International Best Practice in Tender Price Evaluation

March 2022

NEW ZEALAND INFRASTRUCTURE COMMISSION Te Waihanga

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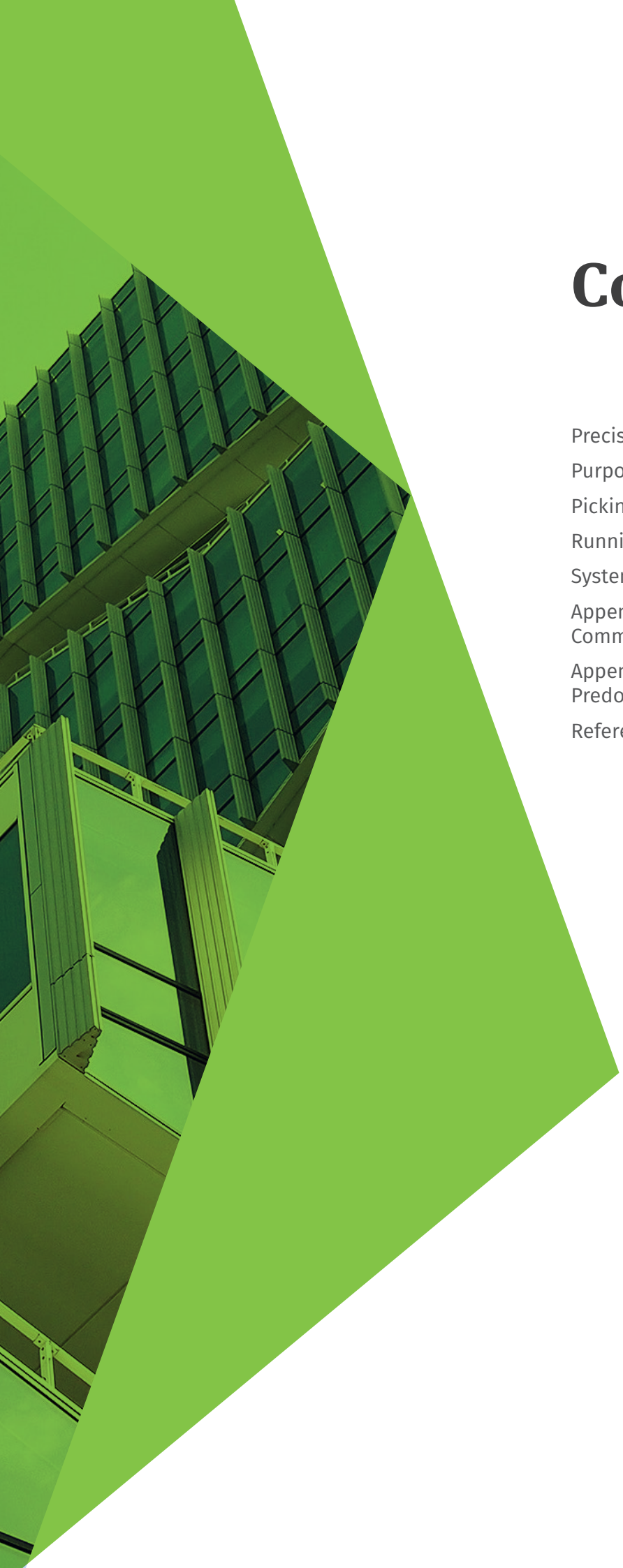

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Precis

An important principle of Government procurement is to obtain the best public value for the taxpayer's investment, accounting for all the costs and benefits over the lifetime of the goods or services being procured.

Unfortunately, in seeking to maximise value, contractor tender prices have, over many years, become more often the sole determinant in the selection of bids for construction works. In recent times there has been broad recognition, both in New Zealand and across the globe, that this focus on price alone does not produce the best outcome and that without understanding all elements of the tender, price in and of itself is a tool of limited value[1]. This desire to move towards greater consideration of elements outside of direct price requires a renewed focus on how we define, communicate, and evaluate price across the course of the procurement process.

We recognise the challenge of maintaining confidence and transparency in awarding tenders, especially in the case of justifying the selection of a tender, with a higher price. This document sets out our research into the various practices for price evaluation, identifying associated strengths and weaknesses, and providing a view on "best practice" opportunities applicable in NZ to help guide practitioners and senior decision makers.

In the search for 'best practice' in construction price evaluation we reviewed industry guidance in eight international jurisdictions. We then interviewed procurement agencies and practitioners across these jurisdictions and within NZ to establish how effectively guidance translates to practical benefits. We wanted to know answers to some key questions: How is price assessed? What is price defined as including? And what conversations are you having with the market to get price definition and assessment right?

What we found was that while there has indeed been a notable shift away from price centric evaluation approaches (with positive market outcomes), this shift has not always been consistent either in application or effect. Methods used for price evaluation are, in some cases, still resulting in tender price being the key determining factor and agency views on overall project price definition are inconsistent or unclear. Moreover, price procurement does not always appropriately consider risk, whole of life costs, or newly introduced non-price elements such as broader outcomes.

We also found that NZ procurement is not in a unique situation with these issues and that while we can learn from overseas experience, there are also areas of best practice already occurring in pockets of the NZ market.

The majority of this report's recommendations are aimed at government procurement agencies. These agencies make up only a fifth of the construction spend in NZ, but they take a lead in setting procurement standards adopted widely in the industry. Improvements in public procurement practice will significantly impact behaviour across the sector as a whole.

1 – Singer, L. S. (2018). Creating Value Through Procurement: A Report into Public Sector Procurement of Major Infrastructure Projects. Entwine.

Purpose & Approach

PURPOSE

The purpose of this report is to summarise our research and recommendations regarding international best practice in tender evaluation, and the role and influence of price in determining tender outcomes in public sector construction procurement. We hope these lessons help guide practitioners in designing tender processes that allow them to effectively evaluate public value and lead to better procurement outcomes.

The report is broken into 3 sections:

Picking the Right Evaluation Method

This section looks at the common methods of tender evaluation, identifies areas of best practice, and outlines recommendations for adoption by NZ agencies.

Running a Good Process

Here we look at the interrelated components that need to be considered for any price evaluation method (or indeed procurement model) to be effective:

- **Price definition:** not all factors we currently consider non-price (or at least non-quantifiable), need to be so. We looked at how others have attempted to broaden the definition of price to consider project risk, whole of life impacts, and broader outcomes.
- **Evaluation team:** good processes rely on skilled practitioners. Some jurisdictions address this via a more centralised approach to evaluation and internal capacity building. We identified some simple steps which may assist agencies in this area.
- **Market:** engagement with the market throughout the procurement process is key; we looked at how this affects price definition, effective pre-evaluation, and market participation.

System Level Improvements

Over the course of our research we identified several potential opportunities at the agency, sector, or all of government level which, if adopted, could provide benefits to NZ public sector construction procurement performance.

While the report does not directly consider the issue or impact of procurement or contract model selection on price evaluation (this area is already well covered elsewhere), our recommendations can be taken as generally applicable to all models. Indeed, the key issue of ***defining what price is***, is a fundamental step in procurement or contract model selection.

APPROACH

When considering where to look to for 'best practice' in procurement internationally we kept in mind that ultimately, any lessons learned needed to be practically applicable in the NZ context. Procurement practices in areas with dramatically different environments are less likely to yield relevant lessons for NZ, and so we wanted to focus on those jurisdictions with some similarities.

A key factor we considered in jurisdiction selection was that NZ government spending in the construction market is concentrated both in regard to sector focus and in terms of procuring agencies. The majority of works in the housing, transport, education, and defence sectors are procured via a small number of crown agencies. The currently regionalised sectors of water, health, and community are also dominated by a small number of LGA's and DHB's[2].

Based on this criterion we narrowed our study focus to eight jurisdictions: Australia, Singapore, United States, United Kingdom, Taiwan, Canada, European Union, Japan, and South Korea. For countries with multiple tiers of governance we looked at those states or territories with the most applicable and contemporary guidance.

2 – It is worth noting that this situation, along with current policy shifts to greater agency aggregation, creates an opportunity for these dominate agencies to visibly lead the way in best practice procurement.

For each of these jurisdictions we looked at the available Government and infrastructure advisory body guidance, legislation, and research papers as related to tender evaluation methodology and price in procurement. Examples of these include the Latham and Egan reports published in the UK, which tend to provide ready to use in-depth analysis of the issues and potential solutions.

A key finding at this stage, which was not unsurprising, was that much of the international guidance was similar to that already in use in NZ. As such when reviewing the documentation, we focused on areas of differentiation which might bring incremental improvement.

Once we had established a 'desktop' view on international and domestic guidance we commenced a series of practitioner interviews with the aim of identifying the reality on the ground. In total, over 50 practitioner interviews were conducted with agencies, contractors, and procurement professionals.

Most interviewees were comfortable sharing details of their experience and organisations approach to price elements of procurement. It was noted that this was a sensitive issue for some, often more so for government agency representatives, and as such our research has some knowledge gaps.

Interview questions were informed by both the literature review, our market knowledge, and the role of the interviewee. These questions only served as prompts, the focus was on generating an organic conversation between the international practitioner and our own practitioners in attendance.

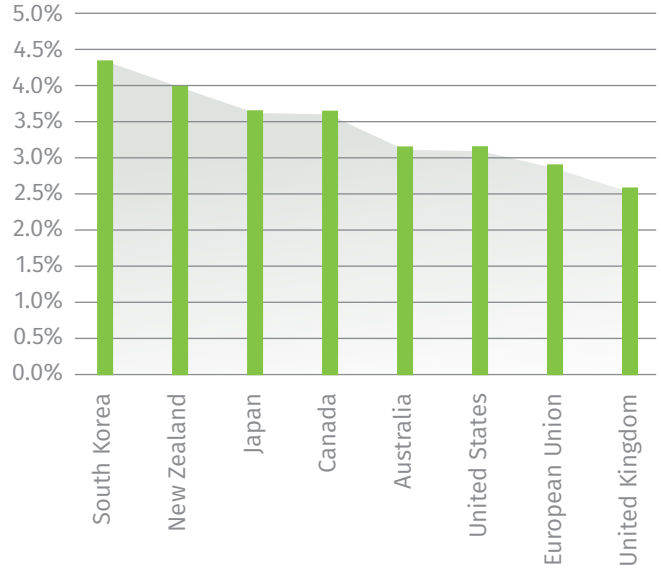
Key focus areas for the interviews were price assessment, definition, and market engagement. We were keen to identify where market practice differed from published guidance and how they regarded the current market environment (healthy or otherwise).

