PREPARED FOR WELLINGTON CITY COUNCIL

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SHELLY BAY FURTHER INFRASTRUCTURE INFORMATION Report

COMMERCIAL IN CONFIDENCE

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QUALITY ASSURANCE STATEMENT

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DOCUMENT CONTROL

Issue	Date	Issue Details	Author	Checked	Approved

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INTRODUCTION

On 22 February 2017 Wellington City Council requested Calibre Consulting to provide comment and further information and respond to some questions about the bulk infrastructure requirements to service the proposed Wellington Company development at Shelly Bay currently being processed under SHA processes.

Calibre have previously provided the following reports and information to Wellington City Council on the infrastructure issues for the proposed Shelly Bay development.

Bulk Infrastructure upgrade cost estimates - April 2016

Infrastructure feasibility report for the development - October 2016

Infrastructure maintenance cost estimates for status quo - September 2016

Copies of these documents have been provided separately.

MATTERS RAISED AND CALIBRE RESPONSES

1. ROAD UPGRADE / CYCLEWAY

Your previous advice is that a high-spec road including cycleway (based on Raumati works) would cost $10m over and above a baseline roading option.

Please advise if the baseline roading option was built first, what would be the additional cost of building the high-spec option at a later date?

Our assessment is that there would be no saving on our estimated $11.2M for the full road upgrade to the high spec option if you proceeded with the baseline option first.

Our analysis is that the initial roading costs (totalling approximately $1.4M) would effectively be “sunk” and not reduce the cost of the later works to any significant degree.

The initial cost ($1.2M + fees) allows for a base level of construction work, along with other additional items, as detailed in Appendix B of the initial report. Whilst some of these features may survive any upgrade of the carriageway, the majority will be deficient or inappropriate for the higher specification proposal. The higher specification “product” would also be likely to require a better finish, for example in the final seal layer. The chip seal allowed for in the initial option would therefore need upgrading to asphalt, as a minimum. Such additional costs (ball-park estimate $350K - $400K) would balance out any of the initial works that could be retained.

2. SHELLY BAY/ MIRAMAR RD INTERSECTION UPGRADE

Predicted traffic flows indicate an upgraded intersection is required. There are three options and the pros and cons of each are set out in the table below.

Option	Advantages	Dis-advantages	Likely Cost Range
Roundabout	• Allows good movement of traffic outside peak hours.	• May require landtake for widening. • Proximity to existing intersection to east, and bend of Cobham drive to west, leading to safety and operational issues. • Can provide a barrier to cyclist use at the intersection, leading to crossing at “unsafe” points.	$150,000 - $260,000

Option	Advantages	Dis-advantages	Likely Cost Range
Single-Lane Dualling	• Improved version of existing layout, reducing uncertainty to drivers. • Low cost option.	• Doesn't allow traffic to flow freely from Shelly Bay Road, leading to queues in peak hours. • Likely to be a short term option, and further improvements may be needed at a later stage. • May require landtake to install.	$120,000 – $235,000
Traffic Signals	• Allows movements for vehicles, cyclists and pedestrians.	• More expensive option. • May lead to queues on Miramar Avenue leading back to previous intersections during peak hours, depending on phasing of signals. • Land take may still be needed, depending on final layout.	$200,000 - $390,000

The cost ranges are very broad at this stage, reflecting the very early information we have.

We would recommend traffic signals, as they would fit best with the various proposals in the area (Shelly Bay Road traffic increasing, new cycleway and more cyclists). All three options may need some land-take, but the traffic signals require the least amount and may not need any.

3. WHARF AND SEAWALL REMEDIATION

The Wellington Company's (TWC) development proposal includes remediating the two main finger wharves at Shelly Bay (see image) to facilitate waterfront access, hospitality uses and ferry services. These wharves are currently in a state of substantial disrepair. What is the likely cost of remediating these structures to an efficient and safe standard required for the proposed uses?

