Assessment of Residential Development Feasibility for the Te Tumu Urban Growth Area

June 2016

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1. Executive Summary

1.1.1 The primary purpose of this research is to assess the financial viability of development in the Te Tumu Urban Growth Area, an area of around 746.4ha of land earmarked for future development (mainly residential development) within the operative SmartGrowth Strategy, Regional Policy Statement (RPS) and operative Tauranga City Plan.

1.1.2 To assess the feasibility of development in Te Tumu a financial model was built which assessed development scenarios. This is a model that includes all of the costs and revenues associated with land development and the timing thereof, including all infrastructure required to deliver development.

1.1.3 The model allows the financial performance of a development proposal to be calculated from the perspective of the developer (at either an Urban Growth Area level, or specific landowner development land area level).

1.1.4 One key scenario (Attachment A) was modelled as summarised below:

- 15 dwelling p/ha residential scenario over land identified;
- Full planning constrained land considered;
- No active reserve (however a 20ha reserve will be required to provide for recreational use and demand);
- 66ha of employment land;
- No education land (however 2 primary schools and 1 secondary school are expected to be required to provide for education requirements);
- Infrastructure network providing for a population of 16,500 persons; and
- No provision for Stage 1 and 2 of the Papamoa East Interchange, nor the Kaituna Link (which has been estimated to cost $67.8M).

1.1.5 The above scenario is considered to be the low (and 'worst case') scenario at 15 dwellings per hectare. For the purposes of the assessment 2.2 persons per dwelling was utilised. As a result the following population and dwellings would be delivered within the Growth Area under this scenario.

Scenario	15 dwellings per hectare scenario
Population	8,646
Dwellings	3,930

1.1.6 No specific modelling has been undertaken to determine financial modelling above the assessed scenario. This is because the outputs of the tested scenario performed well against the considered 'worst case' scenario. Given a low population was tested with a high infrastructure provision it is considered that any density above the baseline assessed will also be viable (up to a population of 16,500).

1.1.7 It is logical that development of Te Tumu is staged to commence once infrastructure is available to its boundary and all required structure planning and Resource Management Act planning is undertaken. The model has also been run on an individual land owner basis and each development has been found to be viable.

1.1.8 Both the model itself, the outputs and conclusions have been independently reviewed and found to be reasonable. The high level of developer participation in the construction of significant infrastructure will enable the Tauranga City Council (TCC) to see considerable development occur (up to around 800 sections) before it undertakes significant levels of debt. This considerably reduces TCC's balance sheet risk.

1.1.9 Based upon the information assessed, and modelling undertaken, there is no reason why Te Tumu should now not be progressed towards the development of a structure plan and Resource Management Act planning process.

2. Report structure

2.1.1 This Report is structured as follows:

- Purpose;
- Background;
- Development feasibility methodology and data inputs;
- Residential development feasibility results;
- Other issues;
- Conclusions;
- Appendices.

3. Purpose

The purpose of this project is to:

a) Assess the financial viability of development in the Te Tumu Urban Growth Area given:

- The prominent role Te Tumu is planned to have in accommodating the city and sub region's future population growth;
- The importance of Te Tumu to enable TCC to fund the costs of major planned infrastructure projects such as the Papamoa East interchange and the Waiari water treatment plant;
- The importance of Te Tumu to the optimisation of the Tauranga Eastern Link and to the toll funding model for this project;
- The importance of Te Tumu to enable the delivery of the Papamoa East Town Centre and creation of an employment area within the Eastern Corridor in proximity to urban population;
- The need for Council to recoup the investment in infrastructure needed to service the Urban Growth Area.

4. Background

This section of the Report provides background information on the Te Tumu urban growth area.

4.1 Location

4.1.1 The Te Tumu Urban Growth area is located in Papamoa East, around 20km from the Tauranga City Centre. It is bounded by the Pacific Ocean to the north, the Kaituna River and rural land to the east and south, and the Wairakei Urban Growth Area to the west in which residential development is now.

4.2 History

4.2.1 Te Tumu has been identified for future urban development TCC for some time. The role of Te Tumu as a future urban growth area was formalised through the SmartGrowth Strategy in the early 2000's and subsequently through the RPS. It is currently zoned 'Future Urban' within the operative Tauranga City Plan. Te Tumu is a post 2021 growth area within the operative Regional Policy Statement.

4.3 Current land uses and land owners

4.3.1 Te Tumu's land area is 746.4ha. It is currently used for farming purposes. Other lesser land uses include forestry, sand mining, market gardening and a small number of lifestyle blocks. Approximately 343.7ha of the total land area is assessed as being developable land free of planning constraints.

4.3.2 Most of the land holdings in Te Tumu are large, although there a small number of more fragmented blocks throughout the area. Close to 90% of the Te Tumu land area is owned by three parties:

- Site 1: Tumu Kaituna 14 Trust – 240ha approximately;
- Site 4: Hickson Block (TCC/WBOPDC with option for Carrus to buy back) – 170ha approximately; and
- Site 11 Ford Block – 245ha approximately.

4.3.3 100% of developable land free of planning constraints is owned by the above three parties and the Tumu 8B1 Trust (Site 9).

4.3.4 It is envisaged that Sites 4, 9 and 11 would be primarily developed for residential purposes, while the Site 1 would be primarily developed for non-residential purposes, but will include residential development.

4.4 Growth projections - Base Assumption

4.4.1 For the purpose of financial modelling a range of scenarios were initially developed to be tested. However only the base 15 dwellings per hectare base scenario was finally adopted and tested. This was because it was considered that this would be the 'worst case' scenario and once run, would provide clear insight into financial viability.

4.4.2 After removing all unavailable land 262ha of land is considered available to be developed primarily for residential purposes.

4.4.3 At an average density of approximately 15 dwellings per hectare this scenario provides for a total of 3,930 dwellings to be constructed.

4.4.4 At an average number of 2.2 persons per dwelling this would equate to a population of 8,646 people. This is summarised in Table 1 below.

