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Since they first arrived in 1993, NEC procurement contracts have had a transformative effect on the built environment and infrastructure industry in the UK and worldwide. They have proved that through collaboration, fair dealing and good management, even the most high-risk and complex projects can be delivered on time, within budget and without litigation.

For example, the Olympic Delivery Authority (ODA) successfully procured £7 billion of venues and infrastructure for the London 2012 Olympic and Paralympic Games – widely considered to be one of the best ever staged – using NEC. ODA Head of Procurement John Fernau said NEC provided, 'pro-active management of risk, a collaborative approach supporting timely delivery, full visibility on costs and transparency for assessing the impact of change'.

This paper looks at the impact NEC contracts have had on the global built environment industry, how the contracts have evolved over time to become today's NEC4 suite, and how they continue to set the benchmark for best-practice procurement worldwide.

Endorsed by clients

In 2015, a biennial survey by the Royal Institute of British Architects (RIBA) confirmed NEC contracts had become the most popular procurement route for UK clients, being used mostly by 42% of clients compared to 32% mostly using JCT contracts. It is now the standard contract suite for works, services and supply in the UK's construction, transport, water, nuclear, healthcare and local authority sectors.

Outside the UK, the Hong Kong government adopted NEC as the standard contract suite for its £7 billion a year public-sector works programme from 2015. It is the main contract suite for utility projects in South Africa and New Zealand, and has successfully delivered public and private sector building and infrastructure projects in Antarctica, Australia, China, Ireland, Netherlands, North Africa, the Philippines and South America.

NEC is endorsed by the UK Construction Clients Board, the UK Government's Crown Commercial Service, the Facilities Management Board of the UK Cabinet Office, the Association for Project Management and the British Institute of Facilities Management.

It is also recommended by the Hong Kong Development Bureau, the South African Construction Industry Development Board and by its publisher, the Institution of Civil Engineers (ICE).

Benefiting industry and society

For clients, the principle benefit of NEC is greater certainty of outcome – they can be much more confident of getting what they need, when they need it and for a fair price. This is because NEC also benefits consultants, contractors, subcontractors and suppliers, providing a more equitable allocation

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of risk, ensuring prompt and fair payment, and rewarding collaboration and innovation.

One of the most substantial users of NEC is the UK's Nuclear Decommissioning Authority (NDA), which adopted the full contract suite for its £115 billion, 120-year clean-up of over 10,000 plants across Britain's 17 nuclear sites in 2005. NDA Supply Chain Manager Sam Dancy said, 'The NEC suite is more than a set of contract conditions – it is also a project management manual which sets the ground rules for the supply chain and project manager to deliver projects successfully. The transparency resulting from NEC's proactive and collaborative approach to communication is providing us with a better understanding of our projects and also an opportunity to learn and improve'.

The UK's Department of Health has now delivered over £8 billion of hospital and social care projects through its NEC-based Procure21, 21+ and 22 frameworks since 2003. Cost savings of 15% have been achieved through construction efficiencies and collaborative development of standardised designs. Cliff Jones, Head of Construction Procurement at the Department of Health said, 'NEC supports the collaborative nature of the relationship on which the frameworks are based'. On The Harbour mental health hospital in Blackpool, for example, NEC pain/gain share mechanisms directly led to £5 million of savings on the £40 million project by encouraging innovation in design and construction.

Lee Tunnel

Thames Water is also using NEC for its £4.2 billion Thames Tideway sewage tunnel, which started in 2016 and is due for completion 2023. This follows NEC's success in delivering the 2010–2017 £630 million Lee Tunnel, which Thames Tideway will flow into. It is the deepest tunnel ever built under London, was the largest single construction let by the UK water industry and it won the Major Civil Engineering Project of the Year Award in the 2016 British Construction Industry Awards. Lee Tunnel Project Director François Pogu of joint venture contractor MVB recommended NEC as 'a good tool' while Program Manager Robert Hayden of CH2MHill said it meant, 'we collaborate to find a solution rather than writing ugly letters to each other'.

Core innovations continue

The NEC suite has evolved over four decades, embedding consultation responses and user feedback and reflecting industry developments and emerging best practice. However, its core innovations have remained largely unchanged. First and foremost is the unique 'hard-wiring' of

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collaboration into the contracts starting with the first clause, which states parties shall act 'in a spirit of mutual trust and cooperation'.

The contracts are written in plain and simple English in the present tense, require all communications to be in a form that can be read, copied and recorded. The contracts are modular, with a comprehensive range of primary and secondary options providing full flexibility in country of use, choice of procurement route, pricing options, design input and allocation of risk.

Stimulus to good management is also at the heart of NEC contracts. All newly emerging risks and problems must be flagged as soon as they become apparent through early warnings, ensuring 'no surprises'. These are then discussed at a risk-reduction meeting and resolved through agreed compensation events as work progresses, rather being swept under the carpet for a later dispute. This real-time approach to change management is underlined by the importance NEC puts on the programme, with all parties obliged to ensure the programme is continually updated to reflect reality.