The **Aecom report** you have provided us for comment, is focused the potential risks for the development site. Both our previous report and that from Aecom, state that further investigations are necessary, and both are therefore approximations at best. Aecom has looked at risks from on-site development, whereas our report essentially looked at shoring up the sea walls against wave action - two sides to the same issue. The potential for liquefaction and lateral spread does present some risk for the seawalls, however this is unlikely to be catastrophic. The buildings within the areas susceptible to liquefaction will need to be suitably engineered. The existing buildings will be susceptible to liquefaction damage. The reports indicate additional considerations in relation to the buildings (particularly shed 8), but not specifically to the concrete sea wall.

Our initial report dealt with the concrete seawall in the vicinity of Shed 8 and the wharf structures, and ways to upgrade this -essentially to keep the land in and the sea out. The reports by GK Shaw and Undersea Construction deal more directly with the wharf and associated structures. Reference to a timber seawall (that needs upgrading by way of a concrete seawall replacement) deal with a different wall than was in our report's scope.

The reports indicate that the condition of the wharf and related structures are as bad as or worse than allowed for in our assessment. The wharf report confirmed that the current wharf structures are well past the point where restoration is possible. The report also confirmed the retaining wall on the seaward side of shed 8 is in poor condition and would need to be rebuilt. To be able to do this a section of the building would need to be demolished to be able to give access for reconstruction works. The removal/destruction of the wharf structure may make the work (that our previous report estimated to cost $608,000) on the concrete seawall both easier and more difficult. Access is likely to be improved if the overall wharf structure is gone, but any support provided by that structure will be lost. There may therefore be more work to be done on the wall, but it may be easier to do it.

Overall the estimate is considered to remain valid. We note that all the reports state that more investigations are required to confirm in more detail what needs to be done.

4. STORMWATER

Stormwater treatment has been allowed for in previous report (see "Stormwater Drainage" in Appendix E of our report).

That report relates solely to the provision of stormwater controls along Shelly Bay Road leading to the site, and possibly an upgraded outlet within the site. The developer will be responsible for all internal stormwater reticulation, and connections to the existing infrastructure within the site including upgrades and new outlets as may be necessary.

5. RESOURCE CONSENT – COMMENT ON DRAFT CONDITIONS

Wellington City have issued draft resource consent conditions for the Shelly Bay SHA application. Calibre have been asked to comment on the infrastructure conditions particularly whether they lock in particular infrastructure solutions.

Our assessment is that the conditions "lock in" general infrastructure requirements, but not the specifics of how this has to be achieved or by whom.

Conditions

The consent holder shall comply with the design, construction and as-built requirements of the Wellington City Council Code of Practice for Land Development. Other alternative solutions ***may*** be approved for those aspects where the standards of the Code of Practice are unable to be met or can be achieved in a different way.

Prior to commencing any engineering work onsite in relation to water supply, stormwater and wastewater drainage, the consent holder must provide for the approval of the Wellington Water Land Development Team all relevant engineering plans, specifications, design and construction documentation. The public drainage design documentation must include an analysis of the impact of the proposed development on the existing stormwater and wastewater network capacity.

Roading

Envelope's proposal deals with the internal road layout, including the section of Shelly Bay Road within the "site". The bulk infrastructure costings dealt with the road "to" the site. There may be some overlap, as our costings allowed for 2.5km in length and the Envelope plans start at chainage 2200 (2.2km). Design carriageway is 6m in width (equivalent to our allowance) with variable width footpaths (up to 3m on one side). The roads on site will serve a different function than that leading to the site (access, parking and manoeuvring vs moving) but there would logically be some synergy in the design and appearance.

The financial impact of any overlap on the initial road costing could be in the order of $150,000 but this is within the contingency margin in our estimated cost of the high-specification roading option so don't recommend that you make any adjustment to those previous estimates.

Stormwater

The condition requires the public gravity stormwater network is extended to serve the proposed lots.

This is all internal to the "site" and so has no real impact on the bulk stormwater infrastructure which will be related to discharging stormwater from the upgraded access road. Our previous reports have allowed for new or renewed outlet structures, but these were generally to be outside the "site" and therefore remain in addition to the development conditions.

