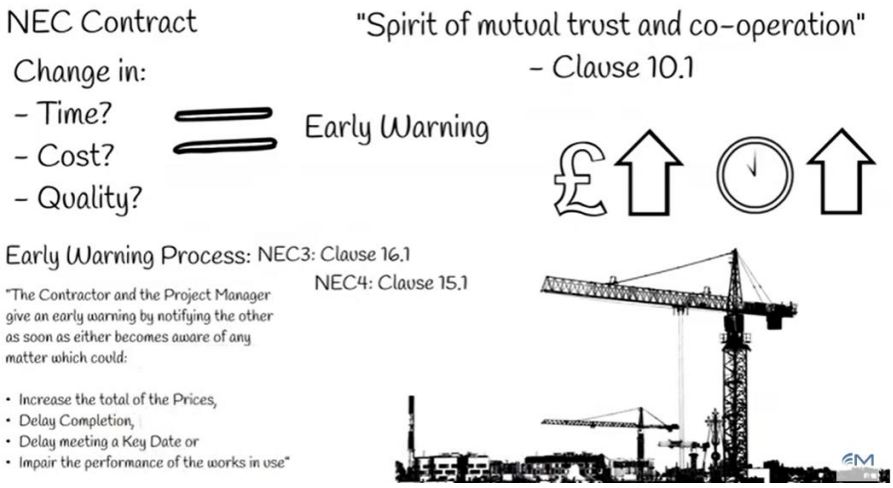

Fig 3: The Early Warning Process

1.1.3 The Risk Register

The first version of the risk register (or Early Warning Register as it is called in the NEC contract) is included in the contract documents. The client usually includes risks and opportunities which have been identified to the point of tender. In most tendering processes for large projects, tenderers are required to also submit a risk register.

These initial risk registers form the starting point of the risk reduction process.

2. CASE STUDY GRAIN TO TILBURY (TKRE) PROJECT

The TKRE project is a Design and Build contract which was tendered from January 2024 to October 2024. The project scope is for a new high voltage power transmission tunnel including fitout and connection to the grid under the river Thames. It is located to East of London in the counties of Essex in the north and Kent in the south. At invitation to tender, the client had commissioned ground investigations, a FEED design and had made agreements with third parties for use of such as the adjacent Tilbury Port, Network Rail which operated track running next to one site as well as some other third parties. The client also included his planning consent which included environmental and archaeology assessments.