Table 1: Summary of Population and dwelling numbers for scenario modelled

Scenario	15 dwellings per hectare scenario
Population	8,644
Dwellings	3,929

4.5 Infrastructure servicing

4.5.1 A diagram of the internal Te Tumu infrastructure is included in Attachment Aa.

Transportation

4.5.2 The main network of transport routes are extensions to Te Okuroa Drive, the Boulevard and Papamoa Beach Road, supported by a network of local roads. Te Okuroa Drive links back to the Tauranga Eastern Link (TEL) in Wairakei, not far from the Te Tumu boundary, where it is planned that Stage 1 of the Papamoa East Interchange would be considered.

4.5.3 It is noted that a separate project has been costed for financial modelling that could form part of the roading network, being the Kaituna Link and associated roading connections to the TEL. This was priced at $67.8M (Attachment B) and excluded the cost of the required on-ramp to the TEL. The assessed cost is an update from the May 2006 "Option 1" cost estimate and Jan 2007 "River Crossing" estimates. The price for the Kaituna Link reflects recent knowledge of the area and updated construction costs and is the expected estimate (50%ile estimate), which includes fees and contingencies.

4.5.4 For the purposes of the financial analysis, the Kaituna Link was not assessed as part of the development scenario.

4.5.5 Due to the population scenario tested, neither Stage 2 nor 3 of the Papamoa East Interchange is considered necessary. Therefore these projects have been excluded from the base development scenario, along with the Kaituna Link.

Wastewater

4.5.6 The wastewater network aligns with the transport route along Te Okuroa Drive and is connected back to Te Maunga. The network is supported by two main pump stations and a network of minor pump stations within Te Tumu (refer Attachment Ab). A range of upgrades or replacement of pump stations and trunk pipes between Te Tumu and the Te Maunga wastewater treatment plant will be necessary to provide for growth within Te Tumu.

Water

4.5.7 The water network aligns with the major transport routes within Te Tumu. The initial connection to the water network would come from Te Okuroa Drive to the west in Wairakei, with a dedicated water main from the Waiari water scheme to the eastern end of Te Tumu (from 2031) providing a second point of access.

4.5.8 The Waiari water supply scheme is required to provide for ongoing growth for the entire City, including Te Tumu. It is currently planned to commence operations in 2021, with construction commencing in 2018.

Stormwater

4.5.9 The stormwater network involves the construction of on-site stormwater mitigation storage and treatment in accordance with the Papamoa Comprehensive Stormwater Consent. The flows will be managed through the Wairakei Stream to Kaituna River stormwater overflow and other consented stormwater outfalls to the Kaituna River.

4.5.10 While a site has not been selected for the Wairakei Stream to Kaituna River stormwater overflow, for the purposes of this work this project was indicatively located within the Hickson block.

4.6 Infrastructure costs

4.6.1 A significant amount of infrastructure needs to be built to the boundary of Te Tumu to enable urban development. The majority of this is debt funded by TCC and recovered through the levying of development contributions. Approximately $75.9M (in 2015 dollars) of capital expenditure has been identified that directly relates to urban development in the Wairakei and Te Tumu Urban Growth Areas and funded through development contributions.

4.6.2 Included in the developer funded infrastructure above are projects that would traditionally have been funded by Council and recovered through development contributions. Approximately $95.9M (in 2015 dollars) of capital expenditure has been identified in this category. This breakdown is outlined in Table 1 below.

Table 2: Breakdown of expenditure on major capital works.

	Water Supply	Waste-water	Storm-water	Transport-ation	Reserves	Total
Council Funded Projects ($M)	18.39	34.36	6.16	16.97	0	75.88
Developer Funded Projects ($M)	10.55	6.12	23.72	51.81	3.67	95.87
Total	28.94	40.48	29.88	68.78	3.67	171.75

4.6.3 In addition to the cost of infrastructure, capital expenditure to service growth across the entire city such as water and wastewater treatment plants and active reserves would also be partly attributable to Te Tumu (e.g. the Waiari water treatment plant). These costs will be recovered across the city (including Te Tumu) through development contributions charged at building consent time (i.e. not a cost to the developer). As the model only establishes viability of section sales these costs have been excluded from the model.

4.6.4 Significant infrastructure investment related to Te Tumu will be undertaken by network utility operators (electricity, gas, and telecommunications) and the developers themselves. For the purposes of this assessment it is considered that all internal infrastructure that relates to each development will be fully developer funded. This is normal practice for TCC and development within the City.

4.7 The importance of considering the financial viability of development

4.7.1 The term financial viability refers to whether development would be sufficiently profitable for the developer/landowner to be willing to undertake, and for project finance to be secured. This is assessed:

- To ensure that the SmartGrowth settlement pattern is realistic and could be delivered. It is important that growth is not allocated to areas that would be financially unviable to develop.
- The Tauranga City Council has, and would need to continue to invest millions of dollars to service new growth areas. To enable new urban growth areas to occur this investment is often in the form of lead infrastructure and is required prior to development commencing. Given this, any Council like TCC can face significant financial challenges if infrastructure investment occurs in areas that prove to be financially unviable to development.
- In a general sense it is much more difficult to put together a financially viable development now than it was say 10 or 20 years ago in the Western Bay of Plenty.
- There can be a significant difference between the financially viability of development in different parts of the sub region due to varying development costs and market prices for sections in different locations.

5. Development Feasibility Methodology / Data Inputs

5.1 Land development model

5.1.1 To assess the feasibility of development a hypothetical development model was built. This is a Microsoft Excel spreadsheet based model that includes all of the costs and revenues associated with land development, and the timing thereof. The model allows the financial performance of a development proposal to be calculated.

5.1.2 The model is not a new model for TCC and has previously been used in a prior assessment of financial viability for Te Tumu (2011/12), Wairakei and varying hybrids used for other growth area projects to determine financial viability.

5.1.3 A flow chart of the modelling process steps are outlined in Attachment C.

5.1.4 The original model was externally peer reviewed for mathematical accuracy. While this mathematical peer review has not been repeated through this current assessment, there a two external reviews that give the report writers comfort over the model's accuracy. These are outlined in section 6 of this Report.

