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The Implementation of the New Engineering Contract in Australia

An Institutional Perspective

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Abstract

Current traditional delivery models used in the Australian construction industry are seen as highly bespoke and adversarial where there is an inappropriate contractual risk allocation, lack of collaboration and poor project management. With the pipeline of investment compounded with the impact that global macroeconomic trends and events (e.g., COVID-19, climate change, political instability, social change, digital revolution) have on supply chains and risk profiles; there are calls from practitioners and researchers for fundamental change to contractual delivery arrangements to support the implementation of collaboration. The standard form of contract known as the New Engineering Contract (NEC) is seen as a logical step in the right direction; however, there is a lack of in-depth investigation to understand and support its implementation, particularly in Australia. This thesis aims to understand whether NEC could be utilised to a greater extent in the Australian construction industry by using institutional theory as a frame of reference. This paper reports on an exploratory interview study with a range of professionals in the construction industry in Australia to understand the current problems with traditional procurement, NEC's perceived role and contribution to developing contractual practice, the barriers to change and the roles that various actors play in driving the development of NEC.

The study confirms that the industry has a range of economic, knowledge-related and cultural factors that motivate the need for change. The effect of these practices has become part of the institution of the construction industry, 'the way we do things. This has resulted in inefficient and poor performance outcomes. The general perception and experience amongst industry participants is seen as positive to NEC, where many acknowledge clear advantages but also various issues to its implementation. Key institutional actors are perceived to act as barriers to further adoption of NEC are the government, clients/public sector organisations and the legal profession. Other main barriers identified include the limited number of trained professionals and the culture and mindset in the industry. Greater adoption of NEC requires the active role of government, clients, and industry and professional bodies.

Titel	Implementeringen av New Engineering Contract i Australien – Ett institutionellt perspektiv
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Sammanfattning

I den australiensiska byggindustrin används idag skräddarsydda kontrakt som skapar motsättningar mellan parterna genom obalanserad riskallokering och är förknippade med dåligt samarbete och bristande projektledning. Med tanke på den stora volymen planerade investeringar och den påverkan som globala makroekonomiska trender och händelser (t.ex. covid-19, klimatförändringar, politisk instabilitet, social förändring, digital omställning) har på leveranskedjor och riskprofiler, är det idag många praktiker och forskare som pekar på behovet av nya kontrakt som stödjer samverkan. Standardkontraktet New Engineering Contract (NEC) ses då som ett steg i rätt riktning. Syftet med detta examensarbete är att förstå de nuvarande problemen i den australiensiska byggindustrin och undersöka om NEC skulle kunna användas i större utsträckning. Studien baseras på intervjuer med yrkesverksamma inom byggbranschen i Australien. Med hjälp av institutionell teori diskuteras NEC:s upplevda roll och bidrag till att utveckla avtalspraxis, hindren för förändring samt de roller som olika aktörer spelar i att driva utvecklingen av NEC.

Studien visar att branschen präglas av en rad ekonomiska, kunskapsrelaterade och kulturella faktorer som motiverar behovet av förändring. De har blivit en del av byggindustrins institutionaliserade praktiker, "så här gör vi", och har resulterat i ineffektivitet och kvalitetsbrister. De intervjuade är generellt positiva till NEC, men ser både tydliga fördelar och vissa problem med det. Centrala institutionella aktörer som idag fungerar som hinder för fortsatt implementering är statliga myndigheter, andra offentliga byggherrar och den juridiska professionen. Andra barriärer som identifierats är bristen på yrkesverksamma som är utbildade i NEC samt branschens kultur och tänkesätt. En ökad användning av NEC förutsätter en aktiv roll från myndigheter, kunder, branschorgan och professionsföreningar.

Acknowledgements

I would firstly like to thank the interviewees who took their time out of there busy lives to speak about the real issues occurring in the industry. Your insights will contribute to the field of research, and it is hoped your insights will drive the change the Australian construction industry requires. Cheers.

This thesis would not have been possible without the many people around me who have provided guidance, support, and perspective when I needed it most. Many thanks to Anna Kadefors for being a great thesis supervisor even though we were on different sides of the globe. Cheers, Anna.

We as a society owe Mr Martin Barnes a great deal of debt for his creation of the NEC suite. In what began for me as a small course on collaborative contract forms at university, is now an appreciation for how NEC has changed the traditional approach to contracts. His innovative vision of NEC was well ahead of the times, where he was not afraid to be the instigator of major transformation in the construction industry, persisting even when he faced major resistance. He passed away in February 2022 as I began this thesis, leaving a legacy of change in contractual procurement that cornerstones of the industry internationally will continue to honour. I will do my part to increase the uptake of NEC in Australia. Cheers, Martin.

Dannie O'Brien
Brisbane, Australia
10 June 2022

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1. Introduction

This chapter will firstly introduce the report, provide a detailing general background information about the research problem, followed by a problem statement. Further the purpose and relevant research questions will be outlined, followed by delimitations.

1.1 Background

The Australian construction and engineering industry is playing a vital role in the post-COVID economic recovery effort, with fiscal stimulus, specifically infrastructure expenditure across the State governments, boosted by 26 per cent in 2022 compared to last year's budgets (Infrastructure Partnerships Australia, 2022). With this scale of investment and the surge in the scale and volume of construction activity, increased discourse is growing on the poor health of the construction industry and the inefficiency of current project delivery to service the growing demand. Further this was shown in a study completed by the Melbourne Law School in 2020 on the 'Health of the Australian Construction Industry' where they found that two of the main issues in the Australian construction industry with the potential to be improved include risk allocation and collaborative contracting (Sharkey et al., 2020).

It is common practice in the Australian construction industry to use conventional contracting models where the client or government entity internally manages or outsources the design, development and project management using a cascade of separate contracts (Love et al., 2010). This often leads to each project participant focusing only on performing the responsibilities to which they are allocated and working separately rather than integrating the project team to work cooperatively (Jefferies et al., 2006). Thereby they offer little in the way of collaboration or active risk management, which are required to deliver best for project outcomes. The tendering selection process used on traditional procurement models in Australia tends to involve a competitive lowest cost approach rather than non-price criteria (Gerber & Misko, 2019). This frequently involves contractors aggressively bidding low on a project to win the job with an intention to recover and mitigate the loss through a claims-based approach or pushing risk further down the supply chain (Sarhan et al., 2014). The risk and reward structures in traditional contracting models used in Australia involve considerable risk transfer from project owners to contractors and other project participants, even though they may not be able to manage the risk (Infrastructure Australia, 2019; Sarhan et al, 2014). The conventional contracting models therefore are shown to drive a misalignment of commercial incentives between project participants, leading to adversarial and blame game' behaviours, strained contractual relationships, disputes, a silo mentality, low trust and poor project performance (e.g., delays, unresolved claims, cost overruns, litigation) (Infrastructure Australia, 2021; Miller et al., 2009; Klakegg et al., 2021; Gerber & Misko, 2019). According to ARCADIS (2021), a global Design & Consultancy organisation, the average value of construction disputes in 2021 was $52.6 million (US). This was a 3% decrease from 2020 at $54.3 million however historically higher than 2019 and earlier years (ARCADIS, 2021). The fundamental causes of these disputes were the result of poorly drafted or incomplete and unsubstantiated claims, errors and/or omissions in contractual documents and the failure of the contractor/owner/ subcontractor to understand or comply with their contractual obligations (ARCADIS, 2021).

As was evident during the unprecedented COVID-19 pandemic, unforeseen disruptions across the construction industry (e.g., supply chain) exasperated the risk profiles of various construction projects. They increased the commercial and technical risks faced by project participants, resulting in the collapses of various major contractors. Despite these challenges, the disruption highlighted the importance of collaboration between all parties involved and the opportunity for strategic change in project delivery in Australia. Collaborative procurement focuses on developing relationships based on trust and cooperation and eliminating opportunistic and adversarial behaviour, which lies at the heart of contractual disputes (Miller et al., 2009; Gerber & Misko, 2019). Unfortunately, there is no readily available industry-wide standard Australian collaborative contract, however, there are several collaborative standard forms formed and adopted overseas. One such contract that has only been used on a few projects in the Australian market is the NEC contract. Using the current climate as a backdrop, this study investigates by way of semi-structured interviews the slow adoption of NEC in the Australian market by exploring whether NEC may improve the systemic issues in the construction industry.

1.2 History of Contracting in the Australian Construction Industry

1.2.1 The 1980s

The first recognition of the shortcomings to traditional contracting in Australia occurred in 1988 with the formation of a Research Project group comprising those from the Australian Federation of Construction Contractors, the Australian Institute of Quantity Surveyors and Federal and State Government Construction authorities (Stehbens et al., 1999). This Research Group developed the Research Report titled 'Strategies for the Reduction of Claims and Disputes in the Construction Industry', which recognised the principal causes of claims and disputes and the need for a change in attitudes and practices in the Australian construction industry (Stehbens et al., 1999). In reaction to this, a Joint Working Party (JWP) comprising diverse private and public industry groups was formed to explore how the recommendations in the report should be implemented to achieve more efficient management and performance of projects (Rahmani et al., 2017; Stehbens et al., 1999). This collaboration led to the 'No Dispute' report, which was advocated as a bible for the Australian industry and advised for the implementation of new project delivery strategies (Stehbens et al., 1999). In particular, the 'No Dispute' report highlighted the importance of standard contracts that allow both parties to be familiar with their obligations towards each other and provide an equitable allocation of risks, thereby reducing claims and disputes (Stehbens et al., 1999). At the time, many projects relied on design then constructs models with fixed price lump sum compensation entitlements being the predominant forms of contract, including the Australian Standard AS2124-1986, JCC and NPWC3 (Briggs, 2007). These forms tended to be heavily amended to relocate risk from the owner to the contractor, including the insertion of time clauses that denied contractors fair claims and the insertion of tedious warranties and indemnities by the contractor (Briggs, 2007). Further, they provided a higher tendency for contractors to under-price their bid to win and recover the costs through unwarranted contractual claims for variations (Briggs, 2007).

1.2.2 The 1990s

Following on from this report, additional concerns were raised by construction industry organisations in NSW and Victoria over issues regarding industrial relations (Stehbens et al., 1999). This, resulted in the Prime Minister launching the national Construction Industry Reform Strategy (CIRS), which recognised the need for commitment by all parties to address issues in the industry, including industrial relations, contracts, skill formation and industry development (Stehbens et al., 1999; Jones et al., 1996). The Federal Cabinet then requested the Minister for Industrial Relations to formulate an In-Principle Agreement based on the recommendations from the CIRS, which was signed and endorsed by all States, a range of industry associations and unions (Stehbens et al., 1999; Jones et al., 1996). To implement this reform, the Construction Industry Development Agency (CIDA) was established with a Contractual Relations Action team that focused on contractual practices, specifically the debate on industry-standard forms (Stehbens et al., 1999; Jones et al., 1996). The Action team published the Standard Building & Construction Contracts Users Guide which underlined how various standard forms at the time (e.g., JCC, AS2124-1992, Department of Defence Head Contract) dealt with and responded to a range of issues (Stehbens et al., 1999; Jones et al, 1996). These included risk allocation, time/cost/quality management, communication, the role of the superintendent, management of provisional sum items, security arrangements and dispute resolution (Stehbens et al., 1999; Jones et al, 1996). At the same time, the standard for AS2124-1992 was released by Standards Australia as a revision for the previous 1986 version to fulfil the need for contractual reform from the 'No Dispute' report (Stehbens et al., 1999; Jones et al., 1996). However, through the work of the Action Team, it was found that this standard form was defective, with criticism raised over the consensus drafting process in the development of the form (Stehbens et al., 1999; Jones et al., 1996). In 1995, AS4300-1995 was developed, leading to increased use of design and construct (D&C) models for project delivery, which encouraged a single point of responsibility for design and construction (Briggs, 2007)

1.2.3 The 2000s

Over the following decade, limited progress was made to produce industry-wide change and follow through with the ambitions of the 'No Dispute' report, with traditional delivery mechanisms remaining the preferred choice to establish terms of agreement. However, in response to the backdrop of criticism, a range of initiatives was imported from the United States (US) and the UK, including relational contracting models (Rahmani et al., 2017). These include, for example, partnering, alliancing, managing contractor, Public-Private Sector Partnerships (PPPs) and early contractor involvement (ECI) (Rahmani et al., 2017). These models promote a cooperative partnership between the owner and the contractor by binding the behaviour through mutual understanding, trust, commitment, and relational continuity (Briggs, 2007).

One of the most innovative strategies to improve project delivery was Alliance contracting in the late 1990s. According to Briggs (2007), a project alliance involves an owner and one or more service providers working as an integrated team with an alignment of their commercial interests and project outcomes. This approach was based on models used in

the UK and adopted on a range of public sector building and civil engineering projects, including a range of road, rail, oil, gas, and mining projects (e.g., Wandoo Offshore Gas Platform) (Ross, 2009; Briggs, 2007). There is currently no standard form of contract for an alliance contract in Australia, with most project alliance agreements being bespoke (Ross, 2009). It is noted, however that the Department of Infrastructure and Regional Development published National Alliance Contracting Guidelines 2015, and the Alliancing Association of Australasia have a model Project Alliance Agreement. The role, value and performance of alliancing have come into question over the last decade. Many are concerned about its success and applicability with disputes, cost and time overrun remaining prevalent (Young et al., 2016; Gerber & Misko, 2019). In particular, a Report commissioned by the Treasuries of Victoria, Western Australia, Queensland and New South Wales in 2009 called "*In Pursuit of Additional Value: A benchmarking study into alliancing in the public sector*" (the 'Department of Treasury and Finance Report') found that alliancing was becoming a default model that was not delivering the value for money or exceeding business case estimates in most cases (Department of Treasury and Finance, 2009; Gerber & Misko, 2019). Pure alliance contracting models are no longer regarded in Australia, where they have shifted out of favour by many State treasuries, and tend to only be used on a few mega-projects (Hayford, 2020; Capelli et al., 2013)

More recently, in 2017, the Construction Leadership Group (CLG) was established by Infrastructure NSW to drive reform in collaboration and project delivery for government-led projects (Infrastructure NSW, 2022). As part of this, in 2018 the CLG developed an infrastructure action plan in the form of ten-point commitments known as the NSW Government Action Plan. There was a clear push for collaboration in this plan including a partnership approach to risk allocation and standardisation of contracts and procurement methods (Infrastructure NSW, 2022). In addition, in 2021, Infrastructure Australia published the 'Australian Infrastructure Plan', which provided their roadmap for infrastructure reform. Underpinning this roadmap was a drive for collaboration and the need to use standard form contracts that support collaborative behaviour and efficient risk allocation (Infrastructure Australia, 2021).