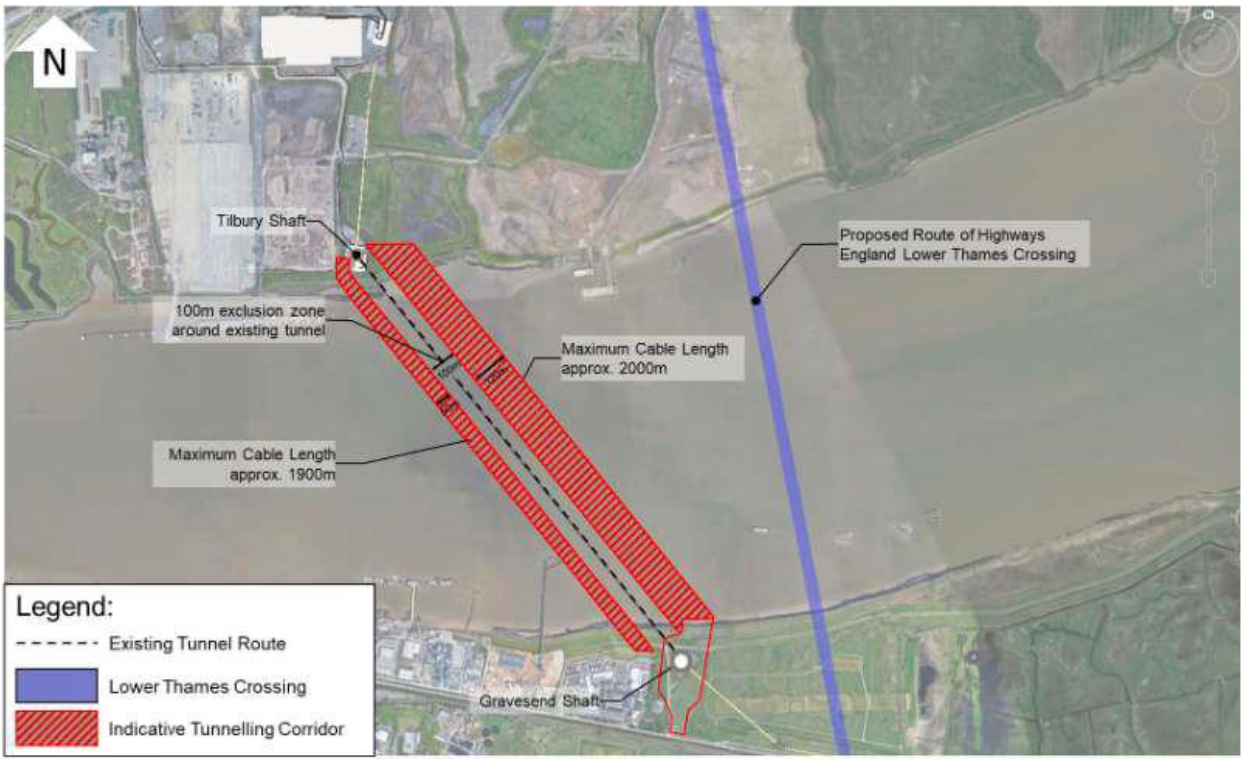

Fig 4: Overview of the TKRE Project

During the tendering process, 385 risks were identified. 203 risk items were closed out already during the tender period through the review process with the client or were dismissed. 182 risks and opportunities were selected to be entered into the risk register.

2.1 THE RISK REGISTER ITEMS

The author has selected 4 examples in below table from the submitted risk register to demonstrate the process of risk reduction.

Table 1: Extracted and abbreviated Risk Register

ID	Risk/Opportunity	Owner	Description of the proposal
9	Standard Opportunity	* redacted *	There is an opportunity The JV could apply for extended hours in Section 61 applications to maximise productivity and thus provide high levels of assurance in completing the works to plan.
42	Standard Opportunity	* redacted *	Disposal of shaft and tunnel spoil in adjacent IVL site
138	Standard Risk	* redacted *	A conventionally powered generator may be needed on site as NGET, via the Distribution Network Operator (DNO) have been able to arrange a permanent power connection to be installed [1.3.3.93]
28	Standard Risk	* redacted *	- Flood Risk Assessment may need to be undertaken during detailed design - May require change in minimum site levels to mitigate against impacts of flood

2.1.1 ID 9 – Restricted Working Hours

In the FEED design, a diaphragm wall shaft was planned due to the high-water table of the site adjacent to the Thames. The construction noise assessment which was included in the client's planning application was therefore made based on large piling rigs and working was only granted during restricted daytime hours. Our design and build submission, however, was made based on a so-called Vertical Shaft Sinking Machine. The changed method therefore presented an opportunity to work 24 hours a day. Early in the project programme, the Project Manager and the client agreed to commission a new noise impact study based on the revised methodology and to contact the planning authority to discuss the proposal and subsequently agreed to make a new planning submission. The result was a gain of 3 months on the construction programme with associated savings of time related project cost.