Interviews with NZ based SME's also focused on feedback as it related to the practical application of international practice to the NZ context.

Apart from the specific findings outlined, the review process also revealed that issues associated price evaluation, on which this report is focused, are not unique to NZ and that guidance alone will not be effective in transforming agency approaches.

The key determinant of success is effective and consistent implementation that is clearly visible to the market.

Goverment Infrastructure Procurement
Gross Fixed Capital Formation % of GDP, 2015



Size of Goverment
Tax Revenue as % of GDP, 2010-2019

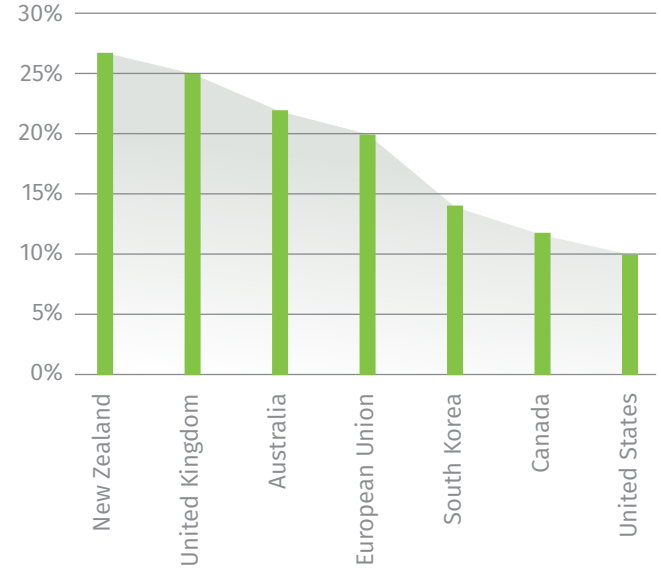


Figure 1: Public Sector Infrastructure and Figure 2: Tax Revenue to GDP.
Source: OECD.

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Picking the Right Evaluation Method

Government procuring agencies have an explicit responsibility to deliver good value to the taxpayer on their projects, but they also have an implicit responsibility to foster and grow a healthy market over the long term. The tender evaluation method chosen by an agency sends a strong signal to the market about their desired approach to achieving these objectives.

Our research found that the types of models used for price assessment were reasonably consistent across all the jurisdictions examined. What varied was the extent to which a model (or method) was prescribed and how specific the guidance was.

In Australia[3], the UK[4] and EU[5], guidance generally allows flexibility to identify the most appropriate model to evaluate tenders. This included the freedom to select the model type, formulas, criteria, and weightings. In some instances, example approaches were provided within guidance, but these were rarely prescribed. This 'guide rather than prescribe' approach extended to most other factors we have considered in this report (risk pricing, whole of life costs, and broader outcomes).

In California[6] and Canada[7], guidance was particularly light on detail and, in some cases, unclear and contradictory in regard to appropriate model selection. At the other end of the spectrum Singapore provided detailed and highly prescriptive guidance, with little room for deviation beyond adjusting weightings within prescribed ranges.

Current NZ guidance[8] and practice are most similar to the UK and Australia, providing a degree of detail but not seeking to prescribe. While any chosen method does have to comply with the rules of procurement, these rules are focused on transparency and accountability, and not on appropriate model selection.

In practice we found that most NZ agencies tend to only use an overtly price centric model (i.e. Lowest Price Conforming) for what they consider very low complexity projects. For higher complexity projects, the norm is to attempt to give weighting to the impact of non-price attributes (generally via the Weighted Attributes Model).

This is shown in Appendix II which summarises the typical evaluation methods among NZ agencies interviewed. This is broadly in line with observed international practice.

3 – NSW Government. (2021). Procurement Policy Framework. Sydney.
4 – Government Commercial Function. (2020). Bid Evaluation Guidance Note. London: HM Government.
5 – European Commission. (2018). Public Procurement Guidance for Practitioners.
6 – Taylor, M. (2017). An Evaluation of Best Value Procurement Pilot Programs. Legislative Analysts Office California.
7 – Public Works and Government Services Canada. (2021). Supply Manual. Ottawa: Government of Canada.
8 – Ministry of Economic Development. (2011). Mastering Procurement: A Structured Approach to Strategic Procurement. Wellington.

PRICE-QUALITY METHOD

The simple exercise of considering what an agency is willing to pay (in real dollar terms) for one contractor's offer over another is possibly the most valuable step in a procurement process. This can and should be done in conjunction with any method of evaluation, however, there are some methods that encourage this more than others.

The Price-Quality Method (PQM)[9] uses a weighted attribute as its base approach, with the modification that non-price scores in excess of the lowest scoring bid are converted to a dollar figure – the Supplier Quality Premium (SQP). The SQP represents the amount a procurer is willing to pay for a higher quality tenderer. This method is used in NZ by Waka Kotahi.

Methodology

Pre-tender, the Project Manager should run sensitivities on the non-price attributes and price to sense-check the SQP for non-price score differentials. If the SQP is determined to be too high/low, the weighting distribution should be revised to obtain an appropriate SQP.

The base estimate must be included in the request for tender to ensure the evaluation process is transparent.

Under the Waka Kotahi model, a further SQP 'sanity check' is performed following evaluation of the non-price attributes, but prior to review of the submitted prices, by the evaluation panel to satisfy itself that the resulting premiums are reasonable.

While the non-price scores themselves cannot be adjusted, the SQP can be replaced with an adjusted value, with clear written justification.

The below example shows the PQM calculation for contract works with a base estimate of $1M.

In this case Tender A has the lowest adjusted evaluation price and would be the preferred Tender.

Non-Price Attribute	Weighting	Tender A	Tender B	Tender C
Methodology	20%	85	90	70
Relevant Experience	10%	80	85	60
Relevant Skills	10%	75	85	60
NPA weighted sum		32.5	34.5	26
60	**Price %**			
NPA weighted sum margin (weighted sum minus lowest scoring weighted sum)		6.5	8.5	0
Supplier Quality Premium (SQP) (base estimate multiplied by ratio of NPA weighted sum margin to price weighting)		($1M x 6.5/60) $ 108,333	($1M x 8.5/60) $ 141,667	$ -
Tender Price		$ 925,000	$ 985,000	$ 870,000
Adjusted Evaluation Price		**$ 816,667**	**$ 843,333**	**$ 870,000**

9 – Note that while Singapore utilises a method labelled Price-Quality Method, this is in fact functionally the same as a weighted attributes method, not the PQM method used by NZTA.

The Waka Kotahi method also allows the use of an Alternative Tender Premium (ATP) for any aspect of a tender that differs from the RFx documents. For example, where a tenderer proposes an alternative product, the ATP allows the evaluation panel to convert that into a monetary figure for consideration.

The benefit of this method is that it compels procuring teams to carefully consider what price they are willing to pay for extra quality, and for tenderers that offer higher spec products or propose significant risk reduction in proposed methodology. This however requires a more detailed consideration of the attribute weightings to ensure proposed benefits are given an accurate premium in the evaluation. Allowing the SQP to be altered following non-price evaluation also introduces a probity risk, which needs to be managed by an experienced evaluation panel and strong team leader.

The PQM model does require more upfront consideration of the attribute weightings compared to the Weighted Attribute Model and is more suited to projects where innovation is encouraged and can be explicitly assessed against the project criteria.

This may explain why the method is more commonly used by Waka Kotahi and less so by agencies who are more focused in higher volume but generally lower complexity project procurement.

Recommendation: Price-Quality Method

It is recommended that:

1. Agencies incorporate Price Quality Method as a procurement method option particularly where the agency anticipates significant value-add or alternative solutions may be offered by the tenderers.
2. Consideration given by MBIE to amending relevant guidance to include the Price Quality Method as a recommended option. The guidance should emphasise the importance of sensitivity testing and sense-checking of the weighting's distribution and SQPs, and provide clear direction on when and how SQPs can be substituted for adjusted values following non-price evaluation.

WEIGHTED ATTRIBUTES METHOD

Pricing behaviour is not always conducive to a healthy market. Competitive tension introduces pressure on contractors to reduce their tender price. This can help to drive cost-saving innovations and getting good value for public money. However, it can also lead to negative outcomes, such as a contractor taking on excessive risk that is unsustainable, or vigorously pursuing variations once in contract to make up for underpriced items. A balance needs to be struck to achieve a more sustainable market while maintaining some price tension, and this may be achieved through adjustments to the evaluation method – the most commonly used is the Weighted Attributes Model.

The Weighted Attributes Method (WAM) was the most commonly observed method in NZ, the UK and Australia. WAM see tenders assessed on both price and non-price criteria with each having a weighting (out of 100%) assigned. It benefits from being a relatively straightforward process to follow, whilst allowing additional focus on the non-price attributes of a tender and robustness of the evaluation process, relative to Lowest Price Conforming (LPC).

While WAM is a more balanced approach than LPC, in that it shifts the dial away from price, there are some interrelated factors to be considered.

Non-price Score Signalling

While non-price criteria sectioning approaches do vary, below is an example of a typical criteria breakdown and weighting (assuming a 30% price weighting):

- Proposed Team Capability – 20%
- Organisational Experience – 20%
- Project Methodology and Program – 20%
- Broader outcomes – 10%

In this example it can be seen that while the sum of non-price criteria is 70%, the individual non-price elements have a lower weighting than price at 30%. This structure sends a signal to the market that price is still going to be the most valued single factor.

