

Memorandum

To Jason Webber – Milford Opportunities Project
From Tim Lancaster
Date 17 June 2024
Reference J000725
Subject Milford Opportunities Project – WSP Estimate Summary Spreadsheet

Dear Jason,

Alta has been engaged by the Department of Conservation to undertake estimate reviews on a range of projects being developed by different designers on the Milford Opportunities Project Business Case. This memorandum details the review of the estimate summary spreadsheet provided by WSP.

Scope of Review

Our review has focused on the Stage 2 Estimation Rev C spreadsheet, developed, and provided by WSP. This is a spreadsheet that summarises a large number of projects, to provide an overall value of \$419.97m.

Our understanding is that this spreadsheet lists all the projects that are to be considered by the current business case. Projects that are listed but do not have accompanying values are as follows;

- Walking and Cycling projects estimated by Southern Land. These are included in the Southern Land Walking and Cycling Experience report. Alta has provided a separate memorandum on these estimates.
- Park and ride facilities developed by Beca. These are further detailed and included in the Milford Sound Park and Ride report. Alta has provided a separate memorandum on these estimates.
- Energy supply related projects estimated by Stantec. These are included in the Energy Assessment Recommendations report. Alta has provided a separate memorandum on these estimates.

The remaining sixty-seven projects in the spreadsheet have either been estimated by Stantec or WSP. The forty-eight project values estimated by Stantec are carried through from another costing spreadsheet developed by Stantec. These projects sum to \$369m. We have reviewed the costings for these projects. Commentary from these reviews are listed in this memorandum.

The other nineteen projects, totalling \$50.1m have been estimated by WSP. No supporting information has been provided and we have been unable to verify or review these estimates.

Development of Stantec Estimates

The Stantec estimates were originally developed in 2021. These estimates are very high level and should be considered either AACE Class 4 or 5 estimates. Table 1 below provides detail around the expected accuracy. The WSP spreadsheet appears to adopt a -30% to + 50% accuracy range, which suggests a class 4 estimate.

Table 1 AACE Cost Estimate Classification Matrix

ESTIMATE CLASS	Primary Characteristic	Secondary Characteristic		
	MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges at an 80% confidence interval
Class 5	0% to 2%	Concept screening	Cost/length factors, parametric models, judgment, or analogy	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	Study or feasibility	Cost/length, factored or parametric models	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	Budget authorization or control	Semi-detailed unit costs with assembly level line items	L: -10% to -20% H: +10% to +30%
Class 2	30% to 75%	Control or bid/tender	Detailed unit cost with forced detailed take-off	L: -5% to -15% H: +5% to +20%
Class 1	65% to 100%	Check estimate or bid/tender	Detailed unit cost with detailed take-off	L: -3% to -10% H: +3% to +15%

Stantec have developed unit rates (included in their estimate workbook as the Reference Costings tab) which inform all the estimates. There are fifty-five different unit rates in the reference costings. In most cases, a single rate is used for each estimate.

For instance, project PHub 3, Visitor Accommodation, is estimated using the Hotel 3-4 Star rate of \$5,800/m², with an estimated quantity of 1,540m². Some logic is provided on how the quantity has been calculated.

Further detail is provided alongside each of these rates to explain how the rate has been developed. See Figure 1 below.

Figure 1 Unit Rate Example

Infrastructure	Description	Quantity	Unit	Raw Rate	Unit Rate	Reference
Structures	Hotel 3-4 Star	1	m ²	\$5,800.00	\$5,800.00	<p>Calculated from QV CostBuilder - 2020 costs [Referred to by Structures Team]</p> <p>Average cost per m² for typical hotel building. Assumes flat site & good ground conditions.</p> <p>Figure based on: medium to high rise, basic building, reception, foyer, bedrooms, bars, restaurants, kitchen, service and plant facilities, HVAC, lifts, emergency generator, waste compactor, medium-standard finishes, 57 m² per bedroom. All inclusive unit rate cost includes building services and fit out. [Assumption initial rate based on Dunedin pricing]. Uplift of 33% to marry in with quotes provided by Boffa Miskell (19/11/2020)</p>

The Stantec estimation sheet then applies a range of percentage uplifts to allow for costs such as preliminary and general costs, design fees, scope uncertainty, location of works and overall contingency.