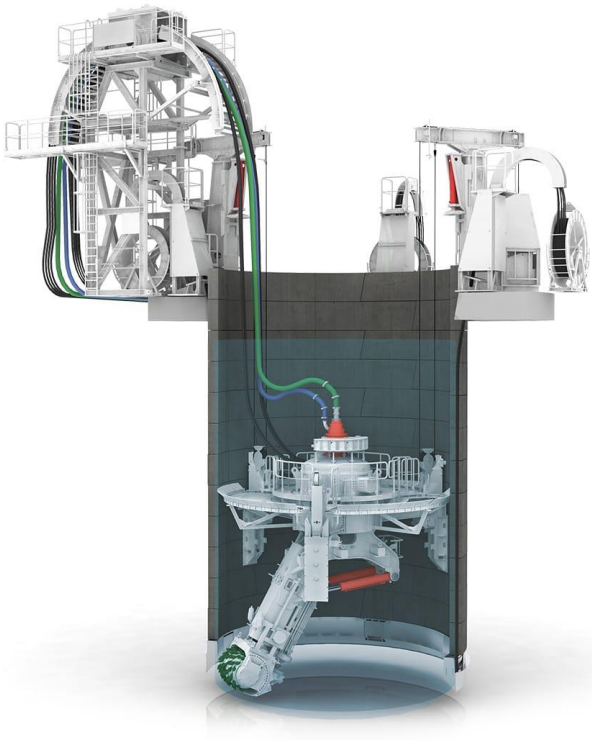

Fig 5: Vertical Shaft Sinking Machine © Herrenknecht

2.1.2 ID 42 – Shaft Spoil Disposal

The planning consent by the planning authority stated that tunnel arisings must be removed by river barge as part of a wider scheme to remove traffic movements from the local roads. Due to licensing restrictions, As the neighbouring land parcels, former landfills, had been designated as renaturation sites

by the Environmental Agency, we saw an opportunity to upgrade an agricultural road to the renaturation site and deposit the spoil within this site.

Discussions with the operator of the site were held and were positive. After contract award, when we reinitiated contact with the site operator, it emerged that in the meantime a covenant had been placed on large parts of the land to only accept spoil from a neighbouring infrastructure project of national importance (the Lower Thames Crossing). The only unaffected parcel of land was owned by the Tilbury Port. While the operator-initiated discussions with the port to obtain consent to deposit the tunnel arisings in that area, the relationship with the port was governed by an agreement between National Grid and the port and needed to be led by the client.

Tilbury Port refused to give permission as they had designated most of this land to their next phase of port development. Tilbury Port did however propose that we could temporarily deposit the tunnel arisings on land adjacent to the site. A mandatory planning condition in England is to provide biodiversity gain, currently set at 10%, for any land take or biodiversity reduction. As part of their planning consent for the port expansion, Tilbury Port will partially discharge this condition at a site further to the East using the TKRE spoil. The Project Manager and the client agreed to contact the planning authority to discuss the proposal and subsequently agreed to make a new planning submission. The client had an existing third-party agreement with Tilbury Port. The agreement was modified to incorporate the spoil disposal arrangements which meant that disposal cost could be reduced by ca 40%.