1.2.4 Standard Forms of Contract in Australia

Standard form contracts were introduced by professional associations, government organisations and industry bodies with the intention to produce a fair and balanced risk-sharing between the contracting parties through standardisation and uniform contractual rights and obligations (Youssef et al., 2018). The Barnwell Report in 1964 first recommended the use of one standard form of contract for building and civil engineering (Hardcastle et al., 2008). Despite this, there has been a trend over the last 20 years, particularly in Australia, where many of the commonly used standard forms of contract are extensively amended or modified to deflect costs or liabilities onto another party or down the supply chain resulting in a bespoke contract with an inequitable allocation of risks between project participants (Mosey, 2019; Gerber & Misko, 2019). Given how complex and uncertain construction projects are and the diversity of risks they carry throughout the project lifecycle, the chosen contractual form arrangement and the relationship between the inter-organisational parties is

important to overall project performance and has significant scope for improvement in Australia (Khalef et al., 2021; Klakegg et al., 2021; Osipova, 2007; Gerber & Misko, 2019).

An extensive proliferation of contract forms has made traction in Australia even for the same delivery model; refer **Table 1**.

Table 1*- A list of contractual forms used in Australia*

Name	**Details**
Australian Standards Contracts (issued by Standards Australia)	• AS4000 – General Conditions of Contract for Construct only (1997); • AS4901 – Sub-contract to be used with AS4000 (1998); • AS4902 – General Conditions of Contract for Design and Construct (2000); • AS4903 – subcontract for use with AS4902 (2000) • AS3400 – General Conditions of Contract for Design and Construct (1995); • AS2124 - General Conditions of Contract (1992) • AS4905 – Minor Works Contract Conditions (superintendent- administrated) (2000) • AS4906 – Minor Works Contract Conditions (principal administrated) (2000) • AS4910 – Equipment Supply with Installation (2002) • AS4911 – Equipment Supply with Installation (2003) • AS4912 – Periodic Supply of Goods (2002) • AS4916 – Construction Management (2002) • AS4917 – Construction Management Trade Contract (2003) • AS4919 – Asset Maintenance and Services (superintendent's version) (2003) • AS4920 – Asset and Maintenance and Services (principal's version) (2003) • AS4904 – Consultants agreement (2009) • AS4122 – Consultants agreement (2010)
Australian Building Industry Contracts (ABIC) – A joint collaboration with the Master Building Association and the Royal Australian Institute of Architects	• ABIC MW 2018 – Major Works Contract (major non-housing/ non-domestic) • ABIC MW 2018 H – Major Works Contract - Housing • ABIC SW 2018 – Simple Works Contract (simple non-housing/ non-domestic) • ABIC SW 2018 H – Simple Works Contract - Housing • ABIC BW 2018 C – Basic Works Contract (Commercial) • ABIC CP 2014 C – Commercial Cost-Plus Contract • ABIC EW 2003 – Early Work Contracts
Housing Industry of Australia (HIA)	
Government Contracts – NSW Procurement System for Construction	GC21- General Conditions of Contract
National Public Works Committee (NPWC)	National Public Works Council Edition 4 (NPWC4)
Masters Builders Australia	• Period Trade Contract 2014 • Construction Management Contract 2012 • DECON 2013 Lump Sum Contract • Trade Contract 2012 • Each State and Territory Master Builders Association has a range of contracts
Australian Department of Defence – Defence Support and Reform Group (ASDEFCON)	• HC – 1 - 2003 – Head Contract • MCC – 1- 2003 – Managing Contractor • MW – 2 – 2004 – Medium Works • DSC- 1 – 2021 – Design Services Contract

According to Mosey (2019), the standard form contracts used in Australia follow traditional contract theory, where Australia has no contract informed by relational contract theory. Research completed by Melbourne Law School in 2014 on standard form contracts in Australia, found that the Australian Standards forms are the most widely used forms,

including AS2124, AS4000 for construct only projects and AS4300 and AS4902 for design and construct projects (Sharkey et al., 2014). However, it is well understood that these Australian Standard forms are, in most cases (60%-80% reported), heavily amended from the relevant published standard (Sharkey et al., 2014; Shnookal & Charrett, 2001). This has resulted in the majority of contracting in Australia being through bespoke forms, hybrid contracts or heavily amended standard form contracts (Bell, 2009; Sharkey et al., 2014). According to Schnokal & Charett (2010), the use of bespoke contracting began in many cases due to the employer wanting to change the risk allocation embodied in a standard form of contact, as well as the rise of major law firms developing bespoke contracts for their clients which were modified for the type of project. It should be noted that Standards Australia was to release a new standard form of contract to replace AS4000 in 2017, known as AS11000, however, this did not eventuate (Gerber & Misko, 2019). In 2019, the Australian Procurement and Construction Council (APCC) and Austroads released a new General Conditions of Contract for Construction called the National Capital Works 4 (NC24) however, it has yet to be used on any project in any state in Australia.

1.2.5 The New Engineering Contract (NEC)

From an international perspective, there are many standard forms of contract which promote collaboration; however, an alternative contract form developed in the United Kingdom (UK) by the Institution of Civil Engineers (ICE) and has gained industry support internationally is NEC. NEC was first introduced in the UK in 1993 and coincided with the backdrop of the Latham Report, *Constructing the Team* (1994), which reviewed and provided recommendations based on the relationships between clients and contractors and the nature of procurement and contractual arrangements in the UK construction industry (Latham, 1994). In particular, Latham criticised the lack of relational contracting arrangements and endorsed the 1st Edition of the NEC Contract as a 'modern contract' (Latham, 1994). The NEC contract contains all assumptions of best practice and attempts to improve contractual relationships through a focus on collaborative and relationship contracting principles (Lord et al., 2010). In particular, the fundamental nature of an NEC contract is that it requires the contractor, the project manager, and the supervisor to act in a spirit of mutual trust and cooperation and promotes fair risk allocation to minimise contractual disputes (NEC Contract, 2022a). This is seen to differ from traditional adversarial contracts, where it is a 'them and us' approach. Evidence of the successful track record of the NEC internationally is seen in South Africa, New Zealand, Hong Kong, Antarctica, China, Ireland, Netherlands, North Africa, Philippines, South America and the United Kingdom. Example projects include for example, the London 2012 Olympics, Christchurch International Airport, Tin Shui Wai Hospital and Wits University (NEC Contract, 2022b; Lau et al., 2019). Further NEC has been endorsed by the Government Construction Board in the UK Government, and mandated by the Development Bureau, Hong Kong Government as the main contract suite for public works projects (Lord et al., 2010; Lau et al., 2019).

NEC is currently on its fourth edition (NEC4) and is seen to encourage a greater collaboration than other standard forms currently on the market in Australia (NEC Contract, 2022a; Mosey, 2019). The contract is managed by NEC Contracts, a division of Thomas

Telford Ltd, a commercial business arm of the ICE, where specialist products and services are created (NEC, 2022c). The NEC suite currently contains fourteen (14) contract forms which are made to cover the entire project lifecycle from major to small -scale projects including projects (the works contracts including the Engineering and Construction Contract (ECC)), maintenance and other on-site services (the services contracts), professional consultancy services (professional services contracts including architectural and engineering consultancy services), and the supply of goods (the supply contract) (NEC Contracts, 2022d).

The core philosophy embodied in the NEC suite since conception is one of simplicity, clarity, flexibility, and stimulus to good management (NEC Contract, 2022a). In terms of simplicity and clarity, this form of contract uses simple language, present tense, short sentences and avoids legal jargon to provide an ease of understandability and reduce information asymmetry amongst all project parties in terms of their roles, responsibilities, risk allocation and procedures (Gerrard, 2005; Tung et al, 2020). NEC aims to be flexible to enable various procurement strategies and varied optional clauses (e.g. X, Y and Z clauses) to add in addition to core clauses (e.g. A, B, C, D, E, F, W clauses) and therefore adaptable for any industry sector or technical discipline, anywhere in the world (Tung et al., 2020). The core clauses are recommended to remain upheld to enforce the aims and objectives of the NEC. The X, Y and Z clauses are optional bolt-on clauses where X and Y are pre-written locational clauses to suit the laws and regulations in a specific region/country whilst Z clauses are amendment clauses to only be used when customising specifically to the needs of a project and the terms of its delivery (NEC, 2014). The contract is a stimulus to good management by encouraging best practice and proactive project management, including defined timescales, an early warning system, the production of an accepted programme, risk reduction procedures and collaborative working (Tung et al., 2020).

Although the contract has existed for over 25 years, there is still a slow traction for use of the contract in Australia. In 2012, Meridian Energy was the first project in Australia to utilise the NEC3 Engineering and Construction Contract (ECC) to deliver the Mt Mercer Wind Farm, totalling $260 million (AUD) (NEC Contract, 2022e; Bennett et al., 2009). In 2018, Main Roads Western Australia (WA) trialled the third edition of the NEC contract (NEC3) through a ECC (option D- target contract with bill of quantities) for the ‘Pithara’ package of their Great Northern Highway upgrade, totalling $25 million (NEC Contract, 2022f). More recently, in 2020, Sydney Water which is an NSW government owned entity, was the first in Australia to utilise the new suite of NEC4 contracts to deliver there Partnering for Success (P4S) procurement strategy which involved replacing there existing traditional procurement approach with three 10-year NEC4 based frameworks worth $4 billion as their standard procurement approach for all construction works and services (AUD) (NEC Contract, 2022g). The model integrates end-to-end asset lifecycle from design to facilities management (NEC Contract, 2022f). In 2021, Main Roads also awarded an NEC4 an ECC Option D (target contract with activity schedule) for the upgrading of a section of the Mitchell Freeway, valued at $86 million (NEC Contract, 2022h). In addition, the intergovernmental organisation Square Kilometre Array Observatory are utilising NEC4 Framework Contracts, NEC4 Service Short Contracts and NEC4 Design Build and Operate

Contracts and NEC4 Infrastructure Contracts to construct the world's largest radio telescope in Western Australia and South Africa (NEC Contract, 2022i). More recently, NEC published a set of new optional "*Y*" clauses to align with the relevant security of payment legislation for each state and territory in Australia and encourage further adoption of NEC in Australia (NEC Contracts, 2022j).

1.3 Problem Statement

The civil engineering and construction sector is currently overheated where industry capabilities and capacity are stretched, and there is a high insolvency rate. Therefore, to meet the market demand, there is a need to improve productivity and provide more efficiently delivered projects. The construction industry in Australia is often referred to as adversarial and dispute-oriented in nature, where conventional procurement and contracting behaviours are seen to drive these poor outcomes (Klakegg et al., 2021; Gerber & Misko, 2019). These contracts are seen to provide an inappropriate risk allocation where there is an emphasis on mitigating contractual liability and shifting these to the contractor (Bell, 2009; Sharkey et al., 2014). Further to this, they do not provide incentives for contracted parties to work together for a win/win outcome (Jefferies et al., 2006). It has often been suggested that improvement of construction project outcomes is dependent on the relationships between project owners and other project actors, and therefore improvement could be achieved through collaborative contracting models like NEC. However, despite the well-recognised benefits and opportunities for improvement through NEC, current progress to adoption in Australia remains slow and under-researched from an Australian perspective. It is well understood that change initiatives specifically, regarding project delivery processes in Australia, are few and far between whilst other industries undergo tremendous levels of change. From an Australian perspective, there is a need to understand the institutional actors to explore the role of various institutional actors in the implementation of NEC and identify the barriers to further adoption.

1.4 Purpose and Research Questions

The purpose is to investigate the current slow adoption and implementation of collaborative forms of contract like NEC in the Australian construction industry. Also, this thesis will explore what is required to enhance the institutional environment for change for further implementation of NEC in current procurement practices.

In order to address the above aim, a further four (4) research questions have been developed:

1. What institutional factors embedded in traditional procurement in Australia motivate institutional change?
2. What is the perceived role and contribution of the NEC standard form of contract in Australia in developing the institutional practice of collaboration in contractual practices?
3. What are the institutional barriers to change in contractual arrangements? How can legitimacy be established and ruined?
4. What role can institutional entrepreneurs have in implementing the development of new contractual forms in society? Which strategies can they use, and which are effective?

1.5 Delimitations

The observations of this research relate to information available to date and therefore is limited to the perceptions in the industry to date. Although NEC has been established for over 25 years, the current utilisation, knowledge, and experience in Australia are low. It, therefore, is considered a new concept by many stakeholders in the industry. This research aimed to provide a general perception of the implementation of NEC in the Australian construction industry. Therefore, every attempt was made to interview a wide array of stakeholders in the industry from both public and private sector. Due to time constraints and financial resources, the sample of semi-structured interviews undertaken is minimal but acceptable in capturing an overall depiction of the industry, including those from a range of industries, educational backgrounds, and professional experience in Australia and internationally.

2. Research on Change in the Construction Industry

An overview of relevant literature was performed to understand what is known about the research problem and area and to understand further what is yet to be known. Previous literature regarding the challenges of implementing change in the construction industry through innovation, including procurement approaches, is explored.

It is widely acknowledged that there is a need for change in construction, with various calls relating to the economy and society, including improving productivity, quality, safety, and sustainability (Fulford & Standing, 2014; Sharkey et al., 2020; Hughes et al., 2014). Further many compare the industry with other industry sectors in terms of efficiency improvements and the need for radical transformation to align with the best practice, norms, and current thinking of other industries to deliver projects more efficiently (Fulford & Standing, 2014; Hughes et al., 2014; Leviäkangas et al., 2017; Bresnen et al., 2006). Notwithstanding all considerable attempts of reform movements for long term change in the construction industry, have in most cases fallen short of their aspirations and remain only project specific (Szentes & Eriksson, 2013). A substantial body of research exists on the ability of collaboration to deliver greater efficiency to project performance in the construction industry (Fulford & Standing, 2014; Sharkey et al., 2020; Mosey, 2019; Jefferies et al., 2006). Projects with increased levels of uncertainty and risk, are seen to benefit the most from increased collaboration (Kadefors, 2004). The procurement method chosen in a construction project is shown to have a significant impact on the level of collaboration in a project (Bresnen & Marshall, 2000; Eriksson & Westerberg, 2010). However, there is a lack of research that focuses on collaboration in the context of a procurement method, where much of the research has focused on the investments and use of information technology systems, including BIM, to achieve greater collaboration (McNamara & Sepasgozar, 2018; Leviäkangas et al., 2017).

According to Mosey (2019), standard form, relational style contracts can support collaborative procurement where they treat all parties fairly and impose collaborative processes. The benefit of collaborative procurement is well researched, including project cost and schedule savings, elimination of cost overruns, reducing administration costs, improved buildability, enhanced innovation, enhanced problem solving, ability to meet user requirements and an improvement in the quality of relationships between project participants (Bresnen & Marshall, 2000; Löfgren & Eriksson, 2009; Atkinson et al., 2022). Several studies have also stated that the contract type does not eliminate adversarial attitudes and opportunistic behaviour; rather to support collaboration, you need to establish the right governance, trust, relational attitude, and culture (Galvin et al., 2021; Klakegg et al., 2020; Mosey, 2019). Interestingly, Barlow et al. (1997) state that using standard contracts that third parties make will hinder partnering and increase opportunism in projects due to their formality.