5.2 Key modelling assumptions

5.2.1 To enable considerations of developable land constraints mapping analysis has been undertaken. This has taken into account the following potential constraints:

- Outstanding Natural Features and Landscapes;
- Important Amenity Landscapes;
- Natural Character Areas;
- Special Ecological Areas (Category 1 and 2);
- Significant Archaeological Sites;
- Significant Maori Areas;
- Sea Level Rise;
- Flooding (from the Kaituna River);
- Stormwater Management;
- Liquefaction;
- Coastal Erosion; and
- Tsunami.

5.2.2 For the purposes of financial viability modelling a conservative approach has been taken that all constrained areas are unable to receive any form of urban development for commercial, industrial or residential purposes.

5.2.3 Development in Te Tumu is anticipated to begin in 2021 in line with the current urban growth policies of the operative Regional Policy Statement. Development is also anticipated to occur over 20 plus years. This will result in likely changes to density delivery and costs to deliver infrastructure (and therefore financial viability).

5.2.4 Further, there will be varying degrees of upturn and downturn in the marketplace. As a result, predicting financial feasibility is somewhat difficult. The approach that has been adopted to overcome these issues is to run the modelling using conservative base density assumptions against a high infrastructure capacity assessment.

5.2.5 To enable development to proceed, and for modelling purposes, it assumed that development of the neighbouring Wairakei area has significantly progressed by 2021 and infrastructure like roads (Te Okuroa Drive), water reticulation and wastewater reticulation are at the boundary of Te Tumu to enable growth delivery at or prior to 2021.

5.2.6 The timing of development and path of key infrastructure are detailed in Attachment Aa.

5.3 Revenue inputs

5.3.1 The approach to the revenue inputs was to use a relatively conservative estimate for section price sales, as opposed to getting external valuer estimates.

5.3.2 A base section price of $225,000 (including GST) was initially selected to undertake modelling viability. This is considered fairly conservative, especially given that many sections will have high amenity value from being near the coast and/ or the Kaituna River.

5.3.3 The model also calculates what the section price needs to be in order to achieve a targeted Gross Margin of 20%.

5.4 Cost inputs

5.4.1 Cost inputs into the land development equation can be broken down into the following categories:

- Land purchase costs;
- Development setup costs;
- Construction costs;
- Council costs;
- Indirect costs;
- Direct sales costs; and
- Project finance costs.

Land cost

5.4.2 One land purchase scenario has been modelled, being that all of the land is purchased from the time development occurs at a rate of $379,000 per hectare. This price is based on the expected purchase price for the Hickson Block which is currently jointly owned by TCC and the Western Bay of Plenty District Council (2/3, 1/3 share), and is based on an existing contractual relationship. This cost is also used for all the other landholdings where the land is already held by the developer with no debt outstanding. This enables fair comparison of each block for viability and determines a true market value.

Development setup costs

5.4.3 Development setup costs are associated with planning approval processes associated with the rezoning of land. These are based on previous experience and external developer advice.

Construction costs

5.4.4 Construction costs relate to the direct costs of delivering finished lots. They are made up of earthworks, roads, services (water, wastewater, stormwater, electricity, gas and telecommunications), landscaping, design and supervision. Construction costs were sourced from current developers undertaking development within Tauranga. The model includes a 10% contingency for construction costs. This was considered conservative by the developers concerned.

Council costs

5.4.5 Council costs relate to resource consents (both land use and subdivision), 223 and 224 certificates, development contributions (subdivision impact fees) and rates. The costs are based on Council's operative fees at the time this Report was written.

5.4.6 Because development is not anticipated to commence in Te Tumu until 2021, development contributions for this area are not included in Council's operative Development Contributions Policy. For this assessment development contributions have been calculated based upon the likely required infrastructure which will be required to deliver services (water, wastewater and transportation) to the boundary of Te Tumu. The local/internal infrastructure within the urban growth area is proposed within this assessment to be fully developer funded, as opposed to a mix of developer and development contribution funding. These large infrastructure items include a 25% contingency.

Indirect costs

5.4.7 Indirect costs include utilities, insurance, site office, security, office expenses, project management, administration, legal, consultants, bank charges, valuations, accounting and marketing. These are based on previous experience and external developer advice.

Direct sales costs

5.4.8 Direct sales costs are made up of real estate agent commissions and legal costs associated with sale and purchase agreements and the transfer of legal title. These are based on previous experience and external developer advice.

Project finance

5.4.9 Project finance relates primarily to the interest incurred on debt used to finance the project. Holding costs have been calculated on the net debt position of the project over time.

5.4.10 The financing assumptions used in the financial model are relatively simple. They are that:

- Land purchase costs will be funded 100% from equity (no debt). This is based the normal practice of the developers owning land within Te Tumu;
- Other costs will be funded 50% by debt and 50% by equity;
- A minimum working capital amount funded by equity of $1M at all times; and
- A bank interest rate of 6% which is assumed to also include all bank fees (e.g. the cost of settling up and rolling over all banking facilities. This rate is lower than may be expected, but is based on the fact that there is no debt on the land component).

5.4.11 Other financial measures commonly used in relation to property development financing such as loan to value ratios (LVRs) and interest cover ratios have been ignored for the purposes of this project due to the complexity that they add, and the relatively minor part debt servicing plays in this model (as no debt on land purchase).

5.5 Inflation

5.5.1 All costs used in the financial modelling are assumed to be in 2016 dollars.

5.5.2 The financial modelling assumes no inflation for a number of reasons:

- Difficulty of making accurate assumptions about what inflation is likely to be, especially in regards to section prices (revenue);
- That if both costs and revenues are inflated by the same amount they largely cancel each other out; and
- To mitigate risk, the financial viability of a development should not rely on significant increases to section prices over the project's lifespan (i.e. the development should 'stand on its own feet' given current information about costs and revenues).

5.6 Financial analysis

5.6.1 Three financial measures are used to analyse whether development is feasible. They are the gross margin, the project internal rate of return and the equity internal rate of return. These are commonly used in the evaluation of development projects by developers and financiers.

5.6.2 The gross margin is a key measure of the financial viability of the project. It is calculated by dividing net profit before tax by total costs. A gross margin of about 20%, or greater, would be acceptable for the project to proceed.