Our interviewees noted this effect, with the general consensus being that where price is given a weighting higher than 25-30%, price will typically be the deciding factor. Interviewees also noted that this likelihood is known to Contractors and as such their focus on non-price criteria is reduced.

Score Clustering

Score clustering is where non price elements for multiple tenderers obtain a similar score leading to even a low percentage price weighting being the determining factor. This effect has a few possible causes.

1. **Scoring Scale** — a common example is a scale of 1 – 10 where anything below a 5 or 6, even on one category, is considered non-compliant /below standard. In practice this means most bids will have scores of at least 6, effectively halving the score range. Likewise, scores higher than 8 are generally reserved for exceptional bids, and it can be hard to justify these scores, further limiting the effective range of scores available to assign.
2. **Evaluator Competence & Guidance** — much of the differentiation in bids can come from nuance and reading between the lines, something which someone with more expertise and experience is better able to do. When lacking this experience, it can be difficult to differentiate between bids and so scores assigned tend to be similar. It is noted that

this can be especially challenging on larger projects where contractors have specialist teams creating bids of very high presentation quality.

3. **Response Format** — response criteria often request information in a format which limits the ability to differentiate bids. A common example would be asking for three projects as evidence of past experience rather than asking for all projects in a set period which might better reveal true recent experience. Another example would be the sub-sub-division of criteria leading to evaluators needing to score elements separately that should be considered as a whole.
4. **Generic Criteria** — responses sometimes include criteria for undefined or binary criteria, meaning evaluation is generally quite uniform. This can include health and safety, broader outcomes, and sustainability.

It has been noted in interviews that in busy, healthy markets, such as education and housing, it can be expected that non-price scores for mature contractors will start to converge. This is not a bad outcome. Having a range of genuinely high-quality bidders to select from is a sign of a well-functioning market. In such a case, selecting with more of a price bias is unlikely to result in bad outcomes from the project as long as past performance is properly considered.

How the Price Component is Scored

In NZ the method of price scoring for WAM is varied (and not always revealed). Some methods had the scoring of price based on the deviation from lowest price while others used the deviation from the average of submission or a target price. The example below shows the different effects of these approaches:

	Weighting/Value	Tender A	Tender B	Tender C
Non-Price Attribute	70%	90%	65%	65%
NPA weighted score		**63.0**	**45.5**	**45.5**
Price Submission	30%	$120,000	$110,000	$70,000
Average Price Score (Average price = 50% of available price score)	$103,333 = 15	**12.0** (20% unfavourable deviation)	**13.5** (13.5% unfavourable deviation)	**19.5** (30% favourable deviation)
PA + NPA score		**75.0**	59.0	65.0
Target Price Score (Target price = 50% of available price score)	$110,000 = 15	**13.6** (9% unfavourable deviation)	**15.0** (no deviation)	**20.5** (36% favourable deviation)
PA + NPA score		**76.6**	60.5	66.0
Lowest Price Score (Lowest price = 100% of available price score)	$70,000 = 30	**8.6** (71% unfavourable deviation)	**12.9** (57% unfavourable deviation)	**30.0** (no deviation)
PA + NPA score		74.0	62.9	75.5[12]

11 – Calculation source: CCC 'Price as a Score Evaluation.xlsx' note that lowest price score calculations vary between agencies.

As can be seen in the example above when there is a large price range, and the lowest price is used as the point of deviation, this can lead to some unanticipated outcomes which can be further exacerbated if there is an unexpectedly low offer.

In Singapore, price is mandated to be scored based on deviation from the average of submitted prices, rather than the lowest. This helps to prevent an unreasonably low pricing winning the bid. In addition, price scores are capped at 20% below the average, meaning that no bid is rewarded for being more than 20% below the average price.

A similar mechanism is seen in the UK and in some NZ agencies[12], however rather than capping the score, it is typically used as a trigger for further investigation into the price. The price is not excluded from the bidding process, but further due diligence is conducted to ensure the tenderer has correctly priced the scope and isn't taking on unreasonable risk.

Feedback from our interviews has been that a 20% deviation in submitted prices is a very high deviation that will capture instances of highly unusual pricing or a poorly defined scope. A cap closer to 10% was generally agreed as a more appropriate level.

In summary the Weighted attributes model can be a good model if the basics are done right; the right weightings for scale and complexity, and properly thought through qualitative criteria with clear guidance to the evaluation team on what good practice looks like. These settings should be tested prior to tender release to make sure the desired outcome will be achieved.

Making the evaluation method (including calculation), transparent and clear to the market is also important as it engenders confidence in the fairness of the process.

Recommendations: Update Guidance on Weightened Attributes Method

It is recommended that Agencies:

1. Review and perform sensitivity checks on non-price criteria looking at both weight and criteria definition. Reviews should include consideration of evaluator competence and project knowledge.
2. Consider scoring price based on the deviation from either;

   a) the average of the submitted prices; or

   b) the PQS price estimate.
3. Consider the use of a deviation cap of, for example +/- 10% (from the average or the PQS estimate) outside of which the following occurs;

   a) a query mechanism is implemented to ensure the price offer is sustainable (as defined by the agency at the outset), is a genuine cost-saving innovation, and if it is to be included (and how) in further assessment.

   b) the price score is limited to the cap range (i.e. when using a price cap of +/- 10% and receiving an offer of -20% the price is scored as if it was -10%)
4. Set the maximum price weighting at 30% to avoid price being the determining factor.

It is noted that in many cases these adjustments will have little to no impact on the price assessment, this is particularly true in market segments in which projects are relatively well defined and understood by participating contractors.

These changes will help address incongruities that occur at the margins and (importantly, as noted elsewhere), send a signal to the market that non-price items are a genuine priority.

12 – Waka Kotahi NZ Transport Agency. (2020). Contract Procedures Manual (SM01): Procurement Strategy and Methods.

LOWEST PRICE CONFORMING METHODS

Lowest Price Conforming (LPC) sends a strong signal to the market that price is of sole importance, and that anything beyond the minimum requirement is of no value. In certain circumstances, this is appropriate. Projects which are small in scale, low in complexity, and which have a very well-defined scope can be successfully procured under an LPC model. Beyond this, issues quickly arise.

Unlike WAM or PQM, LPC methods focus solely on assessing the price of compliant tenders. To use this method successfully, it requires that binary pass/fail criteria be set up to ensure that the desired project outcomes will be achieved by any tender that meets the criteria (i.e. is compliant). This can be difficult to achieve on projects of any complexity, as there are usually unknowns that cannot be planned for.

Given these difficulties, LPC methods are constrained to small scale, low complexity projects with a well-defined scope. This has been most commonly observed on road maintenance contracts in NZ[13] and Australia[14], where they do achieve good project outcomes. These projects tend to be high volume with similar project scopes, with the associated risks well understood and mitigants well developed.

We have also seen some NZ agencies using LPC for panel engagements, this can be effective and reduce tender costs for all parties, but can also result in tenderers underbidding and taking on too much work.

LPC methods are also commonly used in North America, where the focus is on designing requirements rather than assessing for non-price criteria. However, US studies have found that using a weighted attribute type approach, or "best value" approach, improves price certainty and lowers the volume of contract disputes.[15]

The LPC method enhances competitive tension. When combined with a poorly defined scope or incomplete design, this tension generally leads to inaccurate and volatile pricing and tenderers relying on Variation Claims to recover or enhance margin. Tenderers are compelled to fill in the gaps, and competitive tension within a price focused procurement will often lead to the use of lowest cost materials and labour.

Recommendation: Limit use of LPC

It is recommended that:

1. Agencies use of LPC methods be limited to procurement activities where the scope is fully and clearly defined, and the risks are readily manageable thereby ensuring an acceptable outcome is achievable. This is consistent with domestic and international best practice.

13 – Interviews with New Zealand based procurement practitioners, April 2021.
14 – Interviews with Australian based procurement practitioners, April 2021.
15 – Taylor, M. (2017). An Evaluation of Best Value Procurement Pilot Programs. Legislative Analysts Office California.

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Running a Good Process

GETTING PRICE DEFINITION RIGHT

Across the construction industry there is significant inconsistency in how price is defined and by extension, managed. What is clear is that the price written into the construction contract is very rarely the best indicator of a project's value or it's actual outturn cost. A true definition of price needs to consider project risk, whole of life impacts, market conditions, and any desired broader outcomes.

Our research found that there are common themes across all international guidance reviewed, although approaches to dealing with these themes do differ.

- In many developed Asian countries, particularly Singapore and Korea[16], there is a focus on obtaining a fixed price risk inclusive lump sum contract, with an expectation of minimal or no cost adjustments after the contract has been awarded. To this end, mechanisms are put in place to ensure that the procurement process results in a price that is likely sufficient to ensure no cost adjustments are required (at least no adjustments that impact the client).
- In the US[17] and Canada[18], the approach adopted is similar to that of Singapore, albeit with a slightly reduced emphasis on transparency, varying by state. The focus is on obtaining client price certainty, with an emphasis on competition and allowing the market to price requirements and most of the risk.
- In the EU[19] and the UK[20], the approach is considerably more flexible, with less direct focus on achieving a fixed price lump sum. However, there is still a focus on achieving a realistic price through the procurement process. It is here that risk, whole of life cost, and broader outcomes are more directly addressed. The UK and EU have more of a focus on bi-directional risk transfer, i.e. the procuring agency deliberately choosing to retain some risk.