Despite the ensuring drive for collaboration, many researchers raise the gap between academic aspirations and implementation in practice, where there are many challenges and barriers which impede its implementation, including industry, cultural and organisational level factors (Bresnen et al., 2006; Atkinson et al., 2020; Vennström & Eriksson, 2006,

Fulford & Standing, 2014). In particular, Fulford & Standing (2013) raise various challenges to overcome for collaboration to thrive, including the fragmentation of the industry, small enterprises in the supply chain, differences between manufacturing and construction supply chain and the nature of relationships in the industry. Bresnen et al. (2006) further state that the project-based nature and the complexity in the industry with geographically dispersed organisations working over a short period of time can impact organisational and cross-project learning over the long term required for the implementation of collaboration practices (Bresnen et al., 2006). Eriksson (2008) highlights that the competitive pressures, government regulations, and labour unions can impact change in procurement practices. The focus on lowest and most competitive tender price rather than soft parameters (e.g., capability, attitudes, reputation, earlier experience, shared values) in awarding tenders in the construction industry is also shown to decrease commitment and flexibility, which further hinders collaborative practices (Ng, et al., 2002).

Cheung (2006) further indicated that implementing a new collaborative contracting method requires continuous commitment and improvement from project participants, with the will and ability to adapt to changing circumstances. Further the support, top-down commitment and openness from senior management are shown to impact the effectiveness of team working and the performance of collaborative contracts (Suprapto et al., 2016, Klalegg et al., 2020). Previous research has shown that an organisation's implementation of change is important, where it was highlighted that that the change message delivery through education and training has a proportional relationship to change management success (Alvesson, 2002). Further the literature highlights the importance of appropriately set expectations and change agents to lead a change implementation (Lines et al., 2015). Lines et al. (2015) note that during the implementation of any change initiative in the construction industry, including for project delivery, resistance is inevitable where actors need to learn new approaches while disengaging from traditional ingrained practices. Misunderstandings and ambiguity in the meaning of collaboration are also shown to reside, where it can be interpreted differently by different people (Bresnen et al., 2006). As different participants have different kinds of knowledge, for innovation in procurement to flourish, there is a need to bring different kinds of knowledge (e.g., lessons from other sectors, knowledge and experience of professionals and users) into the dialogue and increase knowledge mobilisation (Atkinson et al., 2020). The accepted way of doing things must be challenged through new ideas, thinking and knowledge for the organisation to respond to external opportunities. Eke et al. (2019) note that to persuade others to adopt change and realise the true benefits of innovative approaches like collaboration, more evidence is required on how it can impact a construction project.

Eriksson & Nilsson (2002) highlight that firms lack competence and capabilities to implement collaborative approaches can impact cooperative relationships, where relationships can be strained if actors have low confidence in their client's abilities. Furthermore, the unique position and responsibility of organisational leaders, including the construction client in a change initiative, is mentioned throughout the literature (Love et al, 1998; Eriksson & Westerberg, 2008). Many studies highlight how the client's procurement and contracting method can facilitate innovation in construction projects, whereas current

methods hinder client-initiated change (Lenderink et al., 2022; Eriksson, 2008). The public sector has consistently been noted as a significant industry actor in triggering change and reconfiguring existing institutional norms, values, logics and practices (e.g. government policies, reform agenda, funding, promotion of change) (Latham, 1994; Oti-Sarpong et al., 2021; Larson et al., 2020, Szentes & Eriksson, 2013). Harries (2012) identifies various barriers to change for the public sector, including an over-riding focus on efficiency, which ensures no new ideas are tried or tested, the possibility of failure, risk-averse behaviour, and a blame culture where records become a means to manage blame and knowledge being a scarce resource. Vennström & Eriksson (2006) acknowledges how public sector innovation can be more difficult in comparison to private where the private sector must innovate to survive. However public clients have considerable capacity to exert influence given they can set the procurement methods and type of management used. Clients are required to feel comfortable using a new procurement method for the right reasons and have positive attitudes to its effect on project outcomes (Eriksson & Westerberg, 2008; Eriksson & Nilsson, 2008).

It has been commonly suggested that to implementing a change to procurement will require a significant change of attitude and culture in the industry which can be problematic (Bresnen et al., 2006; Vennström & Eriksson, 2006; Eriksson, 2008). There are numerous studies concerning the culture of the Australian construction industry, including the adversarial and confrontational culture between the contracting parties causing the actors to work in opposition and distrust (Jefferies et al., 2006). However, as stated by Bresnen & Marshall (1998) it is well established that cultural transformation within and between organisations is complex and challenging where attempts tend to provoke resistance if the content, context, and process of change are not equally considered.

Although NEC contains the provisions for incentivising collaboration and implementation has been launched in many countries, and the literature provides perspectives of NEC in the UK, Hong Kong, New Zealand, and South Africa, this remains largely unexplored in an Australian context and warrants further discussion.

3. Theoretical Background

The theoretical foundation for which this thesis is grounded includes institutional theory to examine the influence institutions have on implementing collaborative procurement change initiatives, including NEC in the Australian construction industry. Specifically, this chapter will explore the institutional theory, institutions in the construction sector, institutional pressure and responses on institutional change and institutional entrepreneurs.

3.1 Institutional Theory

Institutional theory is both complex and multilayered and can be interpreted differently across many disciplines and empirical studies. The term "*institution*" has been widely defined with no universal consensus; however, it is seen as both a process and a variable. Many refer to institutions as "*shared expectations rather than rules*" (Hayek, 1973), "*rules of the game*" (e.g. laws, courts, constitutions) (North, 1990), "*humanly devised constraints that shape human interaction*" (North, 1990), "*taken for granted assumptions*" (Zucker, 1987), "*shared systems of belief about expected behaviour*" (Aoki, 2001), "*regulative, normative and cultural-cognitive elements*" (Scott, 2008) and "*informal rules"* (e.g. conventions, norms) (North, 1990). Thereby an institution can be said to represent the dominating interests of the society, acting as a template for how one perceives their environment and in turn how these pressures will influence their actions. Critical to institutional theory is organisational fields, which describes the socially constructed beliefs, expectations and practice which emerge through the interaction of communities of organisations (DiMaggio & Powell, 1983). Organisations are not seen as institutions, but organisational forms, and their structural components (e.g., norms, values) are institutions that act as patterns of behaviour (Berthod, 2018).

Institutional theory mainly provides a lens for analysing organisations, the institutional contexts in which they are embedded and understanding the processes and implementation for change at a micro individual or macro-organisational level (Dacin, 2002). Institutions, therefore, can evolve, and shape change as a change agent as well as be a barrier to change, therefore, as noted by North (1999), they are an "*underlying determinant of the long-run performance of economies".* More contemporary work on institutional theory (i.e., new institutionalism) has focused on organisations in social and cultural contexts, how they deal with external influences (e.g., cultural differences, legal requirements, norms, diversity of actors) and how this impacts cognition, behaviours, and practices for legitimacy (Berthod, 2018). According to Meyer & Rowan (1977), organisations are driven to incorporate the practices and procedures institutionalized in their field to increase legitimacy and survival. Thereby institutional theory over the decades has transcended from a theory about the stability of specific organisations, to a theory about the change of organisations within their environments (Lammers & Garcia, 2017).

Institutional Isomorphism

Early institutional work of Scott (1995) and DiMaggio and Powell (1983) for institutional isomorphism explains how institutional patterns can emerge and change over time where they identify three sources of institutional isomorphism being coercive, normative, and mimetic (DiMaggio & Powell, 1983; Scott, 1995). Isomorphic change

involves maintaining an organisation's legitimacy through adopting, imitating, or normalizing change. Thereby this involves the pressure to conform to a dominant order. Coercive isomorphism is based on the power of authority that one organisation or entity can overt or covert on another organisation to receive legitimacy, compliance, resources, or associated benefits (Jepson et al, 2020). These pressures in institutional environments are usually exercised by those with legitimate powers (e.g., governments, professional bodies, or credential associations) who enforce regulations, mandates, or standards (DiMaggio & Powell, 1983). Mimetic isomorphism is where in response to uncertainty or ambiguity in an organisation's environment, an organisation will imitate or model the processes or procedures of other organisations which are seen to be successful (e.g., market leaders) to increase their legitimacy (Jepson et al., 2020; DiMaggio & Powell, 1983). Normative isomorphism refers to the influences from professionalism or an authority of an organisational field on organisational norms and behaviours (Jepson et al., 2020). These normative influences are usually diffused or filtered by professional education or through the professional network and result in organisations aligning with their institutionally appropriate expectations or best practice standards (e.g., accreditation) (Lammers & Garcia, 2017). In short, institutional theory describes how an organisations choices are shaped by their institutional environment and these institutions create pressures for organisations to seek legitimacy.

3.2 Institutional Change

The initial stage of institutional change, as described by Greenwood et al. (2002) is an 'event' or 'jolt' in the institutional environment that will destabilise the practices considered legitimate. As these jolts occur, Suddaby et al. (2002) describes how deinstitutionalisation can then occur, which disturbs the reality and consensus in the institutional environment, resulting in the weakening and eventual disappearance of institutions (Suddaby et al, 2002). This deinstitutionalisation phase is influenced by the emergence of new players, the ascendence of actors and institutional entrepreneurship that introduce new ideas (Dacin et al, 2002). The next stage of the institutional stage is the pre-institutionalisation phase, where organisations independently undergo sensemaking and an understanding of the viability of change in response to the problems (Tolbert & Zucker, 1996). An important facet to practices becoming more widely adopted is through theorization, where Tolbert & Zucker (1996) outline how it involves a 'specification' of the general organisational problem or failing and a 'justification' of a solution/innovation to this institutional failing based on logics or empirical evidence. This allows other actors considering adopting the new practice to see successful efforts that seem more appropriate than their current practice, which may justify change (Greenwood et al., 2002). According to Greenwood et al. (2002), a central part of theorisation is also regulatory agencies as they enable shared meanings and understandings to reciprocate.

Legitimacy

This will lead to an alignment of normative prescriptions (e.g., beliefs, ethics, ideals), giving them moral legitimacy (Greenwood et al., 2002). Also, it will provide practical superiority and align with one's self-interest and broader interdependencies interests (e.g., political, economic, social), leading to pragmatic legitimacy (Tolbert & Zucker, 1996). Thereby from a pragmatic perspective, organisations may implement a best practice model

where the expected value gained, and benefits received align with the self-interests of surrounding stakeholders. As an innovation becomes more widely diffused among adopters, they will become more objectified, being tied to artefacts and resources, and therefore it will be become more necessary and taken for granted, leading to greater cognitive legitimacy (Tolbert & Zucker, 1996). To increase the cognitive legitimacy gaining requires a degree of change capacity where the change is accepted, recognised and supported by both internal and external stakeholders (Liu et al, 2021). As discussed, legitimacy of change can be classified into three dimensions where moral legitimacy is relative to external norms, ethics, laws, pragmatic legitimacy is based on audiences' self-interests and cognitive legitimacy is related to comprehensibility and taken-for-grantedness (Suchman, 1995). According to Suchman (1995), three (3) strategies to gain legitimacy include conforming and positioning an organisation into pre-existing institutional regimes in the institutional environment, selecting an institutional environment where stakeholders will support their current practices or manipulating an institutional environment by creating new audiences and beliefs. These three types of legitimacy are key when an organisation implements transformational and long-term change that challenges current organisational legitimacy (Liu et al, 2021)

Process of Institutional Change

The process of institutionalisation is seen to operate at multiple levels, including through top-down enforcement or bottom-up development direction (Wegerich, 2001; Sarhan et al., 2017). Early institutional studies emphasize the political or collective choice process through a supply induced change being top-down inflicted change or exogenous disturbances (i.e. events) in the institutional environment to which organisations responded (Wegerich, 2001; Micelotta et al., 2017). Supply-side change can be from above, inside the institution or caused by outsiders of the institution, and these exogenous factors can include macro-environmental events, opportunities or pressures (e.g. shifts in the political environment, socio-political upheavals, change in regulatory governance structures or competitive pressures) (Kingston & Caballero, 2008). Thereby accountable to institutional change relating to these top-down processes are higher-level institutions and their function of power and agency (e.g. powerful structures, elites, stakeholders), acting as gatekeepers to constrain or empower the actions of lower-level actors to change (Wegerich, 2001). According to Greenwood et al., (2002) a critical component to theorization is regulatory agencies where they enable the formation and reproduction of shared meanings and understandings. Institutional change can also occur through a bottom-up, demand induced process where micro-level improvisions (e.g., changes in prices, technologies, environmental issues, or demographics) can result in a change in discourse leading to change (Wegerich, 2001). This view sees there being no central apparatus to coordinate the shift rather, institutional change occurs spontaneously through a decentralized selection process as institutions compete to survive, adapt, and grow where more efficient institutions drive out less efficient organisations (Coccia, 2018).

The top-down view sees institutional change occur through a transformational and revolutionary (radical change) perspective referring to large scale breakthroughs in a fast manner that transforms institutional logics within fields, organisations, and practices

(Micelotta et al., 2017). In comparison a bottom-up view sees institutional change as a gradual, evolutionary process with minor incremental-based improvements in institutional arrangements or marginal adjustments to rules, norms and structure occurring in a relatively slow process (Kingston & Caballero, 2008). According to Mahoney and Thelen (2010), there are three types of incremental institutional change, including firstly layering which is where new elements are added to an existing institutions gradually changing their status and structure; secondly conversion, where new goals or actors are added to an existing institution to change its purpose and lastly drift when there is a changing impact of existing institutions due to shifts in the environment or policy inaction resulting in gradual change of an institution or in its neglect. It is well understood that the shift to innovative practices in the construction industry (e.g., gender equality, technological innovation, manufacturing etc.) has not been a single act but rather a slow, complex, and non-linear process. Thereby the pace, scale and content of institutional change and level of innovation in the construction industry would be viewed from an evolutionary or incremental change perspective (Micelotta et al., 2017.; Oti-Sarpong et al., 2021). This being triggered by the complexities in the institutional environment, where there is almost always a transitional phase as firms contend to the complex pressures and enact responses based on uncertainty and their self-interests in the field (Oti-Sarpong et al., 2021; Kingston & Caballero, 2008). It can be assumed that outside actors can be expected to push change at a revolutionary pace or radical scope in a social movement like manner, whilst central actors will initiate change at an evolutionary pace or incremental scope by gaining consensus amongst the industry (Micelotta et al., 2017). In situations of radical change, it can be expected that the organisations or actors will need to invest considerably in resources given how risky and difficult the undertaking is, with unknown outcomes (Kingston & Caballero, 2008).