5.6.3 Internal rate of return (IRR) is another measure of a project's profitability. In more specific terms, the IRR of a project is the interest rate at which the net present value of costs (negative cash flows) of a project is equal to the net present value of the benefits (positive cash flows) of a project. Two IRR calculations are used to assess development feasibility.

1. The Project IRR (excluding funding costs): This measures the return on investment for all cashflows (revenues and expenses) in the project excluding funding costs. A Project IRR in the range of about 10-20% is broadly acceptable for development to proceed.

2. The Equity IRR: This measures the return on equity by calculating the interest rate required to make the net present value of equity injections and withdrawals equal to zero. An equity IRR in the range of 10-20% has been agreed as broadly acceptable for the purpose of development proceeding.

5.6.4 While developers own expectations of an appropriate gross margin and internal rate of return are important, the main driver of the minimum acceptable levels for these ratio's is driven by the banking industry. It is critical that these measures are acceptable to the banking sector as without project finance, development cannot be undertaken. Past discussions with experts within the banking industry have suggested that a 20% gross margin is their key requirement when determining if they will provide finance.

5.7 Timing of revenues and costs

5.7.1 The timing of revenue and costs is driven by the agreed development scenario. This scenario assumes that approximately 200/250 sections will be developed per annum based upon a hypothetical economic cycle.

5.7.2 Given the timing of the delivery of finished lots discussed above, costs and revenues have been timed to occur in a realistic fashion. The majority of costs are incurred prior to sales revenue being received.

5.7.3 The timing of costs and revenues is important as it determines the overall debt position of the development and thus the amount of interest costs incurred. To minimise interest costs it is assumed, within reason, that costs will be incurred on a just in time basis.

5.8 Goods and services tax

5.8.1 All costs and revenues in the financial model are GST exclusive. However when considering retail section prices to consumers, GST is added because consumers are required to pay GST.

6. Residential development feasibility results

6.1 Base model results

6.1.1 The base model shows that the overall growth area as having a high level of viability. The Gross Margin is over 37% and the Return on Equity 11.7%. The reason for the large differential between these two is the high level of equity that is injected through the purchase of the land. A summary of the results are provided in Attachment D.

6.1.2 From this work we are satisfied that bank funding will be made available and that developers will have a strong incentive to undertake their developments.

6.2 Sensitivity analysis

6.2.1 Because of the positive nature of the financial results, and the conservative assumptions that were used throughout the modelling exercise, it was deemed to be unnecessary to run any detailed sensitivity analysis at this point in time. If any significant additional costs are identified in the future it would be appropriate to revise the modelling to assess whether development would remain viable. This can be undertaken yearly or as a structure planning process is proceeded with.

6.2.2 It should be noted that the scenarios tested could withstand significantly cost increases (in the order of 20%) and remain viable.

6.2.3 The breakeven point for section price (to give a Gross Margin of 20%) is $193,465 (inc GST). This is a 14% drop from the base price ($225,000 section price) used in the model. These results give the Report writers considerable comfort that our conclusion on the viability of Te Tumu is sound.

6.2.4 TCC also ran the model with a more standard debt structure (50% debt funding on land and an 8% interest rate. This scenario still produced a high level of Gross Margin and a higher level of the Return on Equity compared to the base model.

6.3 Individual development models

6.3.1 As well as looking at Te Tumu from an overall basis, TCC also modelled the development viability of the four land blocks with unconstrained land areas in Te Tumu on an individual basis.

6.3.2 The principle difference from the overall model related to the key infrastructure to be completed by the developers. In the overall model this was averaged into a general cost per ha. In the individual models, these projects were specifically allocated to each land owner.

Site 4

6.3.3 This development is expected to be the first development area within Te Tumu. The model assumes that the developer of Site 4 will first construct Te Okura Drive (with water and wastewater) through the Tumu Kaituna 14 block – Site 1. This scenario includes the reimbursement for the Kaituna Overflow Stormwater swale which is indicatively considered to be located over this Site. This block is expected to take 6-7 years to fully develop.

6.3.4 This block looks highly viable, with a Gross Margin of 37% and an internal Rate of Return of about 20%.

Site 11

6.3.5 This development is expected to be the second development area within Te Tumu. The model assumes that the developer of Site 11 will initially connect to the infrastructure on Te Okura Drive at the shared boundary with the Site 4 block. By 2030 it is expected that traffic volumes along Te Okura Drive will require the construction of the Boulevard (from Wairakei) through Sites 1 and 9 to the boundary of Site 11.

6.3.6 The model assumes that the developer of Site 11 will construct the Boulevard with water and wastewater infrastructure as part of the road construction. This block is expected to take 9-10 years to fully develop. The major difference with this development is the desire of the current landowner to achieve a much higher density and to construct the Kaituna Link Road. Therefore this scenario uses an average density of 23 lots per ha and the costs of developing this road ($67.8M for road and an assumed project cost of $12M for link to TEL).

Site 1

6.3.7 This development is modelled to commence after 2035. The model assumes that this developer will refund the other developers who have already constructed infrastructure through this land at this time (i.e. developers of Site 4 and 11). Due to the distance into the future this is a very approximate model and assumes a very slow development rate (around 2.5 ha per year). It does not take into account the impact of any industrial development that may also be happening (which would be likely to improve viability). This block looks viable, with a Gross Margin of 31%, but only has an internal Rate of Return of about 4% due to the very slow growth assumptions.

Site 9

6.3.8 This development is modelled to commence after 2035. The model assumes that this developer will refund the other developers who have already constructed infrastructure through this land at this time (i.e. developers of Site 4 and 11). Due to the distance into the future this is a very approximate model and assumes a very slow development rate (around 2.5 ha per year). It does not take into account the impact of any industrial development that may also be happening (which would be likely to improve viability).

6.3.9 This block looks viable, with a Gross Margin of 31%, but only has an internal Rate of Return of about 4% due to the very slow growth assumptions.

6.3.10 It is noted that Site 9 is multiple owned Maori land.

Overall

6.3.11 After reviewing all of the individual areas the Report writers are comfortable that the results are consistent with the base modelling; that development in Te Tumu is likely to be viable.

6.4 Comparison with developers own modelling

6.4.1 As a means to check the validity of the modelling results, Carrus Corporation used their own development feasibility model with their own cost inputs in relation to the Site 4.