NEC3 box set

The contracts allow for incentivising contractors through target cost arrangements, key performance indicators and bonuses for early completion. Specific clauses allow for value management, multi-party collaboration, early contractor involvement, building information modelling and project bank accounts.

And finally, as NEC contracts were unlike anything published before, ICE was keen from the outset to ensure that users are given as much support as possible to ensure they gain maximum benefit from them. The NEC Users' Group was established in 2006 with a comprehensive programme of training events and courses. It now has branches in the UK, Australasia and the Asia-Pacific, with currently over 400 member companies worldwide. It provides newsletters, FAQs, seminars, workshops and a helpline for members, as well as discounted access to a wide range of services, including publications, training courses and consultancy.

Conclusions

No other contract suite has had such a transformative effect on the built environment industry as NEC. It has put the collaborative sharing of risk and reward at the heart of modern procurement. It is also unique in

The contracts are written in plain and simple English and in the present tense, and require all communications to be in a form that can be read, copied and recorded.

providing a complete, back-to-back procurement solution for all works, services and supplies in any sector and any country.

NEC contracts have successfully delivered hundreds of US$ billions worth of works, services and supply around the world. The feedback from users has been constantly monitored, analysed, and taken on board.

NEC3 contracts

New complementary contracts and clauses have also been published to reflect industry developments and needs, ranging from new ways of working to the advent of new technologies and regulations.

With each evolution of NEC, it appeals to an even greater number of clients across an ever-wider range of sectors and countries. NEC3 had already become the public-sector contract of choice in the UK, South Africa, Hong Kong and New Zealand. With its increasingly international appeal and flexibility, NEC4 could well become the world's favourite procurement suite within the foreseeable future.

The NEC4 contract suite offers a comprehensive range of flexible contracts for procuring works, services and supplies:

- Engineering and Construction Contract (ECC)
- Engineering and Construction Subcontract (ECS)
- Engineering and Construction Short Contract (ECSC)
- Engineering and Construction Short Subcontract (ECSS)
- Term Service Contract (TSC)
- Term Service Short Contract (TSSC)
- Professional Service Contract (PSC)
- Professional Service Short Contract (PSSC)
- Supply Contract (SC)
- Supply Short Contract (SSC)
- Framework Contract (FC)
- Dispute Resolution Service Contract (DRSC)
- Design Build Operate (DBO)
- Alliance Contract (ALC)

NEC4 contracts

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A brief history of NEC

1986
Commissioned to draft a new contract.

1993
The New Engineering and Construction Contract (NEC) published.

1995
NEC2 published.

1986-1993

The NEC story starts in 1986, when leading UK Project Management Consultant Martin Barnes was commissioned by the newly formed legal affairs panel of the Institution of Civil Engineers (ICE) to draft, 'a radical new contract which would stimulate and not frustrate the application of good project management'.

As Barnes recalls, **'Our philosophy was to produce something which cured every known ill of traditional contracts. We did not have to compromise. Everything we thought would be a good idea went in – and we could decide what to put in solely on the basis of what would stimulate all those who used it to manage their contribution well'.**

The New Engineering Contract

After five years of drafting and reviewing a consultative draft was finally published in 1991. It took two more years to digest the responses, after which ICE finally approved the 'New Engineering Contract' (NEC) and its back-to-back subcontract for publication in 1993.

1993-1995

Early adopters included British Airports Authority, National Power and Scottish Hydroelectric in the UK and public electricity utility Eskom in South Africa. A year later ICE published the first edition of an associated Professional Services Contract (PSC) – intended for all construction-related professional services providers, whether NEC was the main contract or not – and an Adjudicators' Contract (AC), for retaining the services of an adjudicator as provided for in all NEC forms.

By this time Sir Michael Latham had already started his review of contractual practices in

The New Engineering and Construction Contracts 2

the UK construction industry. In his 1994 report Constructing the Team he said, **'Endlessly refining existing conditions of contract will not solve adversarial problems. A set of basic principles is required on which modern contracts can be based. A complete family of interlocking documents is also required. The NEC fulfils many of these principles'.**

In fact NEC complied with 11 of Latham's 13 principles for an effective, modern contract and Latham even set out in detail what was needed to make NEC exactly that. ICE duly published the second Latham-compliant edition of NEC, now known as the NEC Engineering and Construction Contract (ECC) 2nd Edition, in 1995, together with the NEC Engineering and Construction Subcontract (ECS) 2nd Edition.

1995-2005

One of the second edition's major successes was the £5.8 billion High Speed 1 railway between London and the Channel Tunnel, built in two phases between 1996 and 2007. However, the clear, simple, plain-speaking contracts still

1998
New contract editions published.

2005
NEC3 published.

2013
NEC3 updated on its 20th anniversary.

faced considerable headwinds from construction lawyers for more general use.

As Barnes recalls, 'We expected to get some flack from the lawyers but we under-estimated how much there would be and how long it would be sustained. Lawyers generally have nothing to say about how to manage a contract well but they do know how to sustain an argument about what the tortuous language of traditional contracts might mean or has been ruled to mean'.