There is always a temptation to treat the tender price as a fixed price tag. The reality is that tender price is rarely the best indicator of what the final cost will be. The degree to which an agency can rely on the submitted tender price depends on:

1. **Project complexity**
   - A less complex project means suppliers are better able to price the job with certainty, and so the submitted price will be more reliable.
   - Complexity is a function of project scope, timeframe, cost, and quality needs. As any of these factors increase, the project complexity can be considered to increase, though it is not an exact or uniform relationship, particularly with cost.
2. **What price elements or factors have been included**
   - Risk allocation and evaluation will determine the risk adjusted price. If risk is kept by the client, then the submitted price is not the full and final project cost as it doesn't capture all factors. Procurers must keep in mind any risks

16 – Interview with Singapore based procurement practitioner, April 2021.
17 – New York State. (2014). New York State Procurement Guidelines. New York.
18 – Public Works and Government Services Canada. (2021). Supply Manual. Ottawa.
19 – European Commission. (2018). Public Procurement Guidance for Practitioners.
20 – Cabinet Office. (2020). The Construction Playbook. London: HM Government.

they have retained, and therefore the supplier won't have priced. Refer to the section on Risk Pricing for discussion on risk allocation between client and contractor.

- Whole of Life costs are significant costs of ownership but can be challenging to manage when the focus is on the initial capital spend budget, however, considering them is important in understanding the true cost of the project to the public.
- Broader outcomes are generally a benefit to society. Public procurement is unique in that this benefit can be valued when making investment decisions and the project budget adjusted to include this. Where broader outcome benefits have not been valued, then the tender evaluation will fail to account for this.

3. Market conditions and competitive tension

- Market conditions will determine the extent to which suppliers are willing to bid unsustainably low in order to secure work. If market conditions are tight for suppliers, then procurers need to be aware that this will drive low bids. Procurers can still take advantage of these conditions to get a good deal, but this should be balanced against potential risks of project disruption if a supplier isn't able to deliver, and public procurers' longterm benefit in a healthy construction market.
- The competitive tension achieved within the procurement process has a similar impact to market conditions. The easing of price-competitive tension, by redirecting focus to non-price factors, can lead to a better outcome, but also to cost increases.

Confidence in the reliability of the tenderer and price can increase through active market engagement. When done in the form of a pre-qualification mechanism, supplier options can be narrowed down to those best able to successfully deliver the project. This removes some risk from the evaluation process itself, but significant benefit is achieved from engaging with the market to ensure the scope is clearly communicated and all bidders are pricing the same thing.

Recommendations: Clearly Define Price

A move to improve price definition and transparency should help not only in achieving clarity (to all parties) on expected project outcomes but also provoke inquiry into misaligned organisational behaviours or structures (e.g. the disconnect between opex and capex funding).

It is recommended that:

1. Agencies clearly define (and communicate to the market) what price means to them, what elements it comprises, which of those elements they expect to be reflected in submitted tender prices, and which they expect to incur and manage separately.

RISK PRICING

Risk assessment and allocation is a major consideration in good procurement. Issues experienced during the construction phase often have their roots in poor risk identification and allocation, a factor that has largely arisen from the procurement process that has been carried out. To remedy this, public sector agencies must perform a step change in their approach to risk consideration and must take a deliberate and transparent approach to risk.

Risk is generally treated through processes separate from the price or tender evaluation, such as conducting risk management exercises prior to tender, or setting a risk management plan as a requirement. This also includes formal and informal approaches to adjusting non-price scores in line with identified risks.

In Australia[21], the tendency is toward shifting risk to the contractors, but this is a deliberate approach which treats risk explicitly. Specific risks are identified, and bidders are told which risks they are expected to shoulder, and which will remain with the client. Clients obtain estimates for all risks, and bidders are asked to provide their own price for those risks. So, while risk is transferred to the market, the process is very deliberate in the treatment of risk and contractors are compensated for the risks they bear.

The approach to risk in price evaluation in NZ[22] is not consistent across agencies, something confirmed by both our research and by contractor feedback[23]. The most common approaches to addressing and managing risk are indirect, or achieved through pre and post evaluation mechanisms. The use of supply panels or two stage procurements are the main form of indirect risk management.

Recommendations: Risk Pricing

Agencies should place a strong emphasis on the role of risk assessments within the procurement process. The most important factor is to have risk assessments as a discrete, specific step within the procurement process that compels all parties to consider risk.

Exact mechanisms for achieving this should be evaluated on their merits, but it should be noted that regardless of which mechanism is chosen, simply having the conversation is inherently valuable. When developing a mechanism, we recommend the following factors be considered:

1. Risk cost estimates should be included as separate line items, rather than bundled with other costs. This will allow a more transparent consideration of risk, which will benefit both parties.
2. Tenderers should provide a schedule of their view on incomplete scope items, thus improving the probability that these ambiguous packages are allowed for and are not the cause of conflict during the construction period.
3. Client-side estimates should be formulated as ranges, not values, compelling the consideration of the uncertainty of risk. This avoids creating the illusion of exactness and highlights the ambiguity of risk assessments.
4. Risks and how best to manage them should be considered in the pre-procurement phase and should influence decisions around how and when to engage with the industry. This also requires sufficient time allowance for meaningful market engagement.

21 – Roads Australia. (2020). Procurement Reform Report: Recommendations & Strategies. Melbourne.
22 – Most organisations will undertake risk identification and management in accordance with ISO 31000. But that does not extend to how you assign and manage in contracts.
23 – Interviews with New Zealand based procurement practitioners, April 2021.

Contractors noted that they do not see many procuring agencies in NZ taking a mature approach to risk, which can complicate the process. In particular, they perceive there is an agency assumption that there is no actual cost, or cost premium, to managing risk and therefore, it isn't an issue that needs to be considered in the price evaluation.

Issues arise where risks are not identified and valued explicitly, as it leaves considerable ambiguity as to where the responsibility lies. It also means that it is difficult to identify whether a risk has been priced in, meaning it is unclear from the client's perspective whether unsustainable risk is being taken on by the contractor. This relates back to our findings on Getting Price Definition Right.

A lack of explicit treatment of risk premia means there is incentive to use tags, exclusions, or provisional sums to achieve a lower offer price. This often won't be picked up until a tenderer is at the "preferred contractor" stage, or alternatively the contractor may intend to rely on variations during the process to make up the shortfall.

When treating risk as a separate, distinguishable cost, it compels both the procuring agency and the contractor to consider risk and can prevent assumptions from going unquestioned. This also introduces transparency and consistency into the process, particularly where a quantitative method is used.

To assist in achieving this, project risks need to be considered at the business case stage, when decisions can be made around the contracting approach and the extent of early engagement with the market to best identify, quantify, and allocate project risks.

In particular, there needs to be acknowledgement that risks are inherently uncertain and not all will be identified at the time of tender.

Organisations need to be able to understand that contingency sums are *contingent* on risks occurring.

In terms of quantitative approaches to risk, the typical approach is a deterministic model. This includes the use of fixed percentage contingencies and single dollar value estimates. The use of probabilistic models is allowed for by some agencies in broader risk management frameworks, but rarely used as part of the procurement itself. The reasons for this are:

- Complexity of approach – there is a general lack of understanding of probabilistic models within agencies. This can be managed by leveraging the expertise of external consultants engaged on the project (such as the QS) for risk quantification and analysis
- Potential for results in the form of percentiles to be interpreted as precise estimates – this is linked to the lack of understanding of these models. Risks should be explicitly expressed as ranges rather than exact values which compels consideration of uncertainty
- Time needed to execute – risks require early and ongoing consideration from the business case stage to ensure the results accurately reflect the risk profile of the project
- Need for a good data set to produce reliable results – data collection for the most common risks could be collated in a relatively short timeframe, and in time a growing data set will be able to better inform less common, more complex risks

In any instance that a risk model of any form is used, it must be used within a wider risk management framework that incorporates professional judgement. A value produced by a risk model must never be taken as given and must always be sense checked by those involved in the delivery of the project. This is another factor contributing to the benefit of a collaborative approach.

Recommendations: Probabilistic Risk Modelling

Agencies utilising probabilistic methods for risk quantification should do so with some caution. It is recommended that where agencies wish to utilise probabilistic risk modelling, they consider:

1. Agency Competency - Where competency in developing and understanding probabilistic modelling is not present within the procuring agency, this should be included within the services of external consultants assisting the price evaluation.
2. Data set reliability – Consider if reliable data sets are available and the ways in which they can be developed and maintained.

WORK WITH THE MARKET ON RISK

A collaborative approach to risk has two primary benefits. First, it allows the procuring agency to draw on the expertise of the tenderers to get a more advanced understanding of risks associated with the project. Second, it reduces the pressure on tenderers to price risks in an unsustainable way and gives bidders a chance to substantiate their allowances, rather than simply being compared on their risk price.

Client understanding of risk is often limited to their perspective. Often the expectation is that risk can be shifted to the contractor with little or no cost implications or a fear that collaboration equates to a loss of competitive tension. This results in benefits not being realised and reinforces the belief that collaboration will not best achieve project outcomes.

Because there is often ambiguity around where some risks sit, it may not be apparent that a client organisation needs to retain contingency. Nor is it apparent when a contractor may have taken on more risk than is sustainable, and the client may still need to keep some contingency.

The bidding suppliers naturally have expertise in delivery and the risks associated. Even where a risk is best retained by the client, how this is managed and valued can be informed by the contractor's expertise. Drawing on this can help to rectify the generally poor risk understanding within client organisations.

Where a more dialogue-based approach has been used, the expectations around risk allocation can be better defined and worked through with suppliers.

Early Contractor Involvement (ECI), Design & Construct (D&C) and Alliance models are more conducive to a collaborative approach to risk and, as a result, are also better suited to risk transfer.

A part of this is the longer lead in time, which allows for a more in-depth approach to risk. Replicating this collaborative approach at an appropriate scale on other procurement types could help to reproduce those benefits.

Suppliers tend to adapt their approach to match their client. This depends on having a working history with the client to enable an understanding of how they approach risk and their level of maturity. A more standardised approach to risk could help contractors achieve a greater level of consistency and also provide certainty when tendering for projects. This is more achievable in public sector procurement with an ongoing pipeline of works and established supplier panels.

Procuring agencies must keep in mind the potential for conflicts of interest, and so robust and independent mechanisms need to be in place to take advantage of supplier expertise whilst maintaining price tension.