6.4.2 The results showed that the development of Site 4 to be viable confirming the results provided by the TCC model. The outputs were within 5% of each other giving the Report writers increased comfort that the TCC model was working correctly and that the conclusions determined are reasonable.

6.5 High Level Peer Review

6.5.1 In order to gain greater assurance over the model outputs, Council obtained a high level review of the outputs from Martin Udale: Essentia Group. Mr Udale is a well-respected property consultant and was involved in the viability work completed for Wairakei in 2011/12 (therefore familiar with the model used).

6.5.2 This review confirmed the validity of the conclusions that TCC reached in relation to this work. A copy is included as Attachment E.

7. Other Issues

7.1 Contaminated Land

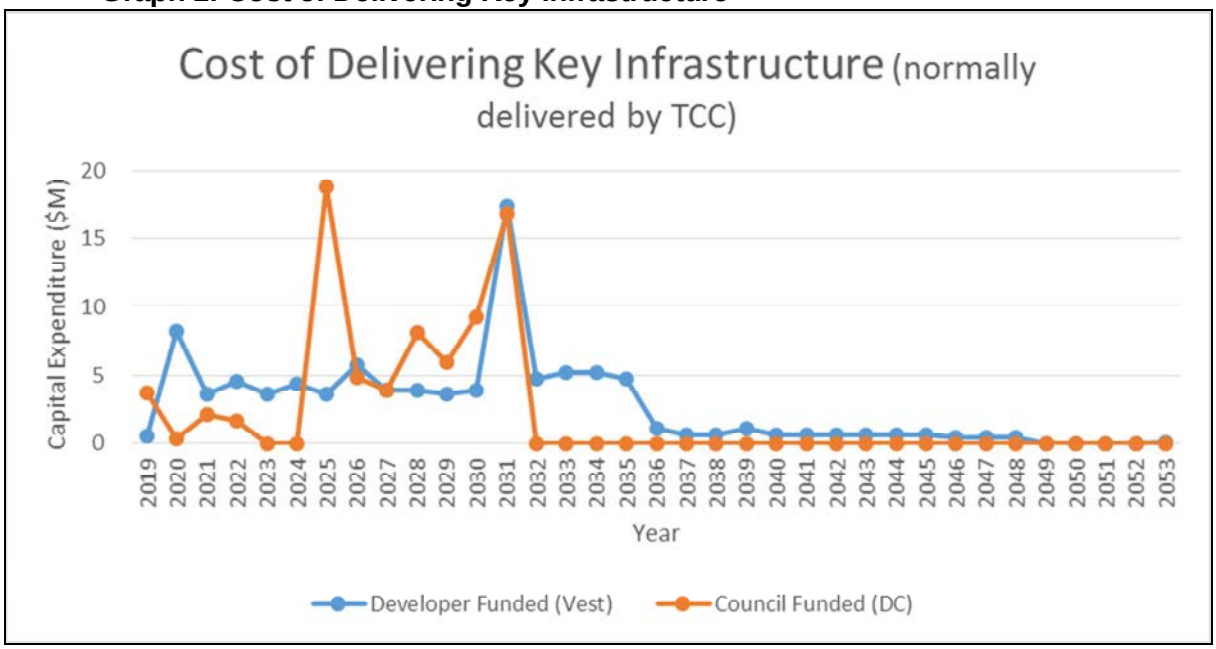
7.1.1 No allowance has been made for the consideration of contaminated land and potential requirements for remediation of land that is contaminated. If significant areas of land required remediation then additional costs would be required. Because of the history of land use there is not expected to be any significant areas of contamination and therefore no additional cost was placed within the model.

7.2 Council debt

7.2.1 Development contribution funding of local infrastructure generally results in Council incurring debt to fund this infrastructure which is then repaid as development contributions are collected as development proceeds.

7.2.2 Initial modelling suggests that Council's cumulative debt associated with local development contribution funded infrastructure for Te Tumu is likely to be low for most of the development period. There are a few 'spikes' in capital expenditure at particular points in the development as can be seen on the Graph 1, below.

Graph 1: Cost of Delivering Key Infrastructure



7.2.1 This is due to the significant portion of the internal infrastructure works being proposed to be delivered by the developer (rather than TCC) and the 'just in time' provision of infrastructure, peak debt is $22.6M and would likely occurs in year ten of Te Tumu's expected development (2031).

7.2.2 With the developers providing a significant portion of the infrastructure this also means that TCC's own investment is delayed. The development will be well underway with approximately 800 sections completed before TCC is required to make a significant contribution. This significantly mitigates the risk for TCC in relation to our investment and the recovery of debt. This is highlighted in Table 7, below.

Table 7: Cumulative Capital Expenditure by funding source

	First 4 Year spend ($M)	First 10 Year spend ($M)	Total Te Tumu spend ($M)
Council Funded Capital	7.93	58.82	75.88
Developer Funded Capital	24.94	49.78	95.87
Total	32.87	108.60	171.75
Area delivered (Ha)	53.32	150.00	262.00
Sections delivered (15/ha)	800	2,250	3,930

7.2.3 In the context of TCC's overall debt limits, the peak debt of $22M is not large. However there is the possibility that TCC's debt position may be under pressure in the future, especially if growth slows which would affect debt repayment on large projects such as the Southern Pipeline and the Waiari Water Scheme.

7.2.4 In addition, Council will be carrying significant debt associated with future projects such as the Waiari Water Treatment Plant and substantial upgrades to the Te Maunga Wastewater Treatment Plant to cater for growth across the whole City, including Te Tumu. As such there may be some pressure on TCC's ability to fund in a timely manner the entire infrastructure necessary for development in Te Tumu to be completed.

7.2.5 It is in order to mitigate this risk that TCC's position is that the local/internal infrastructure within the Te Tumu Urban Growth Area to be fully developer funded, as opposed to a mix of developer and development contribution funding.

8. Conclusions

8.1.1 The financial modelling as a whole indicates that there should not be any significant challenges to development being financially viable in Te Tumu.

8.1.2 Based upon the information assessed and modelling undertaken here is no reason why Te Tumu should now not be progressed towards the development of a structure plan and Resource Management Act planning process.