3.3 Institutional Theory in the Construction Sector

Institutional theory is not well established in construction management literature; however, recently, it has been considered a valuable lens to analyse project-based industries like the construction industry (Qui & Chen, 2022). The construction industry can be seen as a heavily institutionalised organisational field with embedded institutionalised practices and norms of behaviour given independent actors (e.g., suppliers, contractors, clients) with different competencies perform interdependent tasks in a temporary organisation over a short period of time (Jepson et al., 2020; Kadefors, 1995). Each actor in the construction industry is constrained by institutional pressures including the exogenous physical environment (e.g. external events) and by the endogenous structures of the game (e.g. behaviours and strategies). Thereby the institutions have a coercive power over the construction industry on what is adopted as best practice and can constrain the flexibility and ability to replace and innovate project practices (Kadefors, 1995). Lundin et al. (2011) highlight the embeddedness regarding project-based industries in regard to their institutional context and their effect on learning processes, management structures and dissemination of practices. According to Kadefors (1995), there is a range of institutions in buildings, including government regulations, formal standardization initiated by the industry, the tendering system, roles and interest organisations, standardization of skills and knowledge and learning and routine. Standard contracts are industry-initiated agreements and are well established in the industry

to guide project practices in nearly every construction project and can be regarded as formal institutions (Kadefors, 2004). However as seen through history, changing an established standard contract, or introducing a new project delivery method can be a lengthy procedure where attempts to deviate are often met with resistance. Transforming the established adversarial contractual practices evident in the construction industry to more collaborative contractual arrangements, will involve a deinstitutionalization and replacement of existing institutional logics.

Isomorphism Pressures in the Construction Industry

Institutional isomorphism can be used to conceptualise the resistance of change of organisations in the construction sector due to the pressures to conform to an existing order. Construction projects are temporary and operate with increased uncertainty and competition for resources, therefore it can be suggested that they are exposed to greater isomorphic pressures to conform to existing institutional orders, which may conflict with meeting time, cost, and quality criteria for project success (Miterev et al. 2017). One such actor that faces multiple sources of pressure in the construction industry (e.g., policy, practice requirements, regulations, client expectations) and is critical to project delivery are the general contracting firms. Under change, contractors are likely to be compliant with a new client or regulator demands; however, their willingness to change is not guaranteed as organisations will prioritise their self-interests (e.g., political, cultural, belief, attitudes), their resource-dependence relationships with other institutional actors (e.g., clients, government, competitors), and their internal organisational dynamics (Oti-Sarpong et al., 2021). This is partly because of the institutional level pressures to conform to the existing institutional order. There tends to be an assumption that top-down pressures will involve compliance. However, this tends not always be the case in construction (Daniety et al., 2017). According to Oliver (1991), the willingness to conform to change is bounded by organisational scepticism, political self-interest, organisational capacity, conflicting institutional pressures, lack of recognition or awareness and organisational control. Given the fragmented nature of the construction industry, with conflicting project stakeholders who share different interests and demands, the willingness to change, including the adoption of more collaborative standards form contracts like NEC, may not be guaranteed in all instances.

3.4 Institutional Entrepreneurship

Research concerned with developing new project-based practices highlights the role of key actors, particularly the strategic commitment and action of institutional entrepreneurs, as intitially proposed by DiMaggio in 1988 (Opara et al., 2020; Battilana et al, 2009). DiMaggio (1988) termed the phrase institutional entrepreneurs to identify actors can deviate from the institutional pressures and set out to initiate and implement change through institutional work and thereby create new or transform the embedded institutionalized arrangements (Salignac et al., 2017; Hall & Scott, 2016). Institutional work by institutional entrepreneur's refers to the purposeful actions taken in relation to institutions, where they tend to acknowledge that change is difficult to accomplish (Garud et al., 2013). Institutional entrepreneurs hold a unique position in driving innovative change across levels and organisations (Zucker, 1987). These motivated actors advance interests that they value strongly using their authority,

organisational profile, or social position to create change and can include individuals, professions, organisations, or groups of organisations/individuals/professions (Salignac et al., 2017; Lammers & Garcia, 2017). Institutional entrepreneurship emphasizes the often-neglected aspect of institutionalisation being the role of agency through changemakers or a transformational actor in leveraging resources to reshape established structures, shared practices and behaviours and legitimise change (Salignac, et al., 2017). Peripheral actors are considered the most likely to initiate change given they are least subject to isomorphic pressures. However, they are the least resourceful while central and dominant actors have the most resources to initiate change but may be unwilling to (Opara et al., 2020). Oti-Sarpong et al., (2021) highlights the need to assemble and mobilise an entire network of actors with the skills and capabilities to change the established institutionalised practices in the construction industry. Kadefors (1995) also notes the need for stable coordination and uncertainty reducing institutions to allow for institutional change.

Strategies used by Institutional Entrepreneurs

There has been an increased focus in the literature on the institutional work of actors, specifically the tactics and strategies used to enact change (Micelotta et al., 2017). Hung and Whittington (1997) highlight strategies used by entrepreneurs including framing, aggregating, and networking. Framing involves conceive a new vision through rhetorical devices therefore to persuasively motivate and justify support and minimise resistance (Huang & Whittington, 1997). Aggregating involves collective action through mobilising resources and actors in an industry to overcome institutional logics. Institutional actors can mobilise higher status actors or those who possess the formal authority to increase the legitimacy and support for change (Battilana et al., 2009). Institutional entrepreneurs in institutional projects are found to use political tactics, awareness creation and selective networking to gather acceptance and mobilise key stakeholders, including connecting their ideas to the interests of others to gather coalition building (Garud et al., 2013). Networking is where ideas, legitimacy and resources are obtained from outside the industry context, therefore translating ideas across institutional fields (Huang & Whittington, 1997). According to Battilana et al (2009), organisational field characteristics, including the degree of heterogeneity and institutionalisation, are enabling conditions for institutional entrepreneurship to thrive. As the construction industry is highly institutionalized, an institutional entrepreneur would need to use discursive strategies including, targeting actors who will be part of the new field or legitimizing the field through major stakeholders (Battilana et al., 2009). An institutional entrepreneur's social position affects their ability to mobilise resources and allies to enact institutional change successfully (Battilana et al., 2009). Aldrich & Fiol (1994) highlights that a lack of legitimacy, familiarity and credibility in the field are critical barriers for entrepreneurs to overcome. It is critical to note that given the complex nature of institutional change, entrepreneurs will not always succeed in inducing change and transforming institutions (Micelotta et al., 2017).

Scholarly work has found that projects, in particular, large-scale projects, can be a vehicle to drive institutional entrepreneurship and institutional changes in many sectors including the construction industry (Oti-Sarpong et al., 2021; Söderlund & Sydow, 2019). Evidence suggests that innovation and the institutionalisation of new practices are more likely

to occur in large scale, inter-organisational construction projects or a series of interrelated institutional projects given a significantly larger budget and duration (Oti-Sarpong et al., 2021; Söderlund & Sydow, 2019). For example, this was shown in Grabher and Theil's (2015) study on the London 2012 Olympic games. Projects are embedded in their inter-organisational environment and across loosely coupled subfields in a wider institutional field of organisations (Söderlund & Sydow, 2019). These studies indicate that innovative change on a large scale that seeks to transform current practices can have knock on effect to actors operating in the institutional field, thereby changing institutional logics (Oti-Sarpong et al., 2021). Megaprojects are also seen to have significant effects on their institutional context (Qui & Chen, 2022).

4. Methodology

The research methodology is a systematic way to describe the plan of action to answer the research problem and further encompasses the rationale, philosophical assumptions and philosophy adopted, including discussing the research approach and procedures for data collection and analysis.

4.1 Research Philosophy and Approach

The choice of the research paradigm and the philosophical assumption a researcher adopts will influence how research is undertaken and affect the nature of knowledge produced (Saunders et al., 2015). To approach this position and aid my decision to use a qualitative methodology, the research philosophy of interpretivism/constructivism was adopted. As the research study is investigative, an interpretive lens was used to gather and understand a broad spectrum of perspectives in the Australian construction industry and recognise the differences and meanings they create as social actors (Saunders et al., 2015). By focusing on the complexity of views, lived experiences, behaviours, attitudes, motivations, and intentions, the meaning of a situation can be constructed (Ahmad et al., 2019).

The main approach adopted by this research in terms of theory development involved abductive reasoning, which uses data collection to develop theory from the empirical observations (Saunders et al., 2015). The research design will therefore be exploratory by drawing conclusions from semi-structured interviews and then studying with respect to the theory gathered in the literature review and theoretical proposition. Exploratory research designs are best utilised where there is limited knowledge and information on an in-depth life problem, and further investigation is required to establish meaning (Saunders et al., 2015).

4.2 Research Process

The research process was divided into three stages, beginning with an exploratory background study, followed by data collection, and concluding with data analysis.

4.2.1 Background Study

A literature review was firstly conducted to understand the current research base, define knowledge gaps for further investigation and validate the research direction for this study. The topics of interest explored through a range of academic, peer review articles and covered in the literature study include the Australian construction industry, the history of Australian construction contracts, collaborative contracts (e.g., NEC), standard forms of contract in Australia, collaboration, and the implementation of change. The databases and publishers that were searched included: Science Direct, Scopus, SpringerLink, Emerald, Taylor and Francis Online and ProQuest, as well as a range of government and industry departments in Australia, the United Kingdom and Hong Kong.

4.2.2 Data Collection

The data collection process occurred over a period of 2-3 months, and a cross-sectional time horizon was adopted for the research design. Due to time limitations for the study and the limited number of professionals with experience using NEC, a single qualitative data collection method was conducted for the primary data being semi-structured interviews. This

inductive qualitative method allows one to gain an in-depth insight into the complex nature of the industry without limiting the scope, providing flexibility and depth in responses (McIntosh & Moore, 2015). As the concept of NEC is new to the Australian construction industry, the targeted respondents included a range of key professionals in the construction industry based in Australia, the United Kingdom, New Zealand, and Hong Kong who specialise in the interpretation or application of procurement and who have an interest, experience, or knowledge in NEC forms of contract or procurement. This included lawyers, procurement/program managers, owners/clients, government officials, consultants (e.g., engineers, project managers) and contractors. This was to capture a full, holistic, and contextual industry perception and to ensure reliability and validity in results. The sample size for the semi-structured interviews comprised approximately 18 participants and the duration of these interviews ranged from approximately 45 mins to 2.5 hours. **Table 2** below describes the different interviews and respondents.

Table 2- *Interviewee Background Information, Method of Communication, and Interview Duration*

Role	**Method**	**Experience**	**Duration**
Program Manager – Client side	Online	25 years	2.5 hours
Consultant & Surveyor	Online	30 years	1.25 hours
Consultant & Civil Engineer	Online	26 years	1 hour
Consultant – Engineer, Lawyer, & Project Manager	In person	25 years	2 hours
Consultant	Online	33 years	40 mins
Lawyer & Civil Engineer	Online	25 years	1 hour
Lawyer	In person	28 years	1.5 hours
Procurement Specialist – Client Side	Online	25 years	1.1 mins
Consultant	Online	20 years	1 hour
Director - Government side	Online	18 years	40 mins
Consultant	Online	28 years	1.5 hours
Lawyer	Online	21 years	1 hour
Director – Client-side	Online	22 years	45 mins
Procurement Specialist – Client side	Online	32 years	1 hour
Project Director – Government side	Online	15 years	1 hour
Commercial Manager – Contractor side	Online	17 years	40 mins
Director & Manager – Government side x2	In person	10 – 20 years	1.5 hours

The interviews included a mixture of face-to-face in Brisbane and online platforms (e.g., Zoom and Microsoft teams), based on the preference, flexibility, and suitability for the respondent. The semi-structured interview used open-ended questioning and was often accompanied by why or how questions to elicit independent thoughts and breadth in responses. A list of predetermined questions was developed to ensure key topics of discussion were highlighted whilst also allowing freedom and opportunity for respondents to explore issues they considered important (McIntosh & Moore, 2015). It should be noted that the types of questioning and topics were adjusted depending on the respondent's background,

knowledge, and experience to increase the data's validity and reliability (Saunders et al., 2012).

The agenda and themes aimed to be explored through the semi-structured interviews included:

- Respondents' background and professional experience
- Information on experience/perceptions with the Australian construction industry, contractual practices, and traditional form of contracts
- Information on experience/perceptions with NEC contracts, including advantages and challenges
- Drivers for alternative forms of contracts like NEC
- Barriers to industry – Level change and how the barriers can be resolved
- Recommendations to enable industry level implementation/development for procurement change

4.2.3 Ethical Considerations

To guide the design and conduct of the research, careful consideration of a range of ethical issues occurred in accordance with the Swedish Research Council and CODEX, to ensure the research is both of good methodical quality and morally defensible (Saunders et al., 2012). In advance of the interviews being undertaken, the participants were provided with a clear account of the purpose and aims of the research study, including the amount of time required, the content of the interview, the interview procedure and how their responses would aid the research direction. The respondents were first contacted through LinkedIn or via email from other interviewees' recommendations and then emailed invitations to participate once informed consent was obtained. It was made clear through initial discussions that anonymity and confidentiality in responses would be maintained throughout the research process to ensure the respondents identity would not be compromised (Saunders et al., 2012). Permission was requested to record the interview whereby it was detailed that only the researcher would access this recording and the information would only be used for this research. As a researcher in the field using an interview-based approach, it was important to avoid exercising subjective selectivity in terms of what data was collected not to misrepresent the data collection process and compromise the integrity of the research (Saunders et al., 2012).

4.2.4 Data Analysis

It is well known that the non-standardised and complex nature of open-ended questions can affect the data analysis process (Saunders et al., 2012). Throughout the interview process, two forms of data were collected, including what the interviewer said and the tone in participants used to express their responses. This provided contextual information to inform the interpretation of the responses (Saunders et al., 2012). It should also be noted that between interviews, a cursory level of analysis was undertaken to adapt ongoing questioning in other interviews and to note key points for the data analysis phase. To interpret the data, the interviews were transcribed and analysed through content analysis, systematic coding and categorising approach to make pattern inducing inferences from empirical textual data and

develop a conceptual framework (Reay & Jones, 2015). This bottom-up approach to theory building involved a reflective process with the grouped data in conjunction with extant theory to provide new insights into behaviour and beliefs in the Australian construction industry. The codes used to categorise the data were based on the research questions and the institutional framework.

5. Findings

This section contains a detailed overview of the findings concerning the topics raised during the semi-structured interviews and in conjunction with the research questions and interview guideline.