A balance must be struck between competitive tension and more accurate risk pricing. Competitive tension can lead to bidders submitting tenders with unsustainably low allowances for risk. Completely removing this competitive tension will naturally lead to cost inflation in risk premia. A balance must be struck to maintain price discipline while achieving a sustainable risk allocation.

Recommendations: Work with the Market on Risk

It is recommended that:

1. Agency engagement with the market includes specific consideration of risk allocation. This should increase the accuracy of risk estimates, while maintaining price discipline.
2. Competitive tension must remain, to some degree, a factor in any approach to risk. How this is achieved will require careful consideration and will inevitably involve some degree of trial and error.
3. The procurement strategy should be determined early and be informed by the risk management plan for the project.

WHOLE OF LIFE COST

It is widely acknowledged that Whole of Life (WoL) costs are an important aspect of procurement, however this is very rarely implemented in practice. The main barrier is organisational, with opex and capex budgets often managed and accounted for separately. There is also a cultural element, with agencies (and society as a whole), having more concern for the headline capex figure rather than for opex commitments that are built in.

NZ and international guidance is almost unanimous in recommending that where an agency gives tenderers scope to adjust or complete design (or to propose alternatives), Whole of Life (WoL) cost assessment should be included as part of the tender evaluation.

Most international guidance allows for, or even requires, that some form of "Best Value" in procurement be considered which includes a WoL cost aspect. Guidance in this regard generally has its main consideration in relation to the need to be able to fairly assess and compare the WoL price impact of proposals by bidders when they deviate in approach or method (i.e. alternate materials or methods).

In NZ there is guidance available on calculating WoL costs, or Total Cost of Ownership (TCO). This guidance includes details on formulae, types of costs and benefits to consider, and calculating present value.

Australian guidance notes WoL cost as a key element of price, and that ongoing costs need to be noted in initial procurement rather than just upfront costs. NSW guidance[24] states that whole of life costs include contract period, transactional costs, transitioning out costs, contingency costs, contract management costs, and risk.

In the UK, guidelines[25] set out the purpose of procurement as achieving Value for Money, which is expressly defined as considering WoL costs, and not achieving lowest up-front cost.

Strong WoL cost guidance is provided in Texas[26] (which prescribes a methodology), and the UK (Constructing Excellence UK[27]), which has extensive guidance for calculation of common lifecycle costs including maintenance. Elsewhere specific methods for calculating WoL cost are generally not given, and it is left up to procurement practitioners to derive a suitable method.

Our interviews found that a WoL cost calculation is rarely carried out in practice as part of tender price evaluation. Only one organisation reported using WoL cost calculations as a standard part of procurement and, even in this case, the extent to which changes in contractor selection arose from considering WoL cost during the procurement process was limited.

Defining Whole of Life (WoL)

ISO15686

".....economic assessment considering all agreed projected significant and relevant cost flows over a period of analysis expressed in monetary value. The projected costs are those needed to achieve defined levels of performance, including reliability, safety and availability."

NZ TREASURY

"The present value of total cash costs of the investment over its life cycle, calculated using the relevant Public Sector Discount Rate"

24 – NSW Government. (2021). Procurement Policy Framework. Sydney.
25 – Government Commercial Function. (2020). Bid Evaluation Guidance Note. London: HM Government.
26 – Texas Comptroller of Public Accounts. (2021). Procurement and Contract Management Guide, Version 1.3. State of Texas.
27 – Cabinet Office. (2020). The Construction Playbook. London: HM Government.

Where WoL cost calculations are more commonly carried out is as part of the preceding business case process. The implicit assumption is that the procurement process will not have any impact on WoL costs. This is contradicted by interview feedback that indicated that it is common (almost standard), for incomplete project scope/design to be issued to market as part of a 'construct only' contract. As such contractors have indicated that there is generally a need for them to fill in those gaps with products and solutions that will likely affect WoL cost.

Much as with other factors of procurement, like risk or broader outcomes, there is significant value in simply having the WoL conversation. It is evident from our review that this is generally not occurring in a meaningful way in most procurements, both here and overseas.

Equally, guidelines for carrying out WoL cost calculations are generally available and utilised by agencies when calculating the WoL cost for a project as part of the preceding business case. In NZ there is guidance available from MBIE on calculating WoL cost[28]. This guidance includes details on formulae, types of costs and benefits to consider, and calculating present value.

As such there is very little impediment to WoL cost calculation being performed by the Agency PQS as part of their procurement role. This can allow WoL cost to be incorporated as part of the price evaluation in ECI or D&B tenders, or where a tenderer has proposed an alternative product from that specified. However, in order to leverage this, the decision to consider WoL costs should be made early in the project lifecycle, including forming part of the QS selection, and its inclusion should be clearly communicated to all contractors in the RFT.

While most methods of WoL cost calculation focus on direct or indirect costs, such as maintenance or asset renewal, there are some methods that incorporate externalities. Usually environmental externalities, including water pollution or carbon emissions. There is a question as to whether these belong in a WoL cost calculation as an avoided cost or included in a Broader Outcomes assessment as a benefit.

In general, available WoL cost guidance focuses on direct financial costs to the procuring or operating organisation(s) and does not include assessment of external environmental, societal, or opportunity costs.

Canada's *'Green Procurement Policy'*[29] does seek to include environmental performance (such as carbon capture or abatement), as a factor of WoL cost. Their recommended life cycle cost calculation includes maintenance, operation, and disposal cost, and explicitly considers the benefits of higher up-front capital spend to secure both lower lifetime financial cost and environmental footprint.

NZ guidance on sustainable procurement does not currently explicitly make this extension but they are noted as 'other things to consider'[30].

Recommendations: Whole of Life Costs

It is recommended that:

1. Agencies develop and clearly communicate their WoL cost evaluation approach, including price evaluation assessment criteria and if/how alternate proposals are to be structured to enable assessment. It is important for agencies to be honest and transparent in their approach, if they do not intend to consider WoL cost this should be clearly stated with accompanying rational.
2. Consideration be given by MBIE to adjusting relevant guidance to clarify the inclusion of externalities into WoL cost estimates. Based on international guidance, this would primarily focus on aspects related to energy use and material selection but could be extended to include things like construction water usage and waste avoidance. Central Government potentially has a stronger role to play here setting WoL values for elements that are difficult for agencies to price (such as carbon sequestration in timber).

28 – Ministry of Business, Innovation, and Employment. (2013). Total Cost of Ownership: An introduction to whole-of-life costing. Wellington.
29 – Government of Canada. (2018). Policy on Green Procurement. Ottawa.
30 – Ministry of Business, Innovation, and Employment. (2013). Total Cost of Ownership: An introduction to whole-of-life costing. Wellington.


HITACHI
HITACHI

BROADER OUTCOMES

Including broader outcomes objectives in the procurement process is common to all jurisdictions examined, but approaches do differ substantially and in NZ, our method has not yet reached maturity. More advanced, but still experimental, approaches involve quantifying and valuing broader outcomes for inclusion in a price assessment.

All jurisdictions studied have some form of broader outcomes objectives they aim to achieve through procurement. How this is achieved generally falls into three categories.

Requirements: A requirement is designed such that, when carried out, it is expected to contribute to the overall objective. For a bid to be compliant, they must meet this requirement. This is the most common approach to broader outcomes and is typically the dominant approach in North America.

- An example is the use of Historically Underutilised Business (HUB) engagement plans in Texas[31], USA. These require that a certain number of certified minority-owned businesses are engaged within the bid process. The aim is that this gives those businesses more subcontractor and supply opportunities.

Non-price Criteria: Broader outcomes objectives are included in tender documents, with bidders assessed on their response as a part of the non-price criteria. This is typically given a small weighting, but in some cases can be as high as 30%[32]. This approach is more common in the UK, Australia, and NZ.

- A variant of this is used in Singapore[33]. All suppliers are assessed based on the level of funding they draw from Government grants aimed at improving workforce development and technology adoption. This uniform calculation is then factored into a productivity calculation, along with a measure of past experience, which makes up 10% of the non-price criteria.

Priced Outcomes: Social Cost-Benefit analysis can be used to attach a monetary value to outcomes. If done consistently, proposals submitted can be assessed as providing a determined value. This could then be subtracted from the base price for assessment purposes, similar to the treatment of a Supplier Quality Premium (SQP) in the Price Quality Method[34]. This should not be done in isolation of budget constraints, as added social value will not alter the actual capital cost paid, and some form of cap or diminishing value may need to be considered.

- A similar approach is under development in the UK. The Value Toolkit[35] aims to help organisations identify the broader outcomes objectives of most significance to their project. Within this process is an evaluation tool which takes metrics of outcomes and converts them into an index. This index, which allows comparison across different outcomes and bids, could be treated as an SQP.

The non-price criteria approach is prone to inconsistency between projects and different regions. In addition, there is considerable ambiguity about how to operationalise broader outcomes. Some agencies opt for an open-ended approach, with the intent that the market is able to provide the appropriate solution. Market feedback has been that, given the inconsistent approach to assessing responses, it can be difficult to confidently provide a response to an open-ended request. In this case, a more prescriptive requirement would be preferable.

The implementation of broader outcomes, or social procurement objectives is becoming much more common here and overseas. This study did not identify any jurisdictions which do not require some social procurement objectives at a policy level. However, the approach to broader outcomes is generally not mature in NZ[36].

a) In NZ and in some areas like the UK, outcomes generally aren't specified, nor are they valued. This gives contractors little confidence they

31 – Texas Comptroller of Public Accounts. (2021). Procurement and Contract Management Guide, Version 1.3. State of Texas.
32 – Interview with Victoria based procurement practitioner, April 2021.
33 – Building and Construction Authority. (2021). Buildable Design Score Index & Constructability Score Index. Singapore.
34 – Waka Kotahi NZ Transport Agency. (2020). Contract Procedures Manual (SM01): Procurement Strategy and Methods.
35 – Construction Innovation Hub. (2021). Value Toolkit Overview.
36 – Interviews with New Zealand based procurement practitioners, April 2021.

can produce a good offer, and it will take time before they can learn through trial-and-error market mechanisms what clients value.

b) When the client or procuring agency cannot determine a value for broader outcomes, the approach becomes inconsistent and subjective. To counter this, broader outcomes need to have a value attached to them.