8.1.3 It order to mitigate TCC's financial risk it is recommended that the local/internal infrastructure within the Te Tumu Urban Growth Area to be fully developer funded, as opposed to a mix of developer and development contribution funding.

Te Tumu Development Scenario

1.0 Introduction

1.1 The Tauranga City Council is currently undertaking an investigation into the financial viability of Te Tumu through the Te Tumu Strategic Planning Study. Two workstreams within that Study require the consideration and testing of a development scenario. The two work streams are:

- Infrastructure Modelling; and
- Financial Viability.

1.2 A summary of each workstream purpose is outlined below:

2.0 Infrastructure Modelling

2.1 To investigate the implications of undertaking varying landuse scenarios (location and density) within the Te Tumu Strategic Planning Study area within the eastern and central corridors. This modelling work has been completed by updating existing modelling work and ensuring that analysis sits within identified urban development scenarios proposed.

2.2 The infrastructure investigation is focused on assessing and detailing the available infrastructure at main entry / exit points to the Te Tumu future Urban Growth Area, specifically, water supply, wastewater and transportation.

3.0 Financial Viability

3.1 The financial viability aspect of the project aims to address the following matters:

- Whether development is financially viable in Te Tumu. This has included a review of the previous financial viability work undertaken for residential development in Te Tumu, which concluded that development would be viable, and considered the following matters:
  - Possible additional development costs associated with mitigating tsunami risk;
  - TCC's desire for internal infrastructure to be fully developer funded as opposed to a mix of developer and development contribution funding;
- The sustainability of debt funded infrastructure costs required for Te Tumu on TCC's balance sheet.

4.0 Development of Infrastructure Plan – Network Design

4.1 Tauranga City Council has developed a roading and water main layout for investigation purposes to reflect a likely roading hierarchy (Appendix A). It is further coupled with a wider wastewater network (including pump stations) which would provide the necessary services for a maximum population of approximately 16,500 persons. This is the base design in which all modelling has been undertaken.

4.2 The wider network design includes the likely means in which infrastructure would be delivered under a standard reticulation model. This includes:

Transportation

- A main network of transport routes linking to the Tauranga Eastern Link (Stage 1 only), Te Okuroa Drive the Boulevard and Papamoa Beach Road supported by a network of local and collector roads.

Wastewater

- A wastewater network that aligns with the transport route with connection back to Te Maunga and supported by two main pump stations and a network of minor pump stations (10).
    - o A network of internal pipes and pump stations;
    - o Two new main pump stations for all of Te Tumu;
    - o Upgrades or replacement of pump stations and trunk pipes between Te Tumu and the Te Maunga wastewater treatment plant.
    - o Upgrades to the Te Maunga wastewater treatment plant and outfall pipeline.

Water

- A water network that aligns with the transport route supplied by the Waiari Water Treatment Plant and includes:
    - o Connection to the water network developed to the west in Wairakei;
    - o Dedicated water main from the Waiari water scheme to the eastern end of Te Tumu
    - o Internal trunk and local network of water pipes.

Stormwater

- A stormwater network that includes the construction of on-site stormwater mitigation storage and treatment in accordance with the Papamoa Comprehensive Stormwater Consent; the Wairakei Stream to Kaituna River stormwater overflow and other consented stormwater outfalls to the Kaituna River.

5.0 Constraints Mapping

5.1 To ensure the Tauranga City Council understands the developable area, the Council has undertaken research into constraints mapping. This has considered the following planning constraints:

- Outstanding Natural Features and Landscapes;
- Important Amenity Landscapes;
- Natural Character Areas;
- Special Ecological Areas;
- Significant Archaeological Sites and Cultural Archaeological Layer;
- Significant Maori Areas;
- Reserves Assessment;
- Sea Level Rise (excluding consideration of erosion);
- Flooding (from the Kaituna River);
- Stormwater Management;
- Liquefaction;
- Coastal Erosion; and
- Tsunami.

5.2 The outputs have resulted in the determination of constraints and unconstrained land, as outlined in the table below and shown in the map included in Appendix B:

Table 1: Total Unconstrained area

Total Ha - All Development Blocks	
Constrained:	402.7
Unconstrained:	343.7
Total Assessed Area	746.4

5.3 The above excludes:

- Provision for a 20ha active reserve;
- Potential school sites (of which it is anticipated that there would be two primary schools and one secondary school.
- Te Okuroa Drive extension into Te Tumu (which for the purposes of this assessment is not calculated as part of net density).

6.0 Site identification

6.1 For the purposes of developing a scenario each landowner block which is not constrained from development has been assessed for development, and identified below:

Table 2: Ownership of Land-blocks containing unconstrained land

Landowner Development Block	Site identifier
Tumu Kaituna 14 Block	1
Carrus/Hickson Block	4
Cameron	8
Tumu Kaituna 8B1 Block	9
Ford Land Properties Block	11
Tumu 11B2	12

6.2 Appendix C outlines all landowner ownership blocks within Te Tumu.

7.0 Scenario Development

7.1 The below information has been used to develop a scenario for financial and infrastructure modelling. The scenario assumptions include:

- All infrastructure required for development to proceed is located at the boundary of the Te Tumu Urban Growth Area by end of the 2020 financial year. The infrastructure location will be via Te Okuroa Drive (Roading, Water/Wastewater).
- Stormwwater will be managed in accordance with the comprehensive stormwater consent for Papamoa. The Wairakei Stream to Kaituna River overflow will be required when development is initiated within the northern catchment or when the relevant flood levels within the Papamoa Comprehensive consent are met.
- The land is able to be earthworked and appropriate RL's delivered without any requirement for fill to be imported into the individual landowner blocks (refer Appendix D for earthworks calculations – excludes roading and stormwater ponds/Kaituna Overflow and any earthworks being able to be undertaken within constrained areas).
- Te Okuroa Drive is able to accommodate 20,000 vehicle movements per day (or 2000 lots/133ha at 15dw/per ha) prior to additional road construction being required. It is a 140 Collector Road over Sites 1 and 2. All other roads shown in the network plan have a width of 25.5m). For the purposes of the assessment Te Okuroa Drive is excluded from the calculation of nett density.
- The Kaituna Link ($67.8M) and Stage 2 and 3 of the Papamoa East Interchange are not included in the assessment.
- Before any development can be undertaken all infrastructure (roading/water/wastewater) is required to be built to that development site. No provision is made in this research for alternative forms of infrastructure provision.