5.1 Institutional Factors Motivating Institutional Change

This section demonstrates the perceived problems of the current procurement practices in the Australian construction industry, further clarifying the factors that drive change for collaborative standard construction contracts, like NEC. These factors have been categorised into three categories based on the industry's problems including economic, knowledge-related, and cultural factors.

5.1.1 Economic Factors

The consensus amongst most respondents, minus two respondents in government is that current contractual arrangements in Australia are "*underdelivering", "inefficient*", "*lazy*", *"archaic*", "*confrontational*", "*toxic*" and "*unsustainable*". There is clear appetite for alternative contracts that are "*deemed to be fair for both parties*". Many respondents identified the main issue associated with the traditional procurement approaches used in Australia as an engrained adversarial working relationship between the client and contractor where one respondent indicated that "*everyone is out for their own commercial interest*". Many cite that this leads to "*silo interfaces*", "*disputes*", "*a lack of trust*" and "*a blame game*". An overwhelming majority of respondents specifically spoke of governments, engaging using adversarial terms where it was emphasised how "*principles go out to the market, and they run a tough, competitive, neo-liberalism approach*" where "*tenders are incentivised and evaluated on lowest cost*" and "*risks are transferred onto the contractor"*.

Governments are seen to enforce onerous risk practices on their contractors where it was emphasised by a few respondents how "*contractors are entering into contracts that if it went horribly wrong, it would bankrupt them*". A key example used to reiterate this traditional form of contracting by over half of the respondents was the Sydney Light Rail Project, where to get into the market, *"Spanish contractors agreed to play by the rules of the Australian contractors*". A respondent highlighted it as a "*non-sensical approach, where all unknown third-party risk was placed on the contractors*" including, as noted by another respondent, "*the performance of state government entities*" (utilities). A respondent who was previously a state government employee highlighted that "*scenarios like this don't benefit anyone*" and it should be "*contractual 101 where the person who can best manage the risk, manages the risk*". Another respondent using NEC in Australia reflected on how a collaborative form of contract would have taken millions out of the cost for the Sydney Light Rail project.

Further, many respondents referenced the current climate in the Australian industry where there is a *"massive turnover of main contractors*" where many contractors are "*overstretched*" and *"overcommitted*" and becoming "bust". Respondents highlighted how contractors alleviate cash flow issues by doing "*all the things you shouldn't do to avoid becoming insolvent"* including "*to sign up for anything to win new work and smooth over the*

bad jobs", as well as do "*Joint Ventures*", "*Forward funding, payment regimes and debt financing on payments".* Interestingly a respondent who is currently a government employee for a State Department agency mentioned how they were a part of an engagement activity last year where they met with a range of contractors, domestic and foreign, to determine the barriers to entering the market. He explained that only the "*old school Aussie contractors were happy to do lump sum contracts*" whilst foreign entrants stated that "*a lump sum contract with onerous risk terms was a barrier coming into the market*". Five respondents, including clients, consultants and those employed in government, spoke of how state governments are "*overexposed to big Australian contractors*" and "*if those contractors go bust, the government would be screwed".* In particular, one respondent emphasised how the government are "*loading up*" on a select few Australian contractors without doing their due diligence leading to "*a gap between mega contractors and tier 1 contractors"*. Respondents further acknowledged that given the turnover of contractors, there is "*a need to keep other companies in the game by spreading the love*" including by "*building up the capacity of local contractors or inviting foreign contractors"*, or by the "*government disaggregating packages*" which will "*create competition and skills in the market*". Three respondents made a further dire comment in how "*it would take the failure of several major contracting organisations that the government relies on to further manifest change to occur".*

Interestingly a respondent from Infrastructure Australia further reflected how within the bespoke, lump-sum contracts, clients and government can make the change provisions and the procedures so onerous that contractors get no time or money for a change. Two respondents agreed to this in a contractor position where they felt that the clauses and procedures that need to be followed in traditional contracting approaches to establish entitlement to a variation to be an issue. Further a respondent who is a lawyer and has experience on the contractor side, noted the "*massive change management routines that come out of these bespoke contracts*" through "*the volume of information that's supplied and the types of information that is requested*", which can make it "*impenetrable to facilitate the mitigation process*". He added that "*these onerous change provisions realistically put the contractor at risk of missing a time bar or information requirement stage*". Many respondents noted that most clients including the government generally want a guaranteed fixed price lump sum, but the scope of work that clients undertake isn't accurate for contractors to give a lump sum price. According to a government employee, one main argument as to why the government don't use a cost reimbursable approach instead of a lump sum is "*that they (contractors) are not incentivised to be efficient in what they do*" and "*that you end up with companies who just put all these random costs through books, and you end up paying for things you wouldn't*". An overwhelming sentiment shown from a contractor perspective is that there is a need for a contract that does not polarize positions in a way the Australian standard form of contracts does.

5.1.2 Knowledge – Related Factors

The respondents all acknowledged the vast array of contractual forms in the Australian construction industry, with many indicating that the current standard forms are heavily amended and outdated, resulting in industry participants having their own different version or

many just writing their own suite of bespoke contracts from scratch. Two respondents acknowledged how it was current practice to utilise a previously used contract in new projects through adding new clauses rather than going back to the original contracts or using an off the shelf standard form contract, leading to an *"incoherent and long*" contract. In particular, many of the respondents acknowledge how government and client organisations "*would rather take the easier option use and adapt existing contracts which they have spent a large amount of money on*". One respondent from the government acknowledged how old many of standard form of contracts are in Australia but said these "*contracts have 30 years of industry knowledge and experience*". A respondent in government spoke how "*there is a lot of governance around what contract is appropriate for which project and where contracts are required to be bespoke, there are processes and procedures for that to occur*". An overwhelming sentiment shared by most respondents was that many of those who utilise the contract every day, "*don't understand the contract and therefore how to use it*" and there is a "*shortage of commercialised professionals*" in the industry, particularly noted in government agencies. Another respondent raised the *"need to focus more on the contract… and look if the contract gives us what we want*". Many respondents who have experience in the UK compared the educational system here in Australia to the UK where one respondent stated that "*quantity surveyors are seen as an important and well-respected role in the construction project in the UK whereas in Australia they are far down the line*". One respondent explained how in the UK, people are specifically educated in how to operate contracts and the commercial aspects, whereas Australia does not have as of a deep understanding.

5.1.3 Cultural Factors

The respondents also indicated clear inertia and resistance in the industry to change or to try something new where they rely heavily on previous experience and knowledge. In particular, one respondent stated how many have the mindset of, "*we always do it this way, why would we change?*", and another stated how "*it is easier to use a contract that everyone knows and understands rather than one they don't*". It is apparent from the interviewees that the wider perception within the industry is that the form of contract isn't the issue, for example where a respondent stated that "*when a job goes badly, people rarely turn around and say it is because of the contract*". One respondent also stated that contracts are "*set and forget*" where they are "*put in the bottom drawer and people would carry on like they have always done, then when things would go wrong, they would retrospectively try to apply the contract*".

Of the respondents with a client perspective, it is clear there is a lack of trust where "*clients are very wary of being screwed over by the contractor*". In particular, one respondent in New Zealand who used NEC highlighted the "*adversarial"* nature when dealing with Australian based suppliers and contractors in terms of a push back and gaining an acceptance for their terms and conditions of contract. A few respondents compared the culture to the UK, where they spoke of the "*machoism culture*" and *"arrogance*" of Australian contractors to "*go in cheap, look for the gaps, and make money through variations*" and *"to keep the clients at arm's length*". One respondent felt that "*contractors know they can make money in the delivery*". However as noted by a few of the respondents, "*if they push back, they won't get*

the job", and given the "*high turnover of main contractors over the last 30 years, there is always someone who will sign up to take the risk on".* A respondent with a role in an Australian government organisation and experience in the UK, explained how he was "*taken aback by the risk Australian contractors take on construction jobs*" in comparison to the UK where the respondent emphasised the need "*to do business in a less confrontational way".* Three respondents believed that this was the contractors' way to "*stop foreign entrants coming into the market*". One respondent challenged the traditional approach to construction, explaining how "*clients should tender to contractors then contractors choose who they want to work with".* Another added that there was a need for clients to question "*how they want their relationship with the contractor to look*". A client respondent with experience in using NEC highlighted that "*we should want our contractors to make a profit, we don't want our contractors to fail or lose money, what's the point?".*

5.2 Current Role and Contribution of NEC in Australia

5.2.1 Use of NEC Today

Within all interviews, respondents were asked about their background use, experience, and perception of NEC. Of all respondent's, fourteen (14) respondents have used/worked with NEC with all being used on either a main contract or subcontract in terms of the contracting chain. Interestingly, an overwhelming majority of respondents had an experience of using NEC in the UK, rather than Australia. Of the fourteen respondents who have utilised NEC, whether in Australia or abroad, the general perception and experience amongst all industry participants is positive to NEC, with many acknowledging clear advantages to using NEC, as well as some issues to its implementation. It is clear that of the respondents that have used NEC in Australia, the decision to use an alternative form of contract was based on an awareness from client or contractor organisations that their current contractual arrangements "*didn't work with the way they worked, they worked more collaboratively with their delivery chain", "needed to better reflect what they were doing*" and "*needed to improve their relationship with their contractor*" and to respond. One respondent noted that if you have used NEC, you would understand its benefits and it would be your preference over other standard forms of contract. However, as most industry participants have not used NEC, they would prefer other forms like the Australian Standards. Respondents noted underlying misconceptions in the industry for those who haven't used NEC, including where they "*think it's complicated or over the top*", is "*linked to the failed alliance contract*", "*a pommy contract for how the UK deliver projects*", "*not fit for purpose to what government actually needs*", that "*you can obtain the benefits of NEC using the current bespoke forms of contract through amendments*" and *"there is not the time or benefits there particularly for smaller contracts for NEC*". Interestingly, a respondent in government believed that "*NEC would not be able to fulfil all the rigorous requirements of each state and would need to be accustomed to each state to be sufficiently utilised*".

5.2.2. Sydney Water Experience

A respondent having worked on Sydney Water's P4S implementation, described Sydney Water's experience as a "*turnaround story*" where it was explained their original

framework on a project-by-project basis was "*poorly performing and underdelivering*" and the ways they were operating "*would not have coped with the sheer volume, scale and resourcing required for the work coming down the pipeline*". This respondent also acknowledged the *"clear complexities and battles that people* (Sydney Water) *were having with the way they were operating their contracts and there was a need to simplify it*". It was recognised how Sydney Water's approach differed from others who have implemented NEC, where a collaborative enterprise model was adopted across their business, rather than a one-off project arrangement. A respondent in Sydney Water explained that the NEC4 contracts are "*hard wired into our business processes and business systems*" to aid its implementation. Under this partnership model, it was also explained how there are regional planning partners, three (3) regional delivery consortia (partnering teams), integrated planning partners and a shared purchasing arrangement with pre-selected suppliers under a closed supply chain who all use the same NEC4 contract and associated conditions. The selection criteria for those involved in the partnership was explained to be heavily weighted on behaviour where organisational psychologists were used to pick those who would be involved. Implementing NEC as Sydney Water's procurement approach was stated by one respondent at Sydney Water to take a number of years where it was explained how "*it was a natural progression to ensure it wasn't such a big shock*" to the organisation. A monumental part of the implementation was noted as the major training programme to upskill their own staff and those in the integrated partnership. It was also mentioned by one respondent at Sydney Water that having the right mentality will aid NEC's implementation and therefore its maturity which will drive behaviours. Current advantages noted by Sydney Water respondents include how it has reduced disputes, increased efficiency, reduced contract renegotiations and resulted in overall cost savings.

Interestingly of those who were interviewed with experience of using NEC in Australia, it was clear that all NEC contracts used in Australia involved some form of contractual amendment. Reasoning for this included, "*we had to make it Australianised", "to align with the business or organisation*", *"to remove things that speak with the UK origin*", "*just procedural things*" and "*to align with standard templated documents".* A respondent who is a lawyer explained that he didn't believe you can implement NEC without some form of an amendment. An NEC representative and tutor explained how many will "*pick up things from other contracts and dump them into the NEC Z clauses… which can cause conflicts between the clauses in the contract if they are not 'NEC'ized'".* Further other respondents highlighted that many carry on using their old form but steal the good bits from NEC and weave it into their own. Common clauses typically amended in an NEC contract according to the respondent included security of payment legislation, early warnings, timing mechanisms, deemed acceptance provisions, liabilities, and insurance tables.

In particular, frustration was raised by a few of the respondents for the large scale of amendments made to the Sydney Water contract, where respondents claimed that they "*meddled with the balance of the contract*" and "*ring in things into the contract…from the old adversarial ways of doing things*". Another respondent reflected how "*it's a nice headline to say we are using NEC…but its* (Sydney Water NEC*) amended, the same way we do for*

every contract". Another added, "*you cannot take the short form contract which is 13-14 pages long and then add 100 pages of amendments… and claim it's an NEC contract*". It was further noted how the NEC Contracts, a division of Thomas Telford Ltd and the commercial business arm of the ICE "*wouldn't have endorsed the same scenario if Sydney Water were in the UK with all of its amendments*" where another probed how "*it's a licensed product*". But as another interviewee reflected, "*NEC* (NEC Contracts) *accepted it so they would get the form into the Australian market*". A respondent at Sydney Water acknowledged how there NEC contracts used at Sydney Water were *"slightly watered down in a couple of areas*" but explained how "*it was tough getting this over the line with the board, Treasury, the Sydney Water team and NSW Government*" and "*it has been a new paradigm for the executive leadership as it's a completely different risk profile and to persuade everyone that we are doing the right thing*". According to various respondents involved in the Sydney Water initiative, lawyers involved "*wanted to change everything*" however, as the lawyers involved noted that the amendments were to "*make it Australianised*" and to put the Sydney Water perspective into the contract. Interestingly, a UK representative for NEC spoke of how when NEC had been taken to court in the UK, it was due to the tailored Z clauses. Of those who have experienced using NEC in the UK, amendments are seen to *"damage the way the contract operates", "undermine the requirements to act in a spirit of trust, good faith"* and "*change the intent, liability or risk profile".*

5.2.3 Advantages of using NEC

Of the respondents who have utilised NEC, there were many perceived advantages raised that were of value to the respondents. These advantages can be classified into six categories: risk management, compensation events, the family of NEC contracts, project management, language and up to date.