The typical approach to achieving broader outcomes of any form is to include them as a requirement. A binary assessment is conducted to ensure the bids are compliant, and the broader outcomes aren't scored as part of the evaluation process. This is a targeted tool.

Where this is not done, then any broader outcomes are scored as a non-price criterion. While this is generally done consistently within a procurement, it is not consistent across procurements. The lack of specificity in objectives, the relative immaturity of evaluating broader outcomes relative to other non-price criteria, and the lack of method to value outcomes are the primary causes of this inconsistency. This is a more market-oriented tool.

The decision to use a targeted or more market-oriented tool depends on the objective being pursued. Where a simple mechanism applied uniformly has been assessed as likely to achieve broader outcomes across programmes of work, then this can be included as a requirement, rather than assessed. Where such a mechanism has not been identified, or an innovative market approach is sought, then this can be assessed as part of a non-price proposal.

There is a balance to strike between being specific with bidders about what is sought and leaving enough scope to allow bidders to achieve social outcomes in a way that best works with their business and market context.

The cost impact of broader outcomes on project costs needs to be more explicit to enable clients to understand how much these goals are costing them, and so they have a cost to compare the value to. Much like risk, procuring agencies need to understand that there will likely be cost impacts.

Generally, there is an expectation that cost impacts are shared between the contractor and procuring agency. It is not unreasonable to expect a cost share, but depending on the outcome sought, procuring agencies may expect no cost impact at all.

Where an organisation has widely accepted and relatively specific broader outcomes targets, then the emphasis on costing and valuing outcomes is reduced. This is because it is easier to justify procurement decisions vis-á-vis broader outcomes without costing or expecting no cost impact at all.

Where organisations do not have clearly defined goals, or where they are not widely accepted, then there is considerable ambiguity around how to incorporate objectives into procurement processes. This can create a tension between procurement teams and the wider organisation as they are unable to justify any cost increases linked to achieving broader outcomes.

Recommendations: Broader Outcomes

A consistent approach to broader outcomes will allow the market to develop acceptable solutions with confidence rather than continuing the current one-off slow trial-and-error.

It is recommended that:

1. Agencies clearly communicate their broader outcomes objectives and the method used for assessment. Agencies should consider when it is appropriate to use targeted versus market-led approaches cognisant that both have a real price which will need to be evaluated.
2. Costs arising from broader outcomes should be treated explicitly within the evaluation process. Where programmes funded through overheads are included as part of a bidder's responses, this cost impact to the project should be identified as a separate line item. These identified costs should be recorded for use in common data bases.
3. MBIE consider further guidance regarding the implementation of broader outcomes in the procurement process. This should address the concerns regarding inconsistent assessment across projects and regions. Observe the implementation of the Social Value Toolkit in the UK for any lessons learnt.

ENSURE YOU HAVE THE APPROPRIATE TEAM

Evaluator competence was found to be a recurring theme throughout this study. While ensuring the evaluation team has the right skills is not an original insight, it does need to be done with particular regard to how an organisation defines price.

Guidance in the jurisdictions assessed didn't generally touch on the specifics of who assesses the different bid sections (i.e. price and non-price). Exceptions to this were Singapore, Canada, and South Korea:

a) In Canada, quality (or technical) criteria are assessed by the procuring agency, however price is assessed by commercial specialists from Public Works and Government Services Canada (PWGS)[37].

b) In Singapore, the entire procurement is carried out by the Building and Construction Authority[38].

c) In South Korea government agencies must procure through a central agency (Korea Public Procurement Service). Local Government agencies aren't required to do so, but typically do[39].

In other jurisdictions the price is almost always assessed by a separate team, this often being composed of external consultants contracted to the procuring agency. In some agencies external price estimating is reviewed by internal QS staff in an effort to increase and centralise institutional knowledge.

The common key constraints facing the evaluation team are time and capability. Evaluation teams need adequate time and expertise to assess bids thoroughly. It is worth noting that implementing more effective tender evaluation methods, including the recommendations in this report, will likely increase the time pressure on evaluation teams.

Expanding the time available for assessment is not often an acceptable solution as it creates cost for both procuring agencies and tenderers, and makes the procurement process less efficient to implement. The need to implement time and resource efficient solutions must be considered.

Recommendations: Ensure You Have the Appropriate Team

It is recommended that Agencies:

1. Ensure quantity surveyors and project managers have the project specific capability and capacity to run the price estimation and evaluation process effectively.
2. Program in sufficient time (noting your teams capability level), and budget for effective price assessment.
3. Consider options for capability building, such as using the same team on multiple (similar) projects or via an integrated team approach, pooling skills across multiple consultants and the client. Long term these approaches should increase knowledge transfer and procurement efficiency.

37 – Public Works and Government Services Canada. (2021). Supply Manual. Ottawa: Government of Canada.
38 – Interview with Singapore based procurement practitioner, April 2021.
39 – You, W.-U., Lee, J., & Change, J. (2019). Public Procurement in South Korea.

USE PRE-EVALUATION MECHANISMS

Existing guidance focuses on strategic procurement, redirecting the focus of effort away from the evaluation and more toward pre-evaluation steps. These steps are essential to achieving a good procurement outcome. If these earlier steps are not done properly, no formula of evaluation can compensate.

Where best practice tender evaluation is in place, proactive market engagement plays a considerable role. This relates to approaches to risk (summarised below), where it is pre-evaluation mechanisms that can mitigate much of the risk in a procurement. Variations on two stage procurements, such as using EOIs to select for a closed tender, or the use of supply panels, are well established overseas and are increasingly common in NZ.

Supply panels and registers, and other similar forms of contractor pre-qualification, when effectively implemented and maintained, can be very useful in managing risk and matching suppliers with the appropriate work. It is important to ensure adequate mechanisms to allow entry of new participants and for the exit of non-performers.

A key example was observed in Victoria, Australia, where pre-qualification is used to select four suppliers for a closed tender. This involves using a pre-qualification system to identify potential tenderers by the value of project they can successfully deliver. These suppliers are then surveyed to assess their capacity to deliver the work, with focus on their current workload, projects they are currently bidding on, and staff utilisation. From here, a set of four suppliers is selected for a closed tender.

This selectivity can be used as an effective market disciplining tool. Contractors who win work but go on to adopt uncooperative or uncollaborative approaches, or who replace members of the delivery team they were scored on, can be excluded from future tenders. In the past, a single instance of this has been enough to secure compliance across the industry.

This means that some of the emphasis on the evaluation process itself can be shifted. The principles of adjusting method to project complexity still apply, but the use of supply panels and pre-qualification can make a LPC type method more appropriate. The study observed that where LPC methods are used, that agency places significant emphasis on these and similar pre-qualification methods. Organisations that are effective in their use of these arrangements can be reasonably certain that whoever is selected in the procurement process itself will be able to deliver.

This begins to move in the direction of strategic supplier management, where engagement mechanisms are used to create the market. Procurers can help suppliers build their capacity through targeted pre-selection, such as pre-approval for value bands and work types. Comprehensively debriefing those bidders who did not win a contract can help ensure a higher standard of bids are submitted in future.

Recommendations: Develop Pre-Qualification Practice

It is recommended that:

1. Agencies codify the use of pre-qualification mechanisms and how these feed into the procurement evaluation process. In particular, guidance should advise on how pre-qualification mechanisms can be used to track and assess performance. Where a pre-qualification mechanism reduces risk, this should be tied directly into the risk assessment.
2. Agencies should develop clear guidance on how contractors will be monitored and selected for project opportunities, as well as how poor tendering or project performance will be managed.

MARKET ENGAGEMENT

International guidance is quite consistent in recommending pre-tender market engagement to ensure that the scope of work is realistic, a feasible tender price can be determined, and that market bidders understand the price expectations and assessment methodology to be adopted by the procuring agency.

A particular factor of market engagement is how it can be used to influence pricing behaviour. While adjustments to the evaluation formula most directly shift the emphasis away from lowest price, these changes can be reinforced by the market engagement emphasising the non-price focus. This has been noted in interviews, particularly in Australia and Singapore, as an effective strategy.

Communicating Evaluation Method

While method adjustments discussed elsewhere in this report may be minor in mathematical terms for most projects, their impact will be enhanced through their use as a signal to the market that the focus on non-price is genuine.

In terms of communicating evaluation methods, different jurisdictions take different approaches. Some areas, notably Singapore[40] and California[41], will publicly release exact formulas and weightings, as well as the scores calculated for all bidders with reasoning, after the contract is awarded.

Other jurisdictions opt for varying levels of confidentiality. This varies from releasing the methodology, including formulae and weightings, but not publicly releasing scores, to releasing only high-level detail of the method used.

It was also noted in interviews that while a move to less price focused evaluation methods, such as weighted attributes or Brook's law, is effective in shifting market behaviour, this effect can be greatly accelerated when combined with effective market engagement on the subject.

Effective market engagement in this regard includes clearly explaining the evaluation process and how non-price scores are assessed. This gives the bidders increased reassurance that the emphasis really is on non-price criteria and eases the tension from lowering the price unsustainably.

Price Conversations

The disclosure of the PQS estimated price to the market as part of tender documentation is a topic rarely directly addressed in international or local guidance, except when it is related to the evaluation method used, such as a target price method or similar. Interviews noted that price estimates were also sometimes disclosed to tenderers to help with scoping the work, this was more common in cases where the scope is not fully defined or complete, and a two-stage procurement process is contemplated.