- Development will proceed as follows:
  - Year 1 – 5: Residential sections at 15dw/ha – 200 sections per year, with uptake occurring the following year of all sections.
  - Year 6 – 10: Residential sections at 15dw/ha – 250 sections per year, with uptake occurring the following year of all sections.
  - Year 11 – 15: Residential sections at 15dw/ha – 200 sections per year, with uptake occurring the following year of all sections.
- The average household size will be 2.2 persons per hectare at the completion of developing the growth area.
- The Papamoa East Town Centre development will not begin before 2025 and take 10 years to develop.
- 66ha of employment land will be provided within Site 1, with subdivision and development beginning after 2035. The uptake rate of this will be at 2.5 hectares per year (4.5ha per year is the current Tauranga City Council average for the last 6 years).
- Development will initially proceed within Site 4, with that beginning in Year 1 of any development model. The anticipated sequence of development is shown in Appendix A.
- Development will occur on all land (either commercial, industrial, residential) over the development period (including development on multiple owned Maori Land).
- Financial viability will be calculated using a standard density of 15dw/ha over all developable land.
- All constraints identified in the constraints mapping remain, and are un-modified with no development proceeding within these areas. Developable land areas are outlined below within each site:

Table 3: Unconstrained land by Land Owner

Site	Unconstrained Land Area (ha)	Unconstrained Land Area for net density calculations	Unconstrained Land excluding employment land
1	132	127.7	61.7
4	86	81.4	81.4
8	0.8	0.8	0.8
9	15.8	15.8	15.8
11	109	102.2	102.2
12	0.1	0.1	0.1
Total	**343.7**	**326.0**	**262.0**

- It is recognised that within any final development undertaken through a structure plan process that a 20ha active reserve will be required, one neighbourhood centre will be provided at 1.8ha and likely to constructed 5 years after residential development occurs and two local centres will be provided at 0.32ha (located within Site 1 and Site 4) and will be constructed at the time of development.

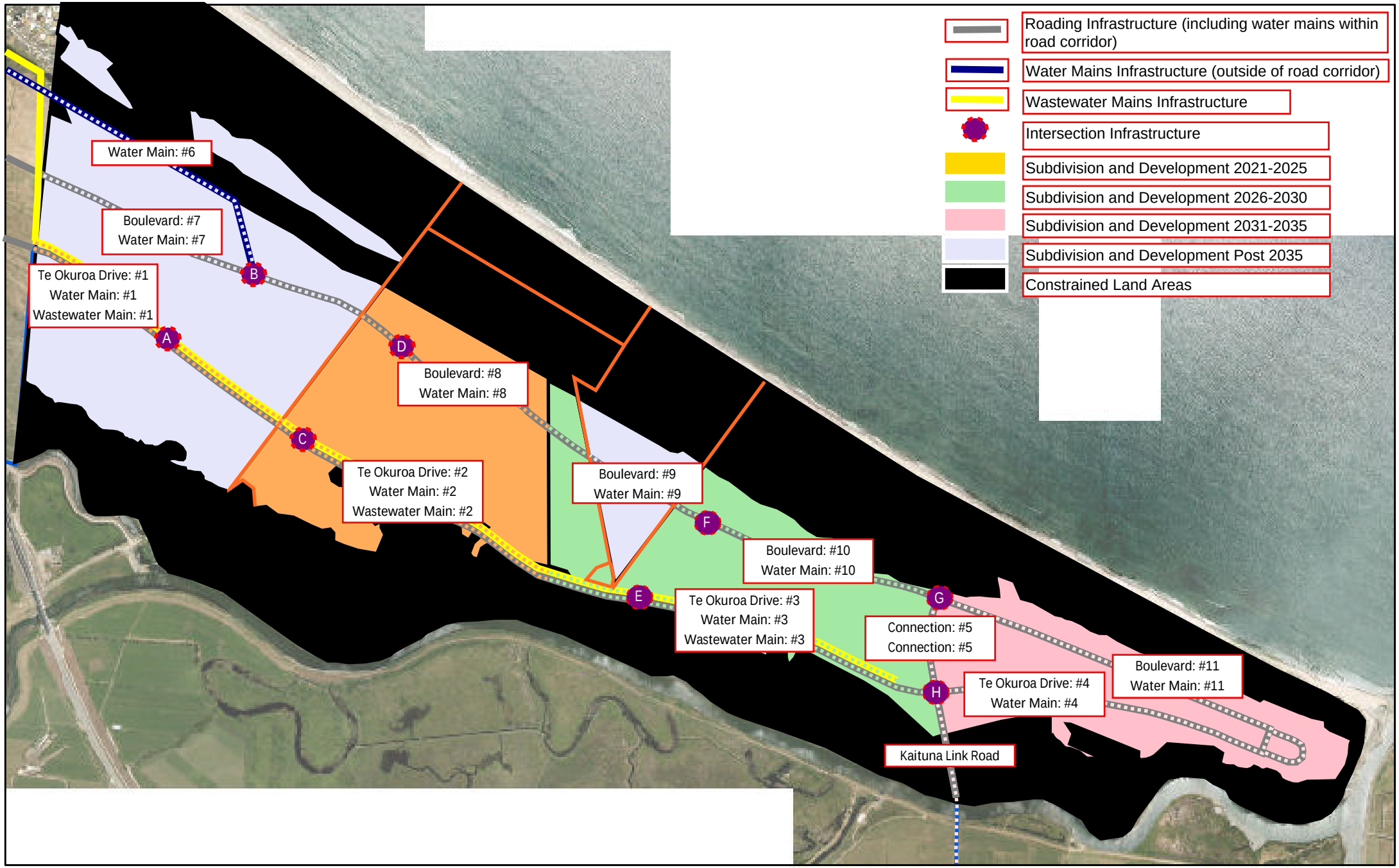
7.2 The timing and infrastructure requirements for this scenario are as follows (as provided in 5 yearly timeslots).