Risk management

In terms of the management of risk**,** a few respondents spoke of the active risk management in the NEC contract through the 'Early Warning Register' including how it is "*fair*", "*well-structured*" and "*well-balanced*". In particular respondents noted how "*it forces parties to recognise and identify the risks early and manage them properly*", "*works on the contractor and client having a particular relationship and a particular risk sharing arrangement*" and "*being open and honest to risks*" and "*is structured so parties act in the best interest of the project because that is in their best interest*". In particular the early warning mechanism was an advantage for many respondents, where respondents stated how "*time, cost and quality are managed together*", "*contractors give us advanced notice through an early meeting rather than being hit with variations and we could work together to minimize and mitigate the impact of that cost*" thereby "*giving certainty to the process*". One respondent also noted how "*NEC is the only contract on the planet that wants you to include time risk allowances in the programme*". Another respondent spoke of how they compared nine (9) different standard forms of contract for a variety of risks, and they found that NEC4 is a "*well-balanced contract"* where other contracts are more favourable to the principal.

Compensation Events

An overwhelming majority of respondents spoke of the clarity in the compensation events in NEC, including "*contractors have a list of compensation events where they get variations all in one place, rather than other traditional contracts where it is between and around the contract*". Many respondents found the rigour around the process and assessment for the cost and time implications of compensation events beneficial, where it "*allows claims to be sorted as you go, rather than being left till the end*". Further another respondent likened to the open book procedure to determining reasonable levels of compensation, which enforced an "*honesty mechanism*". It was further added that this process ensures the that "*programme and budget are updated accordingly as changes occurred which ensured clarity"*.

Family of Contracts

Five respondents also acknowledged how there was nothing in the market that provided a suite of optionality in the contract options (Options A, B, C, D, E, F) for the entire supply chain. Further many respondents likened how it allowed their business to work under a common form of contracting, where it "*linked the projects, people and processes together*". One client respondent also noted how NEC *"lends well to projects in the same locality, at the same time where you can combine the programme over several work streams*".

Project Management

Respondents also noted how NEC encourages "*a stimulus to good project management*" through the early warning register, programme, pain/gain mechanisms and sanctions. In particular, the clear timebound processes ensure "*active management of the project manager*" where it places obligations under a deemed acceptance provision. The forecasting and agreement of the accepted programme was a key advantage raised by many of the respondents where it ensures it is "*regularly updated and realistic for the timely delivery of a project*" and "*the intent of parties is the same*" and can be used to "*assess compensation events".*

Language

The language is seen as "*straightforward*", "*simple*" and "*easy to understand*" by many respondents being in "*present tense*", "*shorter sentences*" and "*not containing legal jargon*" where one respondent noted how they "*don't need to spend hours decoding the core clauses of the contract data*". One respondent also highlighted the clear guidance on the communication and processes parties are to follow when change occurs.

Up-to Date

Respondents see NEC to keep their contract up to date with industry and regulatory standard feedback from industry users compared to the Australian Standards. Many reflected on NEC adapting their contract to better reflect the security of payment regimes in Australia for each state.

5.2.4 Issues with Implementation of NEC

Of the respondents who have utilised NEC, there were a range of implementation issues which have been categorised into four categories: administration, training, cost and communication and relationships.

Administration

Of those respondents who have utilised NEC abroad or in Australia, they noted the "*heavy administration*", particularly the need to put in sufficient time and resources to set up NEC within an organisation regarding the change management, process control and compensation events in the contract. The timebound processes are also seen to place "*pressure on the project managers to make it work with their own internal governance procedures*". One respondent reflected on the heavy administration but "*it makes people work together and makes people do their jobs…it stops you getting in that position of fighting, interrogation and antagonization*"

Training

All respondents with experience with NEC, note how clients need to be geared up to acquaint all project participants including employees (particularly project managers), lawyers, contractors, and suppliers, to understand the contract. Four respondents noted how they provided "*free training*" to their supply chain. Respondents made it clear that the project manager needs to be "*well trained*" and "*consciously competent*" in contract management as NEC can often overload the role of the project manager. One respondent in a client organisation acknowledged how they did not do proper change management and a culture reset from the old ways of working by training their staff and senior management to think differently which caused various issues down the track. A Sydney Water representative reflected on the significant capability development and awareness training required to build the integrated project delivery teams.

Cost

A few respondents emphasised the initial upfront cost of the contract to be an issue where users are required to purchase the licence from the NEC organisation.

Communication and Relationships

Regarding claim management, one respondent raised the importance of having one central point of communication, as from there experience they had rogue vendors who claimed they sent an early warning email when they did not. Additionally, another respondent described how it is vital to establish a strong relationship between the project manager, client, and the contractor for NEC to work as intended. One respondent noted that there can be still plenty of games played by the contractors with an NEC contract, whereas an example they can price gauge every compensation event.

5.3 Institutional Barriers to Change

This section demonstrates the respondents' critiques of the institutional structure of the current procurement practices in the Australian construction industry by clarifying the barriers to adopting NEC. The interviewees demonstrate that two institutional actors are

identified as key barriers to adapting and implementing NEC further, including the legal profession and clients, particularly government. Another two barriers to change, as raised by respondents include the limited number of training professionals and the need for a shift in culture and mindset.

5.3.1 Government and Clients Barrier

All respondents note one key barrier to NEC adoption in Australia including the reluctance of government and clients to change. It should be noted that many respondents reflected these two actors as one barrier in most instances and therefore will be treated as such.

When referring to the government as a key barrier, respondents expressed contempt noting "*a lack of drive at a national level*", *"lack of passion and empathy*", "*lack of thought and care for the contractor",* "*lack of cohesion*" and "*lack of coordinated economic theory in government do what is best for the country*". One respondent who is lawyer described how the government mentality is to "*work in favour of complete conservatism and the status quo rather than novel advancement*". Three respondents who are or have been employed by the government, noted "*the level of bureaucracies in multi-government agencies*", "*treasury is standing over procurement agencies*" and there is "*too much red tape or processes*". Another interviewee working in government demonstrated how highly politicised the government procurement approaches can be when they highlighted that it was *"not out of the ordinary for a contractor to be speaking with the Minister".* Another government respondent explained how "*government is very stakeholder focused and has a responsibility to them. We would need to understand what the change would mean to their tenders, the industry, the supply chain… A short-sighted view would be how do we do this efficiently and to not impact the businesses who rely on the QLD government work. Also, we would need to think about the broader contractors in regional and remote areas and the knock-on effect to them*".

Many respondents pointed to the flat government structure in Australia which is internationally unique and made it difficult to initiate change, with many pointing to the geographic separation and resistance of the different states and departments where "*they all do their own thing in their own way*", "*don't talk to each other*" and "*they don't want to be seen as copying each other*". One government respondent explained how it can be challenging because "*projects are delivered differently across each state and there are different state requirements, contractual legislate outcomes and needs in each state*". An example of this was further highlighted by many frustrated respondents including the difference in the security of payment acts in Australia, where one respondent said, "*what a debacle that is that we don't have a national security of payment regime*". When comparing the UK government structure to Australia, one respondent indicated that the UK doesn't have a federal government so a procurement method can be centrally administrated compared to Australia where the states and territories have their own laws which regulating construction activities. Respondents in government reflected on the constitution in Australia where "when they set up the constitution in Australia, the intention was to have strong states and a weaker federal government, but they have produced the opposite, therefore where the states have

power, they take hold of that power". Further the respondent noted how it can be difficult for the government to initiate change given that the federal return period is three (3) years in Australia compared to the UK where it is five (5) years. In conjunction, a respondent with experience working in government raised how those employed in government to manage large scale projects are only "*in a role for 2-3 years and within the project lifecycle…key people will move on and want to get a promotion*", which can impact the ability to implement a change initiative.

A respondent with 30 years of experience in the UK and Australia spoke of how the government lack resources and there is a shortage of skilled people, reflecting on how over the last 20 years there has been a gradual transition from fully staffed Government departments with an investment in training to now "*skeleton departments*". He further added this reflects the impact of politics and neo-political theory. Two respondents who are lawyers complement each other's findings in adding how government "*have divested themselves of all there in house capabilities",* and therefore they need to "*contract in all their services they require and their skill sets*" or "*PPP (Public - Private Partnership) everything*". One respondent added that government have "*turned it into a privatised monetary, profit-making commodity*".

5.3.2 Legal Profession Barrier

The biggest barrier for NEC adoption in Australia, which all respondents raised from all corners of the industry (government, client organisations, lawyers, consultants, contractors), was the reliance of the industry, particularly client organisations, including government to legal advice. Respondents spoke to of how *"nobody will make a decision without a lawyer giving them advice*" and *"when there is an issue or dispute, everyone goes straight to the legal team*". An overwhelming majority also spoke of how the majority of lawyers would not recommend NEC to their clients where a respondent who is a lawyer believed there was two reasons including *"they would lose their market leading position….and would do themselves out of enormous legal fees they get every time the government goes out to market*". Those with experience of NEC adoption in the UK referenced how lawyers were also initially a key barrier to adoption of NEC. Many lawyers in the UK did not like NEC at first and had to learn a new way of operating a contract.

Many respondents believe the reliance on lawyers stems from the fact that "*no one, particularly project managers, actually understand the contracts they are operating, what's in it, what it means, what risk allocation is associated with it and what the terms of conditions are and what they can and can't do*". Additionally, another respondent mentioned how "*lawyers don't have time to tell you how the contract operates and works*" and the delivery people (e.g., project manager, engineer) will tend to just *"focus on the technical scope and assume that the lawyers are sorting out the contract*".

In unpacking the role of lawyers, one respondent highlighted that lawyer's believe they should "*look after you as a client, whichever side of the bench you are on, contractor, consultant, owner*" and "*to make sure you are protected in the worst-case scenario*. *Lawyers do them (*their clients*) a disservice, as what protects their client is having a project delivered*

well and on time and to budget and to a contractor who is whole and has made a margin and can go onto the next project". In addition, a sentiment shared by many of the participants was that "*lawyers do not understand how to run or deliver a project rather that is the task of engineers and project manager types*" and therefore they are not able to provide commercial advice to their clients. The traditional method to how lawyers is seen to manage risk by respondents, is to say, "*that if that risk comes up it's your problem*" (the other party). Consultants and engineers who were interviewed shared a view that, lawyers should "*put the structural framework, the legal framework around that*" (contract), *"lawyers should just work on the scope and other liabilities rather than reinvent the wheel", "allocate the risk and identify the legal risk and have it allocated one way or another or clearly articulate"* and have it "*stand up in court*". NEC is referenced as "*the engineer's solution to not have the lawyers medal in contracts, it disempowers lawyers, so they are not required*".

5.3.3 Training

Respondents also identify the need for industry participant's to be trained in NEC, as there is a mindset required to use NEC, where there is currently a lack of local expertise, experience, and knowledge in using NEC. Given a key barrier is lawyers, multiple respondents raised the need to "*train the lawyers*" and the need for "*lawyers to be incentivised and have value in supporting clients who use it*". One respondent notes the need to be consciously competent to use NEC, where skills noted by interviewees include negotiation and mediation skills, project management skills, contract management skills and an understanding of collaboration. Over half of the respondents shared the view that "*collaboration has an amorphous meaning here"* (Australia) and a lot of people are using NEC but lack an understanding of collaboration, so they carry on managing the contract how they traditionally have managed it. According to respondents' proper collaboration involves "*talking and listening to each other",* "*talking to each other before the contract is even made and agreeing between them what that agreement should be like*", "*being open and honest…and telling the other party there is a problem and you need help*", "*being accountable and working together to reduce the cost and actively manage risk*" and "*managing change together to mitigate the effect of that change on the project for the benefit of the project"*. A respondent in government expressed how the industry hears "*a lot of different buzz words around collaboration (e.g., alliance) where NEC has been used in that context, but it feels like here is a solution for anything, like pick your own adventure. Collaboration requires a lot more hands on involvement by larger groups of people on both sides of the fence*"

5.3.4 Culture Shift

One respondent explained how "*you need culture and the need right at the top to influence and create a change outcome*". Respondents noted the interface between culture and contracts where one stated how "*NEC won't work without a sensible culture*", and another "*a slight culture change is required, not a big one*" but "*the culture with the right mindset will change things*". The consensus amongst respondents is that it will not be a quick process but rather a "*gradual*", "*organic*", "*evolutionary"* process that occurs over "*decades*" or "*generations*", as it can take time and effort to change cultural mindsets. In particular a

few respondents compared our level of change in the construction industry to other countries, with respondent's stating how "*we have stayed the same*" or are "*a few years behind"*. One respondent recommends the need to focus on one industry and then implement it there first rather than an over-the-top approach to change the industry in one go. An NEC representative although has pleaded with the industry, "*don't take another 10 years to adopt something that should be now".*

5.4 Key Actors or Institutional Entrepreneurs

It is clear that the perception in the industry is that greater adoption of NEC will require the role of government, clients, and the industry and professional bodies to change current contractual practices. All respondents reflected the need for top-down change however there were mixed responses whether it should be driven from government or private sector clients. Although a few respondents raised the need for alignment within organisations who adopt NEC, from the top through to the grassroots level.

5.4.1 Government

It is clear from the interviews that greater implementation of NEC is seen to require the role and influence of government and public sector organisations where one respondent notes "*when the initiative has the momentum of government, it just goes forward"* and "*to get the high level and broad use in the industry… you need government to support it".* Representatives from NEC Contracts, note that adoption has been slow since it has been a bottom-up process for the last two years to raise the profile of NEC in Australia. One respondent in government explained how for change to occur "*it would have to be very well documented and justified and substantiated reasons shown why there is a need for that change, and that you have considered the time, the cost, the impact, and all of those things*". Many respondents reflected on NEC adoption in the UK and Hong Kong and how it was driven by the government where the UK Treasury recommended NEC on all infrastructure projects over a certain value and the Hong Kong Government mandated NEC on all government projects.

One respondent also noted the "*need for government to do pilot studies and to produce a report like Tang in Hong Kong and Latham in the UK*". A respondent in government said that "*a report like Tang and Latham would give the support for NEC, but NEC may not be the solution the industry actually needs*". Many respondents raised the NSW Government Action Plan and how the NEC fulfils this plan, which one interviewee believed "*mirrored Latham and Egan*", due to its push for using more standard form collaborative contracts. Another respondent further noted that the NSW Government Action Plan was a "*good trigger for the government to adopt NEC*", however as noted by another respondent, "the *government intended to follow it but then never followed it*". However, a respondent who is a consultant indicated how it is typical of the government to "*write a report then pat themselves on the back and go to sleep at night but then nothing happens".* Whilst another respondent questioned, "*how are we ever going to improve if government do not follow their own recommendations".*

Others described how the government could "*implement laws of good faith*", have "*a renegotiation of a national partnership agreement*" or a *"forum for governments to recognise the need for implementation of NEC*". Respondents perceive that gaining government support is not possible in the short term where one respondent believes the government does not encourage advancement and continuous improvement. In particular, is clear that NEC is not in the horizon for government where another government respondent highlighted that currently "*the industry environment is so busy, and that they are still recovering from the challenges of COVID-19, that there would be a no capacity or time for us to engage and try and influence the market and impact people's business as usual*".