Interview feedback was mixed on the value of price disclosure, with some noting that it would provide more clarity and higher quality/more appropriate bids, others thought it created an opportunity for low ball bids, and some were worried about its inflationary effect. All agreed that there were often issues with the accuracy of budget estimates provided by agencies.

As noted elsewhere, tendered price, and even contact price, is not the overall out turn cost, and out turn cost accuracy is linked to project parameters, including complexity and location, along with risk allocation decisions (which in turn feed into the procurement model selection). If a procuring agency has good knowledge of the project price (i.e. the work is able to be and has been done), then price disclosure should not be an inhibiter to effective procurement as the price evaluation/scoring mechanisms should be geared accordingly. This in turn provides confidence to the market that their pricing is likely to be competitive and at a level that meets the procurer's expectations.

In the NZ context, several interviewees noted that there is the additional consideration of uneven market knowledge, as NZ's small and centralised

40 – Building and Construction Authority. (2018). Price Quality Method. Singapore.
41 – Taylor, M. (2017). An Evaluation of Best Value Procurement Pilot Programs. Legislative Analysts Office California.

market (contracting, consulting and agencies), means there is significant opportunity for some tendering parties to have knowledge of project budgets, thereby, creating an uneven playing field if the price is not disclosed.

Using Schedule of Quantities

One way of assessing and evaluating low ball bids without disclosing price is to use a Schedule of Quantities (SOQ) in the tender process. The procurer takes on the risk of accurate measurement of the tender design documentation and contractor provides rates against each item. This is regularly used by Waka Kotahi within their measure and value contracts, and to a lesser extent by Ministry of Education.

A SOQ can significantly reduce the incidence of disputes during the contract by clearly setting out the measurement basis of the original price and rates against which any variations are measured. This can be particularly useful where there are known further stages to be priced during the contract. However, this relies on the completeness of the measured design, and the robustness of the SOQ measure as a poorly formed schedule can create more issues than it solves, particularly if there are omissions or ill-defined inclusions.

The decision to use a SOQ should be made at business case stage and should form part of the scope for PQS selection. Sufficient time also needs to be allowed in the programme for the schedule to be fully developed between issue for tendering design documents and procurement. Early engagement with suppliers should also be undertaken to ensure the tenderers are experienced and comfortable using SOQs.

Recommendations: Market Engagement

Transparency

1. Agencies proactively engage with the market clearly communicating their expectations and the level of focus to be placed on non-price criteria.
2. Agencies share their assessment method (including calculations) and associated reasoning for scoring with the market.

Provide details disclosing price

3. Agencies develop guidance (and share with the market) for when, and in what format, price estimates should be disclosed to tenderers. Noting the following considerations:
   - Level of confidence in estimate
   - Market knowledge (is it a level playing field?)
   - Value of transparency versus competition

Using Schedule of Quantities

4. Agencies to consider the use of SOQ as part of the procurement strategy at business case stage of project planning.

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Bringing ideas to life

System Level Improvements

AGENCY OR SECTOR LEVEL PERFORMANCE MEASUREMENT

Understanding tenderers past performance in relation to issues like project quality, health and safety, team, program, and price certainty is a common desire for all procuring agencies. Typically, this performance information is assessed based on the past experience examples presented by the tenderer. Some processes do explicitly allow the tender evaluation team to bring their 'experience' into the scoring of tenderers in these areas, but this is not typical (at least in the aspect of being explicitly allowed), and can, in its own way, introduce the potential for bias.

A more useful method for both measuring and incentivising contractor performance could involve the use of an agency or sector wide performance monitoring system similar to those used in Singapore and by Waka Kotahi. The Ministry of Education also introduced a performance management framework in 2020, although this is still in its infancy and is not yet widely used in the evaluation process.

Codifying performance metrics and developing centralised (agency, sector, or NZ wide), indices for certain performance criteria is a key component of a more digital-literate construction and infrastructure sector.

SINGAPORE

The evaluation method used in Singapore sets aside 10% of the weighting for a productivity score. This score is a product of the following sub criteria:

1) A constructability score index based on performance on the five most recent projects (4 – 8%).

2) A technology adoption index and a workforce development index. Related to company compliance with a range of public sector initiatives. (Each 1%).

3) Any remaining weighting (up to 4%) can be assigned to project specific criteria assessed within the procurement.

These indices are produced separately to any procurement, with the full methodology and final results for all companies publicly available.

Source: Building and Construction Authority. (2021). Buildable Design Score Index & Constructability Score Index. Singapore. And: Waka Kotahi NZ Transport Agency. (2015). Minimum Standard Z/11 - Performance Evaluation.

NZTA PACE

The NZTA PACE scoring system produces a database of scores across all projects and for all suppliers who have been engaged by NZTA.

These assessments are subjective ratings of the supplier's performance across a number of criteria. Suppliers are rated from "unsatisfactory" through to "superlative", with each of these corresponding to a % range.

These PACE scores can be used in the procurement process to evaluate a tenderer's past performance. However, it is neither mandatory nor is there a specific method given. Rather, it is up to the evaluation panel to decide whether and how they wish to include the PACE score into their evaluation.

PACE evaluations are done transparently with the supplier, though unlike in Singapore, final scores are not made public.

Recommendations: Agency or Sector Level Performance Measurement

It is recommended that:

1. Agencies consider the development and use of PACE style supplier assessments across their procurement portfolios. Some agencies could consider use of the PACE framework and scores.
2. MBIE (via the Construction Accord) or Infracom consider the establishment of a central 'contractor performance' index to standardise assessment and minimise duplication.

MANAGE RISK AT PORTFOLIO LEVEL

In NZ, risk is typically being managed and monitored at the project level. While we have seen examples of program level approaches these are generally structured in a reactive manner (i.e. claims are made against pooled contingency when an event occurs), rather than a more pro-active approach which would see the 'program contingency manager' being actively involved in claim mitigation and augmentation (all the way back to procurement).

A pro-active program based approach can lead to a more efficient risk contingency allocation as, because of the nature of risk (i.e. that it is a probability range), contingency held at the programme level is generally lower than the sum of contingencies held (or at least what should be held), at the project level.

Program level risk management will increase agencies risk IQ as risk information is pooled and easily available to inform future procurement decisions and to proactively manage claims. The COVID19 claim environment, while not perfect uniformity of treatment, did demonstrate the benefit of shared expertise when dealing with a common risk.

There is of course a need to balance effective, and reasonably unfettered, project delivery with the requirement to return best value to an agency (and a degree of assurance) at the program level. The first step towards this is appropriate project reporting of price and its risk components at the program level.

Risk pricing, when it sits with the agency, should always be looked at via a program lens.

Recommendations: Manage Risk at Portfolio Level

It is recommended that:

1. Agencies should develop contingency management policies that allow for the monitoring and management of risk at a programme level, rather than project level.
2. Te Waihanga and Treasury should investigate whether there are construction risks that require monitoring and management at an All of Government level.

CONSIDER INNOVATIVE CONTRACT TERMS TO SHARE RISK

Many project risks can be difficult to assess and price, and where allowances are made, these may be unreliable or untestable. A common example of this is ground conditions. Regardless of the level of geotechnical investigation done, ground risk is, by its nature, something that can only be conclusively understood once the project is finished.

The typical method for dealing with this kind of risk is to allocate it to either the Contractor, or retain it with the Client. Where allocated to the Contractor, this approach will likely see the risk priced on a worst-case scenario and therefore, on the high side (reflecting the high side value of risk). Conversely where this kind of risk is retained by the client it may not be managed and mitigated in an optimal fashion.

A feature of effective ECI and Alliance type contract models is the inclusion of a clear and explicit allocation of risk between the parties. Contingency related to risks is not necessarily transferred to the contractor as a form of risk premium, but rather is retained by the client. Where a risk eventuates, there are mechanisms for drawing down on that contingency.

To incentivise suppliers to use their usually more advanced risk management expertise a gain/pain share mechanism is included. This means, where contingency remains after the project completion, a share of that contingency is awarded to the contractor. However, in the case that the contingency is exhausted, any additional costs are jointly borne by the client and the contractor.

While many projects would benefit from including an ECI stage or full Alliance structure, the establishment cost may be disproportionate to the benefit realised

Some interview participants have addressed hard to price risks, such as ground conditions, with this risk sharing view, and, by adapting elements of standard NZS contracts, defined risks can be treated as open-book, cost-plus variations, or measure and value, with time extension provisions structured to incentivise good variation behaviour on both sides. An example would be allowing a risk item to be quoted as a Provisional Sum including a time provision.

This kind of mechanism requires a more detailed approach to pricing risks and contingency management. A clear framework is needed to calculate contractor entitlement for time and cost associated with any risk identified. This must be agreed upon, in exact detail, prior to contract execution. Recent COVID19 change in law mechanisms provide a good starting point for this approach and shows it can be effective.

Recommendations: Cost Sharing for Known Unknowns

It is recommended that:

1. For hard to price risks, such as ground conditions, consider methods of risk sharing such as open-book, cost plus variations, or measure and valve, which incentivise good variation behaviour on both sides.
2. NZ Standards, as part of the current NZS3910 review, consider development of a standard clause for shared risks and the including of a risk allocation table.