The WSP summary sheet takes the unit rate estimate value and then applies a range of additional percentage uplifts. Some of these percentages vary depending on the project. As an example, the following are applied to the unit rate estimate for PHub 3.

1. Escalation 33.1%. The Stantec estimates were developed in 2021. WSP have applied escalation to bring them up to May 2024. This percentage varies depending on the type of work.
2. Scope of works uncertainty 20%. This percentage is constant across all projects and is applied to item 1 above.

3. Contractor preliminary and general 20%. This percentage is constant across all projects and is applied to items 1 and 2 above.
4. Location extra over 10%. This percentage varies between 5%, 8% and 10% depending on the location of the works and is applied to items 1, 2 and 3 above.
5. Professional design fees of 18%, which are made up of;
 - o Design fees 6% or 10%.
 - o Consent and tender fees 2%.
 - o Construction monitoring / MSQA 6%.
 - o The percentage total of these fees is applied to the sum of items 1-4 above.
6. Contingency 20%. This percentage is constant across all projects and is applied to the sum of items 1-5 above.
7. Construction complexity 20%. This is a combined risk factor which is calculated based on the risk of contaminated land, structural engineering, natural hazards/climate change and geotechnical engineering. This varies from 3-20%. This is applied to items 1-5 above.

To get a greater understanding of the sensitivity of the unit rates, we assessed which rates had the greatest impact on the overall cost. Of the fifty-five rates in the reference costings, only twenty-six of these were being used within the estimates. Of these twenty-six rates, six rates made up 83% of all the estimates and 4 rates made up 74% of the estimates.

These four rates were;

- Motel \$3600/m2.
- Experience Hub \$5000/m2.
- Hotel 3-4 Star \$5800/m2.
- Parking/Pullover \$250/m2.

The various percentage uplifts noted above increase the base estimate, calculated using these four rates, from \$83.6m to \$291.9m.

At a high level the unit rates and the various percentage uplifts do not appear unreasonable. However, it should be noted that a small change to the unit rate will have a large impact on the total estimate value.

The Motel, Experience Hub and Hotel 3-4 Star rates have been applied to a number of individual projects. These building projects all have varying forms, functionalities, and sizes. The use of a general rate across a number of projects, rather than a specific rate will provide some levelling across the various unders and overs that will inevitably be encountered.

We have not reviewed the escalation calculations in detail, but we would expect similar percentages based on cost escalation that has occurred over the last 3 years.

The preliminary and general percentage will vary dependent on the size of the project, complexity and type of contractors engaged to deliver these projects. For the more complex infrastructure projects we would expect percentages in the range of 20% - 30% for a tier 1 contractor. Building contractors would be lower, in the range of 10% to 20%, dependent on the size and complexity. The current percentage used sits in the middle of this range.

The percentage fees applied are reasonable based on the various types of projects being considered. Contingency is applied to these percentages.

The location extra over is applied dependent on the location of works, with the percentage increasing the further away from Te Anau the works sites are. Particularly for the works in Milford, this percentage could be low, when considering the additional costs that may be incurred for items like material transport, inclement weather, worker accommodation and location dependent design factors. We note, contingency is applied to this percentage.

The percentages applied for professional fees are reasonable based on the various types of projects being considered. Contingency is applied to these percentages.

Items 2, 6 and 7 above provide an overall contingency of 68.8%. For a class 4 estimate, we would consider this reasonable and the contingency amount would sit between a P50 and P95 estimate.

Estimate Format

Within the overall programme, estimates have been developed by several different consultants. Generally, each consultant has developed and presented their estimates in a different format. There is little consistency across these different estimates, making comparison difficult.

We would recommend in future stages of the programme that a consistent approach is adopted and a common format and methodology, e.g. NZTA SM014 is used and followed. Amongst other factors, this would ensure there was clarity around the levels of contingency and whether funding is based on a P50 or P95 estimate.

Recommendation

We recommend that at the next stage of the programme further detailed assessment is undertaken on some of the estimates to confirm their accuracy, particularly those with a high level of sensitivity. Using a greater number of rates that are project and location specific, as well as better defining the size and specifics of the projects will increase the level of accuracy.

The total programme cost is made up from the sum of a large number of individual estimates. Due to the low level of accuracy of these estimates, individual project values should not be relied upon in isolation, rather these should be used to inform the total programme cost and a funding envelope. Should decisions be required on an individual project basis, further assessment should be undertaken.

Yours sincerely,



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