5.4.2 Client Organisations

A key actor seen as influential in implementing NEC as indicated by the interviewees are large organisations including clients/principles, and senior individuals in the industry. In particular, many respondents are seen to follow Sydney Water implementing NEC as a suite of contract, enterprise wide across their entire supply chain. This has been described by respondents as a "*radical approach*" but also "*targeted and very specific to that programme of work at a larger scale*". Many respondents indicate that the industry needs more high-profile clients and organisations like Sydney Water to use NEC on some "*big bang projects*" and to showcase their results. Two respondents in government said that "*currently NEC in Australia has only been used on mainly infrastructure projects, and there needs to be more building and architectural projects to increase industry usage*". One employee recognised that the adoption rate between clients using NEC has also been slow. It is clear that many of those have instigated the use of NEC in organisations in Australia have had experience using NEC in the UK. Therefore, as shown by a few respondents, Australia "*needs more Brits coming into principal organisations*". A few respondents however indicated that "*one person can't do it alone, where there is a need for overhead support and commitment in an organisation to support its implementation*" (e.g., lawyers, directors). Further it was indicated by the respondents that client organisations drove the development of NEC in the UK where resistance was from consultants, contractors, and lawyers, so as noted by a respondent "*change starts with clients*". Interestingly however a few respondents, particularly in government believes that the impetus for change will be market driven and pushed by the contractors. One respondent who works as a lawyer stated that they "*do not believe there is enough cohesion in the procurement side of the market to drive change*".

5.4.3 Industry and Professional Bodies

It is widely accepted amongst respondents that greater awareness, engagement, training, and education are required by industry and professional bodies to drive the implementation of NEC and to understand the resistance for change. A consultant with ties to the ICE explained how NEC as an organisation, is "*not designed to make a profit*" where it is owned by the ICE, an independent professional association and charitable body in the UK, where they "*lack the ground resources in Australia*" to initiate change. It was acknowledged by many respondents that "*NEC is not doing enough in terms of awareness*", *"they aren't pushing it here, but it is not their job to go on a big PR campaign*" and their "*current thinking isn't expansive*" where they need to "*establish a business proposition with evidence to why people should use NEC*".

In terms of awareness, many respondents acknowledge that consistent discussion of the contract, NEC , is required at industry working groups, webinars, seminars, and lectures. One respondent indicates how "*the more people that talk about it, the more it will self-generate and more conversations, more people ask questions, and it won't seem as scary or unknown and then before you know it becomes endemic and accepted*". One respondent in government said, "*you need lobbying going on or ground noise for a shift to make a strong argument for government to change the way they are doing things*". A few respondents recognise that it may be difficult to get the message of NEC out there given how vast Australia is. Two government respondents highlighted that a peak body like the Australian Procurement and Construction Council (APCC), would need to get on board to facilitate and coordinate the states and federal government to agree to NEC and get consensus across the industry and country. It was further raised that this influenced how the Australian Standards generated greater adoption in the industry.

6. Discussion

This discussion will combine the theoretical framework and previous literature with the findings to analyse and evaluate the results. Thereby the theoretical will be compared to the practical, and conclusions will be drawn. Further, the limitations and recommendations for future research will be discussed.

The purpose of this study was to better understand NEC implementation in the Australian construction industry, including its slow adoption rate and what is required to gain further implementation based on the actors in the industry and the barriers to change. This discussion will answer each research question by interpreting the findings in the context of the theoretical framework and previous literature.

6.1 RQ 1 - What institutional factors embedded in traditional procurement in Australia motivate institutional change?

Previous literature on the Australian contracting environment has highlighted the inefficiency of current contract procurement, and project delivery approaches where there are strained contractual relationships between project participants as a result of the adversarial culture, attitude, and environment in the industry (Gerber & Misko, 2019; Miller et al., 2009; Sharkey et al., 2020). The findings in this thesis further confirm these prior discussions, indicating that the institutional issues in the construction environment, which have been prevalent for decades remain still today. The academic discourse to procure and manage projects more collaboratively was further corroborated by the findings and there was a clear consensus among many respondents that current contracts are unaligned to the demands, expectations and aspirations of the industry and there is a need for alternative contracts which meet these. Drawing on the theory, the highly institutionalised context of the construction industry is evident, where it is clear that organisations are navigating between the long-lasting and embedded institutional logics which govern action and belief (Chan, 2018). A full replacement of one institution to another in the construction industry is not likely initially, rather change in procurement arrangements will occur gradually and incrementally through the combining of new institutions into the pre-existing institutions (Mahoney and Thelen, 2010)

Economic Factors

Specifically, the main economic factors to motivate change as highlighted in the findings and reflected in academic discourse is how current procurement arrangement and contractual structures are based on the engrained adversarial working relationship; there is clear fragmentation in industry, an onerous risk allocation towards the contractors and supply chain and a highly competitive and cost-driven environment (Eriksson et al., 2008; Infrastructure Australia, 2021; Miller et al., 2009; Galvin et al., 2021; Klakegg et al., 2020; Mosey, 2019; Jefferies et al., 2006; Sharkey et al., 2020). The institutional structures which are seen to be adopted by owners and government agencies, do not support a win/win outcome for all project participants, and as the findings and literature indicate can accentuate systemic problems of cost and time overruns, disputes, litigation, and a lack of trust and capacity in the industry to innovation (Lenderink et al., 2022; Eriksson, 2008; Miller et al., 2009). In addition, as raised by previous literature and endorsed in the findings is the notion that the contracts in the industry

are currently weighted in favour of the principal over the contractor, where they are unrealistically exposed to risks which they cannot bid, price, or manage to deliver a project successfully (Mosey, 2019; Gerber & Misko, 2019; Sharkey et al., 2020). As the findings highlight, the tender selection criteria of project owners tend to be based on the lowest price rather than other soft parameters where Ng et al. (2002) highlight how this is shown to limit innovation outcomes and adversely limit the extent of cooperation. Further, the literature is also seen to highlight how there is a lack of active risk management, which is portrayed in the findings where many traditional contracts are seen to provide narrow variation claim entitlements and change provisions to deal with the reallocation of risk and mitigate impact (Sharkey et al, 2020). In the findings, contractors are also seen to lack the financial and labour capacity to take on jobs and absorb the losses if things go wrong, which as highlighted in recent research, has resulted in the high insolvency of contractors.

Knowledge-Related Factors

The findings also demonstrate how knowledge related factors are embedded in traditional procurement that motivate the need for change. As shown in the findings and reflected in earlier literature, there is an institutional tendency to use outdated and bespoke standard contracts which drive adversarial outcomes as amending or adding clauses is seen to shift the risk profile and mitigate contractual liability (Mosey, 2019; Gerber & Misko, 2019). Although the adoption of standardised contracts has been shown in the literature to improve efficiency as the roles, obligations and risks are clear, current standard contracts used in Australia are not updated regularly to reflect legislative requirements and the market demand which drive the amendments (Stehbens et al., 1999). The findings extend on prior literature and demonstrate how there is a lack of institutional capacity (e.g., skills, awareness, experience, and resources) of project participants in Australia to manage procurement and project delivery, particularly the contract, risk, and commercial aspects (Sharkey et al., 2020; Gerber & Misko, 2019). In particular, the findings show a lack of commercial knowledge in the industry, which constrains the contractor's ability during the tendering and procurement phase to clearly identify the commercial impact of taking on a risk.

Cultural Factors

The findings also depict cultural factors which are seen to motivate the need for institutional change, including a strong resistance to change where participants acknowledge our many would perceive the current contracts not to be an issue. This is aligned to the theory on how the construction industry is understood as highly institutionalised where many incumbent actors actively aim to maintain the institutions and resist theorizing themselves to institutional change (Hoogstraaten et al., 2020). As the literature highlights, when innovations are radical, where they do not resonate with existing norms, values and regulations, resistance and reluctance to change is inevitable (Bresnen & Marshall, 1998; Kadefors, 1995). The industry's culture as described in the industry has a lack of trust-based relationships, an adversarial and confrontational attitude and an opportunistic behaviour between clients and contractors. The literature well supported these findings, indicating how it has plagued the industry for decades (Jefferies et al., 2006; Klakegg et al., 2021; Gerber & Misko, 2019). Many critics in the literature highlight how a contract will not eliminate this culture rather to support

the ability of cooperation and collaboration, you need to establish the right trust, relational attitude, and culture (Galvin et al., 2021; Klakegg et al., 2020; Mosey, 2019).

6.2 RQ 2 - What is the perceived role and contribution of the NEC form in Australia in developing the institutional practice of collaboration in contractual practices?

NEC has matured as being a contract of choice internationally for many organisations. However, NEC adoption in Australia remains limited, as described in the literature and interview findings. The perception and experience from those who have utilised NEC in Australia have been positive so far, where it is clear that there are expectations for greater adoption. Using the theory of theorisation from Greenwood (2002), the increased dissatisfaction with current practices was formed through specification. Although this is regarded as a slow process, it is the 'jolt' in the Australian construction industry which has begun to disturb field level consensus. The effect of such shock will raise awareness of alternative logics compared to the taken for granted, traditional procurement methods. NEC is viewed as the justification and response to this organisational failing. Of those who have utilised NEC so far, it is clear from the findings that there was no institutional pressure but rather a recognition or opportunity by those in client/ contractor organisations, that their contractual arrangements were not delivering, and they needed a more collaborative relationship with their supply chain. This represents a form of pragmatic legitimacy where current contracting methods are seen as inefficient and through theorisation, NEC is justified as the solution.

The Sydney Water project is clearly an Australian showcase for NEC, pioneering the first major uptake of the form in a government organisation. A few participants in the industry have followed the uptake of NEC since its inception. However, it may be suggested that uncertainty still exists for widescale mimetic isomorphism to thrive, as actors continue to embrace existing ways of doing things. As suggested by theory, current uncertainty in the construction market may cause organisations to mimic other counterparts like Sydney Water, where they show evidence of successfully adopting NEC. The case of Sydney Water demonstrates that financial resources (e.g., capital), organisational resources (e.g. culture), intellectual resources (e.g. training, knowledge) and social resources (e.g. relationships) are seen as critical elements to drive the greater use of NEC over traditional procurement methods. For example, from the perspectives derived from Sydney Water, the scale of organisational change required to implement NEC and induce collaboration was extensive. Responses from Sydney Water further confirm literature findings that overhead support and top-down management commitment is required to aid the implementation of a change initiative in an organisation (Cheung, 2006). The findings further reinforce much of the literature on the benefits of NEC (e.g., risk management, compensation events, the family of NEC contracts, project management, language and up to date) in comparison to traditional contracting approaches. However, there are still issues prevalent which impede greater implementation (e.g., administration, training, cost and communication and relationships). It is clear that Australia has long recognised and sought to leverage the benefits of collaboration; however, in reality, attempts have wavered to fruition, which is evident from the fallout of their alliance contracting model over the last few decades (Gerber & Misko, 2019; Ross, 2009).

The findings demonstrated that many of those who have procured using NEC have required amendments to their contract. Through the work of Mahoney and Thelan (2010) these amendments to NEC are seen as a mechanism of institutional change through layering, where new clauses are additionally attached to the existing contractual arrangements resulting in the new institutions not replacing the old. It is clear that NEC and Sydney Water both accepted NEC with amendments which is a form of cognitive legitimacy to adapt NEC to the Australian market. Therefore, amendments may be seen as a coping mechanism to reconcile the conflicting pressures and requirements from legitimating institutions in the market. This may also signify that legitimising NEC adoption in an organisation as their main contractual approach requires a slow natural progression rather than a rapid approach to the market. For Sydney Water to gain its competitive advantage in the market, it may be suggested that they are striving for legitimacy whilst maintaining efficiency thereby NEC without amendments may not have been a feasible at the time. However, given the interviewees remain highly critical of these amendments, it may be suggested that Sydney Water require a plan to successively rule out these amendments over the long term. Otherwise, Sydney Water risk losing legitimacy amongst their peers in the industry. Also, normative pressures in the form of professional standards may be required by government or professional bodies to influence established norms of what is appropriate/acceptable in terms of contractual amendments.

6.3 RQ 3 – What are the institutional barriers to change in contractual arrangements? How can legitimacy be established and ruined?

The findings show two key institutional actors that act as barriers to further adoption for NEC in Australia, including government and public sector organisations and the legal profession. Also, the interviews highlighted the limited number of trained professionals and the culture and mindset in the industry as major barriers to implementing new procurement initiatives within the construction industry.

Institutional Barrier – Government

All non-government interviewees agree that the government in Australia does not have a drive for change, the government structure does not support innovation, and there is a lack of skills in public sector organisations to encourage the implementation of NEC. As institutional theory depicts, these central actors have established and sustained institutional logics that suit their interests and therefore are highly embedded and resistant actors to change (Greenwood et al., 2002; Battilana et al., 2009; Kadefors, 1995; Harries, 2012). As the findings have shown, traditional procurement methods brought to the table by client and government organisations favour the client in all instances. In contrast, NEC puts the client and contractor on a level playing field. This suggests that governments are comfortable continuing to work in their institutionalised ways, compared to private sector clients. The alliance contract in Australia is an example of a collaborative contracting method being established and exported internationally and lost in legitimacy. From the findings, government is a key institutional barrier to NEC's legitimisation where it was shown how government questioned the economic value alliance contracts had to project delivery resulting in a form of pragmatic illegitimacy (Gerber & Misko, 2019). Oti-Sarpong et al. (2020) reflected on how the government are highly exposed to normative pressures (e.g., rules, beliefs, norms) in the construction industry which

make their decisions liable to the impact of others. This was confirmed through the findings where various participants in government emphasised how the government has a responsibility to its stakeholders in the industry.

The findings showed unique structural features of Government which are critical barriers to NEC adoption. Firstly, an added complexity is that there is a separation and lack of coordination between the states and territories, where they all have their own procurement rules and policies and forms of contract, acting as silos to one another. Also, the federal government in Australia does not have responsibility for construction procurement; rather this exists with a range of public agencies. Government is highly institutionalised where findings indicate bureaucracies and processes standing in the way of change to procurement methods. Thereby achieving legitimacy across the differing interdependencies of state governments would require horizontal coordination of various government agencies. As stated in the findings, government do not have the skillsets or capabilities to successfully implement NEC given that they contract in their services when required through partnerships with the private sector (PPPs). This lack of cognitive conditions (e.g., knowledge and skills) as a barrier to change is well established in institutional theory (Ling et al., 2013; Oti-Sarpong et al., 2020). For the government in Australia to take on NEC, as a hypothetical situation as their primary procurement approach, it is suggested that they will need to educate people within their organisation and supply chain and can build legitimacy through partnering with other organisations in the industry (Dacin, 2007).