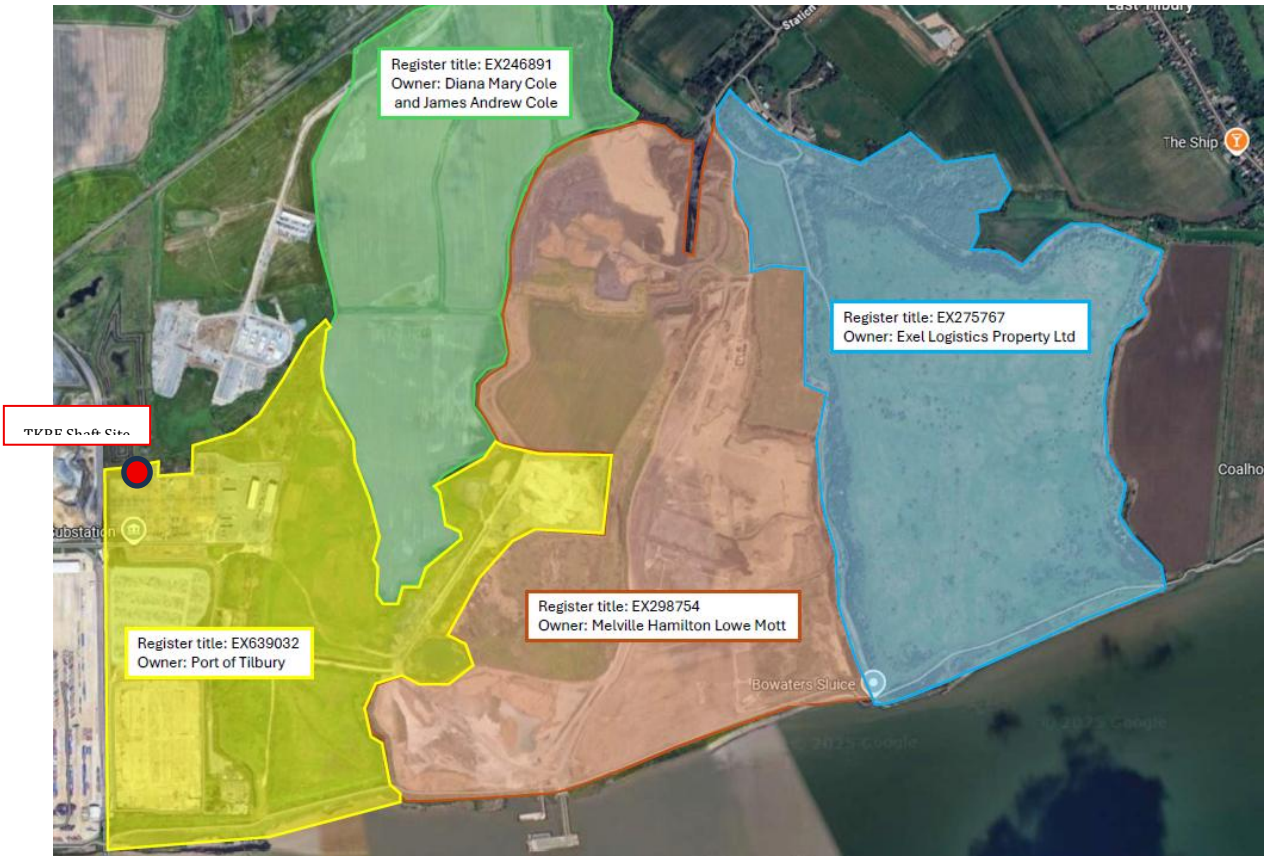

Fig 6: Land arrangements at Tilbury renaturation site

2.1.3 ID 138 – Electrical Power Access

In the local vicinity of the site, no suitable substations to power the site or the TBM were available. The contract scope therefore stated that power should be provided by the contractor with generators. Discussions were held late during the tender process around this as a suitable substation operated by the local Distribution Network Operator, UK Power Networks was identified around 1.3 km from the site.

Enquiries were made but could not be concluded before contract award. UK Power Networks were unable to provide the engineering modifications required to the substation in time to be useful for the construction programme. However, during the discussion with Tilbury Port facilitated by the client, it

was identified that Tilbury Port had a suitable power connection in close proximity to the site and agreed to sell power to us at close to market rates.

The client modified the third-party agreement with the port to accommodate this arrangement. In addition to significant cost savings, a reduction in CO2 emissions could be realised.

2.1.4 ID 28 – Flood Risk Assessment

The client had neglected to commission an adequate flood risk assessment for the southern site in Kent prior to planning application submission. This was pointed out to the client during the tender phase by our designer and included in the risk register. A separate consent from the UK Environmental Agency is required by the agency in certain risk areas to ensure the future impacts of climate change have been considered in the design of new buildings and infrastructure.

The client immediately commissioned a flood risk assessment. The result was that the electrical installations of the shaft head house would need to be protected from up to 3 m of water level increase as the rising sea would breach existing flood protections. After reviewing options which included raising of the flood protections and raising of the land, the option of modifying the shaft head house was chosen. Based on the new designs, the client will apply for a modification to the planning consent. The changes will be a variation to the contract for the contractor. However, due to the early identification of the problem, there will be a significantly reduced impact of the construction programme

3. CONCLUSION

The NEC target cost contract provides a robust contractual framework for collaborative project delivery. By aligning the commercial interests of the client and contractor, it promotes transparency, early risk identification and proactive problem-solving. The Early Warning mechanism and the structured use of risk registers create a disciplined approach to managing uncertainty and exploiting opportunities.

The TKRE case study demonstrates the tangible benefits of this collaborative approach, including significant programme reductions, cost savings, enhanced environmental performance and improved risk mitigation. Early engagement, open communication and shared responsibility enabled innovative solutions that would have been difficult to achieve under traditional adversarial contracting models.

In an increasingly complex construction environment characterised by regulatory constraints, environmental considerations and technical challenges, alliance contracting through the NEC framework offers a compelling model for delivering value, reducing disputes and achieving predictable project outcomes.

LITERATURE

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