The final note is of some importance and relevance. Preliminary discussions with Greater Wellington Regional Council have found that any changes to stormwater outfalls, or creation of new outfalls, will not be approved with the current level of stormwater treatment proposed. This was anticipated as part of our reporting, although the specifics will need to be worked through with GWRC.

Sewer

The condition requires the public gravity wastewater network be replaced to serve the proposed lots.

The replacement of the wastewater network will require a new public pump station and the associated rising main discharging into the Wellington City pump station at Salek Street. Sizing and design of this pump station and rising main will require input and approval at all stages from Wellington Water.

The new wastewater pump station and new rising main were included in our bulk infrastructure costings. The cost allocation was estimated at $2.75M.

Water Supply

The condition states that unless an alternative proposal is approved, a new reservoir, water supply pipe work and associated infrastructure works will be required. The reservoir and pump station proposal shall be in accordance with the Council's reservoir and pump station rationalisation policy.

Our consultation with Wellington Water determined that a new reservoir and related watermain infrastructure would be required to service the development, which is in accordance with the conditions. The major components (a new reservoir at Shelly Bay, replacement of the pipeline between the Mt Crawford and Shelly Bay reservoirs, replacement of the pipeline from Shelly Bay reservoir and local reticulation) were included in our bulk infrastructure costings. The cost was estimated at $2.9M. As with the sewer, it is not clear "who" is to construct and pay for these works. The conceptual requirements have been shown on Envelope plans, but this is probably just to show the overall infrastructure and feasibility of the development.

Summary

The conditions broadly state what the requirements are to satisfy the Council. You must comply with the Code or provide an alternative solution acceptable to Council. Detailed designs and specifications are not "locked in".

On-site roads and stormwater are reasonably independent of the bulk infrastructure requirements, but will need to have some synergies. On-site sewer and water supply networks are heavily reliant on the bulk infrastructure completion, and these aspects will therefore need to be strategically scheduled to ensure the appropriate services are available at the relevant stages.

It is important that all parties understand and agree on who is doing what and when.

In the context of the overall development, some thought should also be given to individual services' capacity "trigger" points. The site and its existing services are currently capable of sustaining a level of site development. This will not be the full development scenario, but may be enough to make a stage of the development feasible without significant infrastructure upgrades. This may enable the site development to get underway, with the bulk of the infrastructure works "flagged" for a later date. For example; if the existing wastewater network could service 20% of the overall development proposal, completing the first 15% may not require that the major upgrade occur "up front". Additional stages would trigger the need for the upgraded infrastructure. The conditions of the resource consent and the individual service approvals would need to allow for this staged development programme to occur. Staging the infrastructure work may have impacts on the costs.

6. DESIGN TIMING AND FEES

Please advise preliminary costs and timeframe to design the bulk infrastructure upgrade works outlined in your previous report.

Fees

Our initial report made allowances for the anticipated consultancy fees based on 15% of the construction costs for the roads and 3-waters components, and 1% for the utilities (power, telecommunications and gas). Within these fees there is some scope for consenting requirements but not for expensive and protracted planning processes.

We have now had a more detailed look at the likely fees, along with approximate design and construction periods. Although there are likely to be some "overs and unders" within individual services, the total consultancy fees within the report of $1.2M is likely to be adequate. The higher specification roading option is not included in this estimate.

Timing

If all of the services and utilities (roading, 3 waters, power/telecommunications/gas) can proceed concurrently through the design phases, a best-case scenario, and excluding any further consenting issues (eg Regional Council Coastal permits), would take approximately 6 months. This is for the period between a "green light" for the design phases and completion of detailed drawings and tendering. Approximately 80% of the consultancy fees (broadly $1M) would be expended over the initial 6-month design period.

The construction phase, is estimated to take a further 12-18 months. The completion of the Shelly Bay Road surface upgrade would likely be the final component, and would be reliant on thecompletion of other construction phases, particularly stormwater (several outlets/discharges along the route) and wastewater (new rising main along the entire route). Given the nature of Shelly Bay Road, the construction of the "new" road will need to be carefully planned and managed to minimise delays and unnecessary disruptions. Extended construction periods (due to delays in services integration, weather etc) will increase both construction costs and fees for construction management.