Institutional Barrier – Legal Profession

Another barrier that the interviews raised as a key barrier to greater NEC adoption is the legal profession in Australia. As the findings depict, governments and client organisations rely heavily on advice from their lawyers for their contracts and procurement strategies as they draft and modify their contracts. This dependency on legal pressure in the construction industry has contributed to the lack of capability in project delivery participants to understand, manage and operate the lengthy and complex traditional contracts they are using; rather they only focus on the scope. Interviewees perceive the lawyers as a supporting role and the greatest impact to NEC adoption where their institutional interests do not align to the need for collaborative and standardised forms of procurement. Lawyers are involved in the drafting and updating of current contracts used by many client and government organisations and are required when disputes arise in construction projects. NEC aims to reduce both of these requirements and essentially eliminate the burden of lawyers on the industry. Those with experience of NEC adoption in the UK referenced how lawyers were also initially a key barrier to adoption of NEC. Many lawyers did not like NEC at first and were resisted to change but had to learn a new way of operating a contract. Lawyers were also perceived by the interviewees to not have the commercial knowledge or experience on risk allocation and how a project is delivered in real time, rather that was described as the role of and decision of those who deliver the projects. Using the lessons learned from institutional theory, it may be suggested that there is an institutional misalignment due to conflicting institutional logics of lawyers compared to project delivery actors. This results in a clear barrier to collaborative procurement (Öberg & Shih, 2014).

Institutional Barriers – Culture and Training

Lastly, the interviews and literature findings demonstrate that competency and the right culture & mindset are key factors to creating greater legitimacy and adoption of the NEC (Bresnen et al., 2006; Vennström & Eriksson, 2006; Eriksson, 2008). These were highlighted earlier as key factors to motivate institutional change given their impact on the construction industry. The findings indicate there is a clear resistance to change in the institutional environment to accept an internationally recognised form without understanding its benefits and performance on project delivery. The findings identified a lack of understanding of collaboration in the industry where actors perceived it as important but did not understand the concept and the perquisites associated with its successful implementation. It may be suggested that Australia lacks a common frame of reference given that collaboration is a foreign element in current contracts used in Australia today. Institutional theory emphasises the need for theorization involving justification based on logics or evidence to validate change to other actors (Greenwood et al., 2002). This is further confirmed in literature findings where Eke et al. (2019) notes that for others to understand the true benefits of collaboration, more evidence is required on its impact. The normalising of collaborative procurement at a project level in Australia would require deeply institutionalised practices to be broken down and the value adding mechanisms to be noticeable. In the findings many link the NEC to the legacy of the alliance contract and the conception that it does not deliver value for money, which may prevent the industry from trying another collaborative contracting model like NEC (Gerber & Misko, 2019). The adverse culture in the industry is not compatible with the project delivery processes in NEC, and thereby a culture shift is required. However, as the literature indicates culture change in the construction industry is not a quick process where it is suggested by interviewees to likely occur over decades or generations (Jefferies, 2006; Sharkey et al., 2020; Bresnen et al, 2006; Vennström & Eriksson, 2006; Eriksson, 2008). There is also significant lack of capability and depth in the construction industry to support collaborative behaviour and innovation. In particular a lack of cognitive legitimacy of NEC and its impact on facilitating efficiency is evident and acts as a barrier to further adoption.

6.4 RQ 4 - What role do institutional entrepreneurs have in implementing the development of new contractual forms in the Australian construction industry? What are effective strategies that they can use?

Attention was focused in this study on understanding how individuals and organisations can change the institutions in which they are embedded (Salignac et al., 2017; Lammers & Garcia, 2017). In particular, this study provides insights into the role of institutional entrepreneurs in implementing of a new contractual form in the construction industry. The findings emphasise the role of three project actors, who can be seen as institutional entrepreneurs, to drive the development of NEC, including central institutional actors including client organisations and government, as well as peripheral actors like the APCC and NEC Contracts.

Central Institutional Actor – Client Organisations

Many clients are reluctant or conservative to change regardless institutional entrepreneurs like Sydney Water are shown throughout the findings to be critical to driving the

radical development of NEC in Australia through mimetic pressure (Greenwood, 2002). This is that the more organisations that adopt NEC and set an example, the more widespread its acceptance and legitimacy across other organisations (Jepson et al., 2020; DiMaggio & Powell, 1983; Greenwood et al., 2002). This was consistent with the findings in the UK, where the more client organisations who adopted NEC, the more widespread NEC's acceptance and legitimacy. Sydney Water realised its current traditional procurement methods disadvantaged its organisational interests, representing a form of specification and pragmatic illegitimacy. Being aware of alternative procurement methods used globally, Sydney Water realised they could benefit from the change. Through the institutional work of Sydney Water, they were able to champion the need for change in their organisation. There top-down enterprise approach with overhead support (e.g., the board, NSW treasury) transformed the procurement approach across their business and supply chain. The findings showed that many of those who have driven NEC in client organisations in Australia, including at Sydney Water, are British or have had experience using NEC in the UK. Therefore, it could be suggested that additional international expertise and knowledgeable agents are required to come into the Australian market and question the current ways of working.

The institutional work of Sydney Water to legitimise NEC was not without its challenges, where the findings depict considerable time, effort and negotiation required. Given the construction industry's complexities and pressures, Sydney Water are seen to take strategic steps to enact change by considering the context and their survival. Sydney Water employed a range of calculated tactics as an institutional entrepreneur to foster institutional change, which is well supported by theory (Micelotta et al., 2017). Using a framing strategy, employees at Sydney Water involved in the implementation of NEC persuaded high order actors in the organisation by articulating their vision for change amongst futuristic issues given the pipeline of work and current failures from their current approach. As Suddaby and Greenwood (2005) highlight aligning innovation with the prevailing normative practices is critical to resonating with existing norms and values. This further reflects the theory on how institutional entrepreneurs must be skilled to narrate and theorize change to provide meaning to others (Garud et al., 2013). Another strategy Sydney Water used to increase the legitimacy of NEC was through a concerted effort to target various consultants and suppliers to be a part of the new enterprise approach. This is well supported by the theory that entrepreneurs can mobilise followers and the assemble resources to support their vision (Battilana et al., 2009; Huang & Whittington, 1997). To diffuse norms and expectations internally and to their supply chain, Sydney Water used normative processes like offering free training. Furthermore, the findings from Sydney Water have confirmed the theoretical understanding that institutional entrepreneurs can use various large-scale demonstrator projects as a vehicle to indirectly drive institutionalisation and the incremental change of construction methods (Oti-Sarpong et al., 2021; Söderlund & Sydow, 2019). It could be suggested that this radical change effort by Sydney Water would not have been possible without the extensive financial capital and authority they have in NSW. Therefore, large, and influential firms and public clients are needed to adopt NEC, either through external pressure or motivated by internal profits to influence other firms to follow suit, and the incremental change in the preferred procurement

method. This is further emphasised through the work of DiMaggio and Powell (1983), where firms are seen to copy from others in response to institutional pressures.

Central Institutional Actor – Government

The findings demonstrate how clients and public organisations are best positioned to make the necessary steps to implement best practices but without a clear drive at a national level, change will continue to be slow and piecemeal. Government, being the most central actor is depicted as a powerful and coordinating institutional influence in the findings to drive coercive pressure and momentum for further uptake of NEC, which is consistent with literature findings (Latham, 1994; Oti-Sarpong et al., 2021; Larson et al., 2020, Szentes & Eriksson, 2013). Government agencies, in particularly Treasury in Australia, hold a considerable market position with the power to control the procurement methods on a range of large-scale projects. Further being a significant industry actor as both a regulator and a client, it may be suggested that they would be well-positioned to gain from the benefits of collaborative procurement. Battilana et al. (2009) highlight how central actors are enabled by access to resources and strong networks within the field compared to peripheral actors. Government can enforce conformity to institutionalised practices through coercive pressures, including regulations, funding schemes and contractual mandates (Kadefors, 1995; DiMaggio & Powell, 1983). The findings confirm that institutional entrepreneurship in the construction industry is a very political process were lobbying efforts and gaining political support from central actors are required to endorse change. In particular, as stated by many respondents, NEC clearly gained further international adoption when the UK government endorsed NEC and the HK government mandated NEC. Strong government driven collaboration efforts with industry participants is shown to be critical to the industry-level change and therefore pilot projects initiated by government with the private sector is suggested as a mechanism to increase adoption of NEC. Suppose the government in Australia wish to follow from example, as shown in the findings in international contexts, they need to become motivated to effect change in practice and follow the recommendations they endorse in studies and reports (e.g., NSW 10 Step Plan). The institutional capacity of government in Australia to deliver such improvements to procurement and champion collaborative contracting remains in question, considering findings depict how their decentralised nature and lack of competence. Theoretically government may be seen as the best choice to drive NEC, in practice this would be difficult to achieve.

Peripheral Actors

The theory of institutional entrepreneurship has shown that actors on the fringes or in the peripheral are more likely to disengage from the institutionalised practices and thereby induce change as institutional entrepreneurs (Opara et al., 2020). The findings highlighted the role of peripheral actors who is least subject to isomorphic pressure, to drive NEC adoption, including ICE (who develop the NEC contracts) and the APCC. In particular, the respondents agreed that greater awareness, engagement, training, and education is required by ICE to the industry to catalyse change in procurement. In order to see greater adoption and consensus across Australian states, the findings also emphasise the coordinating influence of APCC to establish a national forum. This may be suggested as a way to reduce the SILO thinking on contractual arrangements. Therefore, coercive pressure is not limited to just governments but rather

professional bodies and credential associations, as depicted in the theory (Scott, 2014). These findings are consistent with research on institutional entrepreneurship, where actors can mobilise resources and allies through awareness creation and selective networking to gather acceptance (Garud et al., 2013). The findings also emphasised that the current mindset, resources, and influence from ICE to endorse NEC are not expansive enough for the sheer scale and impact needed. This reflects theory, that outsiders lack influence over practice given their limited influence, power, and resources, representing barriers for entrepreneurs to overcome (Battilana et al., 2009; Aldrich & Fiol, 1994). The findings also highlighted that project owners and government need to understand the effect NEC has on project outcomes. Therefore, ICE and organisations who have utilised NEC (e.g. Sydney Water) need to provide further evidence to the market on NEC's impact to project delivery. This is reflective of theory and literature, where theorization requires specification from increased dissatisfaction of current contractual practices and normative justification to validate change to others (Greenwood et al., 2002; Eke et al., 2019). The implementation of NEC internationally has shown that peripheral actors typically start institutional change, but validation is required from more central actors for industry acceptance (Hoogstraaten et al., 2020). In particular, the transition to a greater use of will require government intervention to support experimentation and learning and influence powerful actors and steer long term change in behaviours.

7. Conclusion

The purpose of the conclusion was to provide an overview of the aim and its associated findings, the theoretical and practical contribution of this study, the limitations to the research and specify areas for future research.

This research sought to investigate the slow adoption and implementation of collaborative forms of contract like NEC in the Australian construction industry and to explore what is required to enhance the institutional environment for change for further implementation of NEC. The thesis used semi-structured interviews to answer the purpose and employed an institutional theory approach to examine and interpret the findings to four research questions.

7.1 Answer to Research Questions

Research Question 1

Firstly, the research explored the institutional factors embedded in traditional procurement in Australia that motivate the need for institutional change. The findings were separated into economic factors, knowledge-based factors and cultural factors and included the engrained adversarial and machoism working culture and relationship between the client and the contractor, onerous risk allocation and change provisions, amendment of current outdated standard form contracts by the client/owner, unwillingness to change, skill shortage in contract and risk management, poor scope documentation, price competitive tendering and lack of commercial knowledge and experience in the industry. Taken for granted regulations, norms and attitude in the industry have become part of the institution of the construction industry but they are impeding efficiency and productivity improvements.

Research Question 2

Secondly, the research highlighted the perceived role and contribution of the NEC in Australia in developing the institutional practice of collaboration in contractual practices. NEC contracts have proven to be a positive change and a way forward to improve various challenges the industry face and respond to the demands for collaborative procurement methods. In particular, it provides several advantages compared to traditional forms of contract including risk management, change management and project management. However, implementation remains low across public and private sectors of the industry where a key issue is the embedded attitudes to amendments, including how currently most NEC contracts have involved contractual amendment. Theorisation is needed to increase the acceptance of NEC and create rationales for new practices to be adopted.

Research Question 3

The research identified the institutional barriers to change where two central institutional actors were identified as the main barriers to NEC adoption in Australia, including the government and public sector organisations and the legal profession. Other barriers to implementing new procurement initiatives include the limited number of trained professionals and the culture and mindset in the industry. The barriers that confront NEC are too complex for just a specific industry, person, agency, or organisation to tackle. Rather every cornerstone of the industry needs to work together to encourage, support and share resources, expertise,

and knowledge to accelerate the adoption of NEC and the value it can bring to an industry plagued with issues from their current traditional procurement approaches.

Research Question 4

Lastly, the research also identified the role of institutional entrepreneurs in the development of new contractual forms in Australia and effective strategies they used. Two key types of institutional entrepreneurs included peripheral and central actors in the Australian construction market. Peripheral entrepreneurs, who are least subject to isomorphism pressure, were identified for their role and influence to driving NEC adoption in Australia. These actors include ICE and APCC. Using a top-down view of institutional change, client organisations and government are identified as central actors to drive the radical development and legitimisation of NEC. Current implementation of NEC in Australia has been driven through a bottom-up, evolutionary process of peripheral actors (e.g., consultants, NEC organisation) and institutional entrepreneurs like Sydney Water, and therefore to increase the pace and scale to collaborative procurement like NEC requires central actors to drive an increased consensus amongst the industry.

7.2 Limitations

One limitation of the study is that it is geographically limited to Australia and the institutional context of the Australian construction industry. This may limit the generalizability of the results to other institutional contexts. Only one or two key individuals per discipline were interviewed and therefore it may be suggested that the research has a degree of subjective opinion. The exploratory nature of the research using qualitative methods may not have provided a full reflection of the industry and a follow up using a quantitative method to get statistical data of industry perceptions may have been useful. These limitations could be addressed in future research.

7.3 Future Research

Future research may strengthen or challenge the results of the findings, where the sample size of respondents is increased as well as focus on a specific perspective or sector in the industry or state within Australia. The nature of change within the construction industry will benefit from further research that explores how new practice is embedded into existing practice. An extension would be to perform follow up interviews with those in Sydney Water to gather a full overview of its implementation and the benefits of using NEC to their business. Further studies are recommended to compare the institutional contexts in the Australian construction industry to HK and UK and how this impacts the adoption of collaborative standard forms. The risk adverse contracting models adopted by owners and government agencies are causing significant disputes but clear data of the benefits of NEC in Australia are not shown to convince others of uptake of the new form, thereby further research is required on this front. The current educational system in Australia should be investigated and compared to the UK for its effectiveness in educating for procurement, contract administration, risk management and project management.

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