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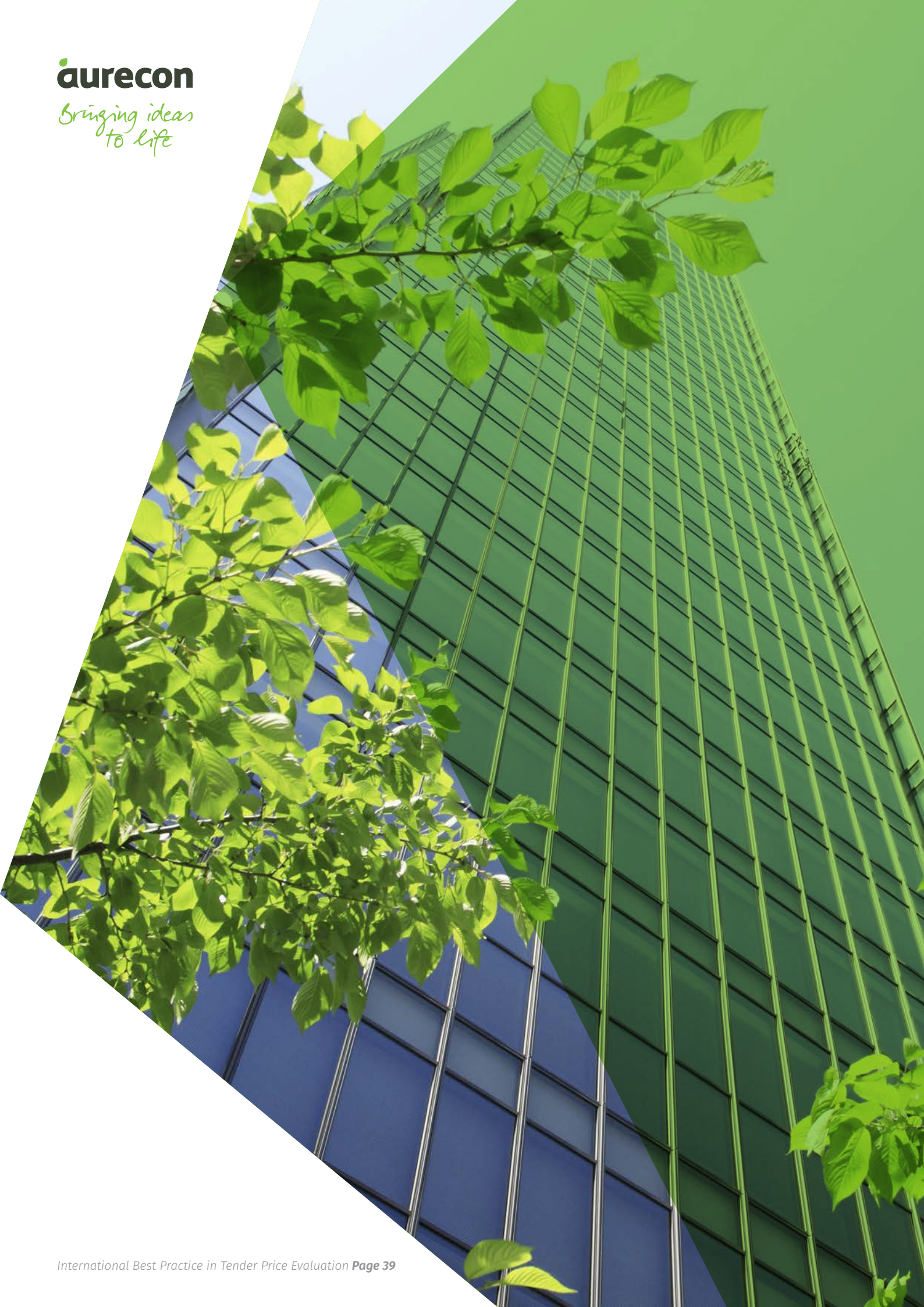

Appendix A

COMMON ASSESSMENT MODELS

	Lowest Price Conforming (LPC)	Weighted Attribute	Price Quality Method (PQM)	Other
New Zealand	All bids are assessed for compliance with requirements. The lowest priced of the conforming bids is selected to progress to negotiations.	The most common method used in public sector procurement. Bids are assessed on both price and several non-price criteria which typically have varying weights.	Bidders are scored on non-price items, with the difference between their non-price score and the lowest scoring bidder's non price score subtracted from their prices using the price per quality score calculated initially.	**Simple Score:** Functionally a weighted attribute with equal weightings applied to all criteria, including price
Australia	Set out in guidance, no functional variation from NZ method.	Set out in guidance, no functional variation from NZ method.	Set out in guidance, no functional variation from NZ method.	**Numerical Scoring:** Functionally a weighted attribute with equal weightings applied to all criteria, including price.
UK	Set out in guidance, no functional variation from NZ method.	Typically includes the use of a benchmark price, or "should cost" model to score prices, rather than using the lowest submitted price.	**Price Per Quality Point:** A variant on this method, where quality points are divided by cost to get a cost per point. The most cost-effective quality point is awarded the bid.	**Sequential Evaluation:** Similar to a Brook's Law method, with bids assessed for quality before being assessed for price. Difference is all prices are looked at.
EU	Set out in guidance, no functional variation from NZ method.	Includes the explicit use of Life-cycle costing, or Whole of Life (WoL) cost, as the price to be used.	Not set out in Guidance	
US	The predominant method in the US.	**Best Value Responsive:** In California, a 50% weighting for the price component is mandatory, though this is not the case in other states.	Not set out in Guidance	
Canada	The predominant method in Canada.	Set out in guidance, no functional variation from NZ method.	Not set out in Guidance	
Singapore	Not set out in Guidance.	**Price Quality Method:** Called PQM, but functionally the same as weighted attributes. Specifies weighting bands that can be used.	PQM method equivalent to that used in NZ is not set out in Guidance	**Quality Fee Method:** Variant of the PQM method intended for procurement of consultancy services. Lower weighting on price is the key feature.
Korea	The only method allowed in legislation. Items that would typically be assessed as non-price are included as requirements.	Not set out in Guidance.	Not set out in Guidance	There are variations designed for Early Contractor Involvement type contracts, but they remain functionally focused on LPC.

Appendix B

PREDOMINANT MODELS USED IN NZ

The below table summarises the typical evaluation models used by NZ agencies for contract works over $1M based on our interviews with procurement practitioners from each organisation.

Agency	Predominant Evaluation Method	Price Weighting
Ministry of Education	Weighted Attribute	Typically, between 30% and 40%
Waka Kotahi	Price-Quality Method	Typically, between 40% and 70%
Kāinga Ora	Weighted Attribute for Capital Works, PQM for Maintenance Contracts	Typically, between 30% and 40%. Regularly direct source capital projects
KiwiRail	Not provided	Not provided
Auckland City Council	Weighted Attribute	Typically, around 50%, 20-30% where there is significant price uncertainty
Christchurch City Council	Weighted Attribute	Typically, between 30% and 60%

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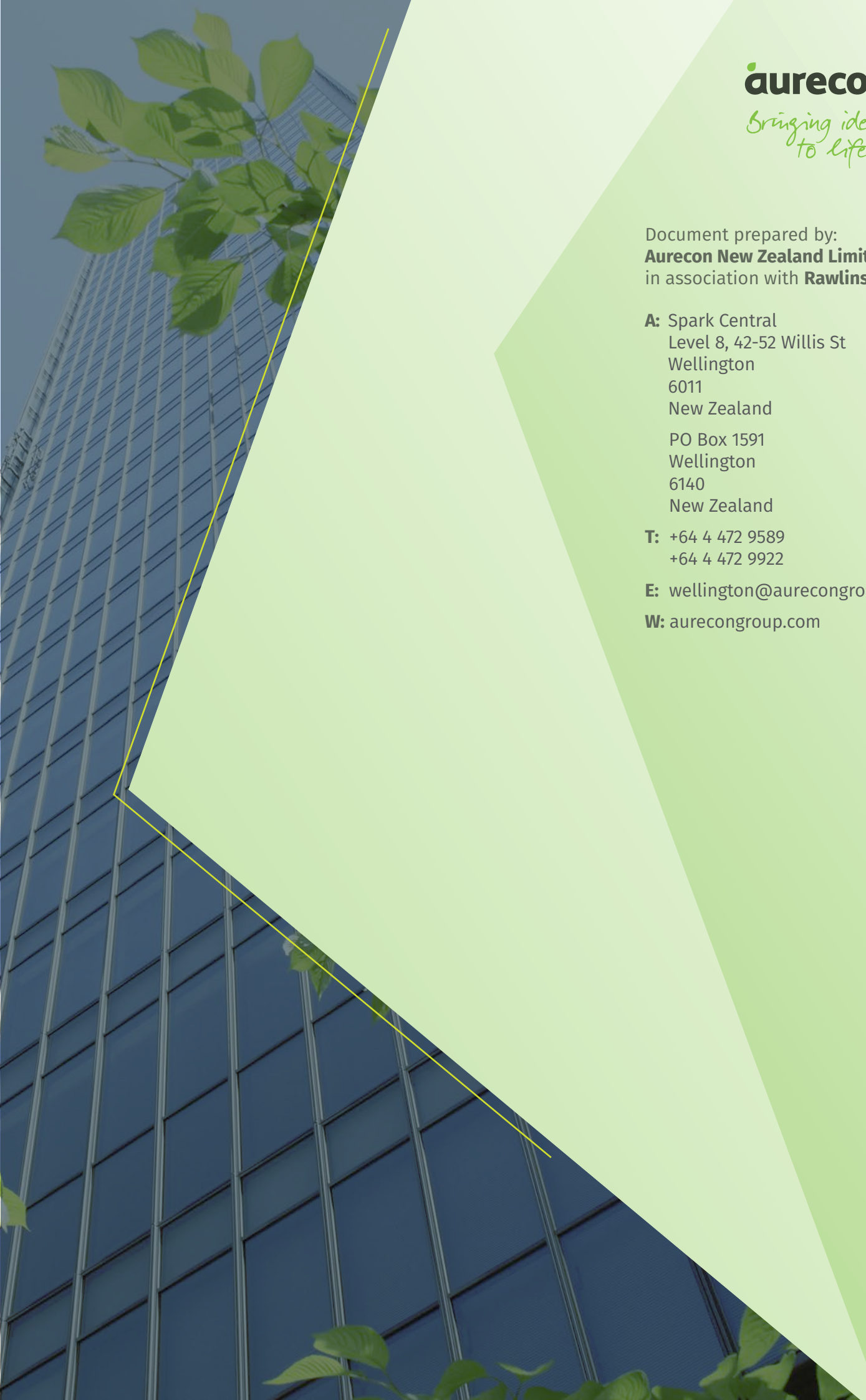

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