NEC3 Engineering and Construction Short Contract

Nevertheless, **NEC gradually became the go-to suite for UK infrastructure projects, helping to drive significant improvements in public sector procurement.** Second editions of the PSC and AC followed in 1998, with a simplified contract for simple low-risk works – the Engineering Construction Short Contract (ECSC) in 1999 and associated Engineering and Construction Short Subcontract (ECSS) in 2001. It became the standard contract suite for the UK Highways Agency, the UK Environment Agency and the Department of Health's £8.5 billion building procurement frameworks.

It was during this period that the UK Government launched its Achieving Excellence in Construction (AEC) initiative to get better value from its annual £40 billion construction spending. Publication of the AEC principles in 1999 and extensive feedback from NEC's growing use worldwide eventually led to a third revision of NEC – known as the NEC3 suite – in 2005. Again it was evolution rather than revolution, with **increased flexibility, better control of risks and greater ease of use. This included the launch of digital versions of the contract, reflecting the increasingly digital nature of construction design and management.** The family also grew again, adding the NEC3 Term Service Contract (TSC) for maintenance work and the NEC3 Framework Contract (FC) for letting packages of work over time.

2005-2017

Uniquely the 2005 **NEC3 suite gained the full endorsement of the British government through its then Office of Government Commerce.** It stated, 'this edition of the NEC (NEC3) complies fully with the AEC principles. OGC recommends the use of NEC3 by public sector construction procurers on their construction projects'. This was printed on the covers of all NEC3 contracts. Four years later the ICE, which since 1945 had also published the Civil Engineering Conditions of Contract, abandoned these in favour of NEC3.

NEC3 was well received by the construction industry and usage continued to grow, particularly in the building sector. Its application was further extended with the NEC3 Term Service Short Contract (TSSC) in 2008 and the innovative NEC3 Supply Contract (SC) and NEC3 Supply Short Contract (SCC) in 2010, covering the buying of all types of plant, equipment and materials. After its widely recognised success in delivering the £7 billion of venues and infrastructure for London 2012 on time and within budget, the NEC3 suite received a general update on its 20th anniversary in 2013. A new NEC3 Professional Service Short


Lee Valley VeloPark

2017
Launch of NEC4.

Contract (PSSC) was launched for short-term consultancy appointments in all sectors and seven new 'how to' documents were published, bringing the total suite – including guidance notes and flow charts – to 39 documents.

Further endorsements came from the UK government's Crown Commercial Service, the Facilities Management Board of the UK Cabinet Office, the Association for Project Management and the British Institute of Facilities Management.

Interest was also growing outside the UK. **In 2006 the Hong Kong government decided to trial the NEC3 on 30 pilot projects worth £1.2 billion to encourage collaborative working in the construction industry.** The success of these led the Hong Kong government to adopt NEC3 as the default contract for its £7 billion a year public-sector works programme from 2015. Hong Kong transport authority MTR and energy utility CLP are also following suit, along with a number of private sector developers. Usage has continued to grow in New Zealand and South Africa – where it is recommended for public-sector use by the South African Construction Industry Development Board, with other successful projects carried out in Antarctica, Australia, China, Ireland, Netherlands, North Africa, the Philippines and South America.

Twelve years on and with several hundred billion pounds more procurement under its belt, the contract suite's next evolution – **NEC4** – was launched in 2017. As before the **contracts were updated and streamlined to take into account consultation responses, user feedback, industry developments and emerging best practice, with improvements in flexibility, clarity and ease of administration.** A new NEC4 Design Build Operate Contract (DBO) has been added to the suite, reflecting the increasing demand for contracts extending into the operational phase, and a consultative NEC4 Alliance Contract (ALC) for multi-party integrated teams was published.

2017 onwards

London's Crossrail, currently Europe's largest construction project, is set to be delivered in 2019 on time and within its £15 billion budget using NEC. NEC is also being used for the UK's £56 billion High Speed 2 railway and £18 billion Hinkley Point C nuclear station, both of which are due to start in 2017.

NEC will continue to be used in Europe, Africa and Asia to procure everything from airport terminals and hospitals to leisure facilities and housing; and from minor road and drainage works to cleaning and maintenance services.

The contracts will be used at all levels and lifecycle stages of the built environment, from initial architectural and engineering design services to project and programme management; from offsite manufacture to onsite building and civil engineering; and from commissioning and operation to facilities management, term maintenance, decommissioning and re-use.

With the new NEC4 Design Build Operate Contract (DBO) and NEC4 Alliance Contract (ALC), the next decade could well see NEC becoming the world's favourite procurement suite.

NEC4 Design, Build and Operate Contract

works | services | supply

nec®

nec4 | Improvement *through collaboration*

The new suite of NEC contracts enables any project to be delivered on time, within budget and to the highest standards. NEC4 facilitates improved collaboration, addresses government priorities and takes account of industry feedback. NEC4 uses clear and professional language to promote fair dealing, greater certainty and helps prevent litigation, even on the most complex and high-risk projects. Our contracts were developed to enable best practice, helping you improve flexibility and streamline processes, to deliver real value.

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