Table 4: Breakdown of development and infrastructure provision in 5 year blocks

Year	Site	Residential Development Area (ha)	No. of Lots (15/ha)	Popn (2.2 per Lot)	Infrastructure Requirements
Years 1 - 5					
	1	-			1. All infrastructure at Te Tumu boundary 2. Development progressively constructed over development period. Infrastructure provision includes: • Transport: 1, 2 (80%), signalised intersections A & C, and one roundabout (D). • Water: 1, 2 (80%), 8. • Wastewater: 1, 2 (80%), 8 and pump stations: Main Pump West, E & F.
	4	66.67	1,000	2,200	
Years 6 – 10					
	4	14.73	221	486	1. Development progressively constructed over development period. Infrastructure provision includes: • Transport: 2 (20%), 3, 10, one signalised intersection (E) and one roundabout (F). • Water: 2 (20%), 3, 10. • Wastewater: 2 (20%), 3, 10 and pump stations: H and Main Pump East. • Stormwater: Kaituna Overflow.
	8	0.8	12	26	
	11	67.8	1,017	2,238	
Years 11-15					
	11	34.40	516	1,135	1. Development progressively constructed over development period. Infrastructure provision includes: • Transport: 7, 9, 5, 4 11, and three roundabouts B, G & H. • Water: 6, 7, 9, 4, 11. • Wastewater: Pump stations: I and J.
	1	32.27	484	1,065	
Years 16-20					
	1	29.43	442	973	-
	9	15.8	237	521	
	12	0.10	1	2	
Total		**262.0**	**3,930**	**8,646**	

Appendix A

Infrastructure Plan – Network Design &
Infrastructure Plan – Network Pump Station Design

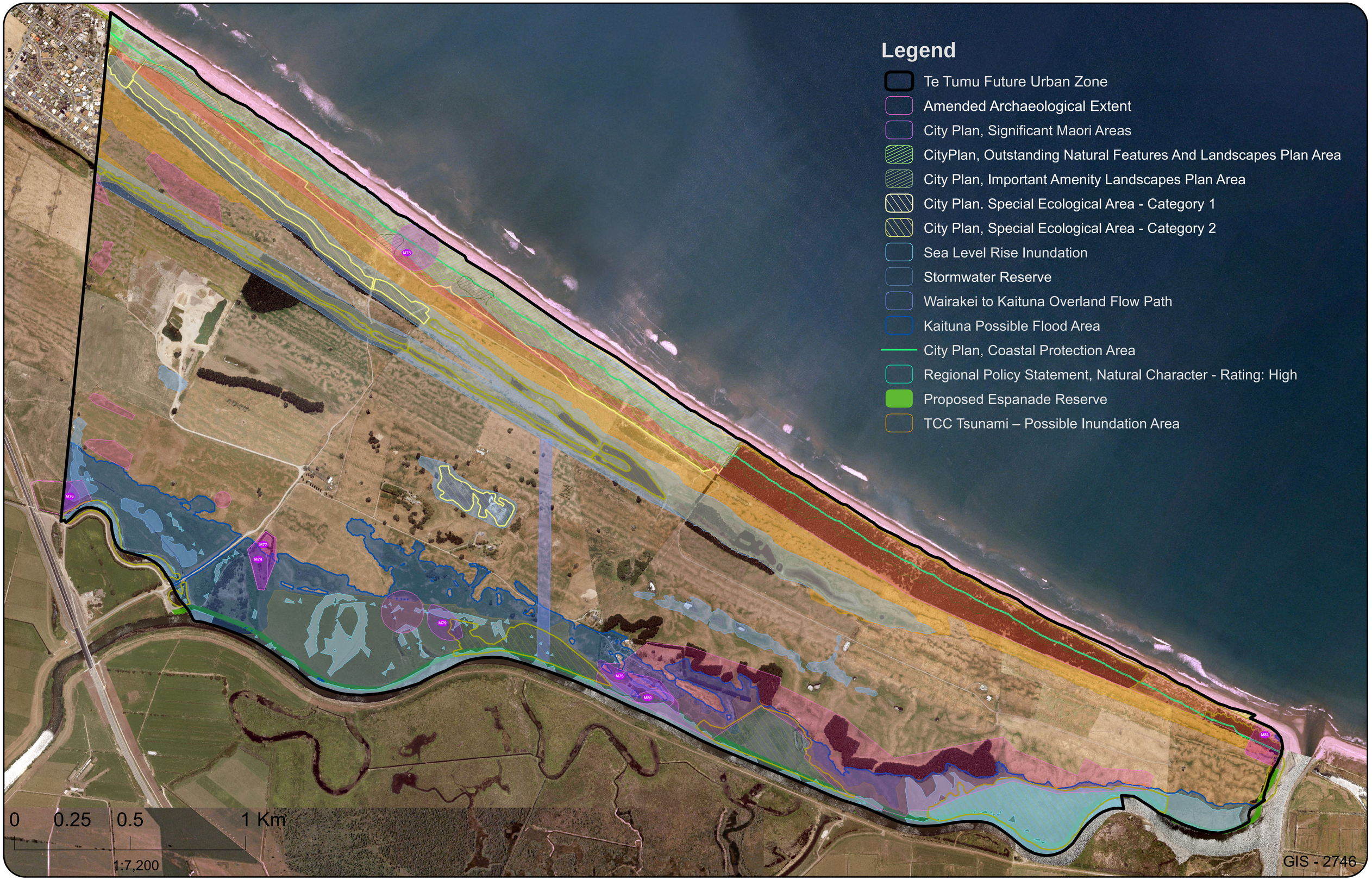


Te Tumu Infrastructure Provision and Timing

Te Tumu Proposed Pump Station Layout (Main and Local Pump Stations) - 400m radius

Appendix B

Constraints Map



Tauranga City

Constraints - Te Tumu Future Urban Zone

Displaying Amended Archaeological Extent

- Tauranga City Council -

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Appendix C

Site Identification – Ownership Blocks

Te Tumu Ownership Blocks

- Tauranga City Council -

Tauranga City

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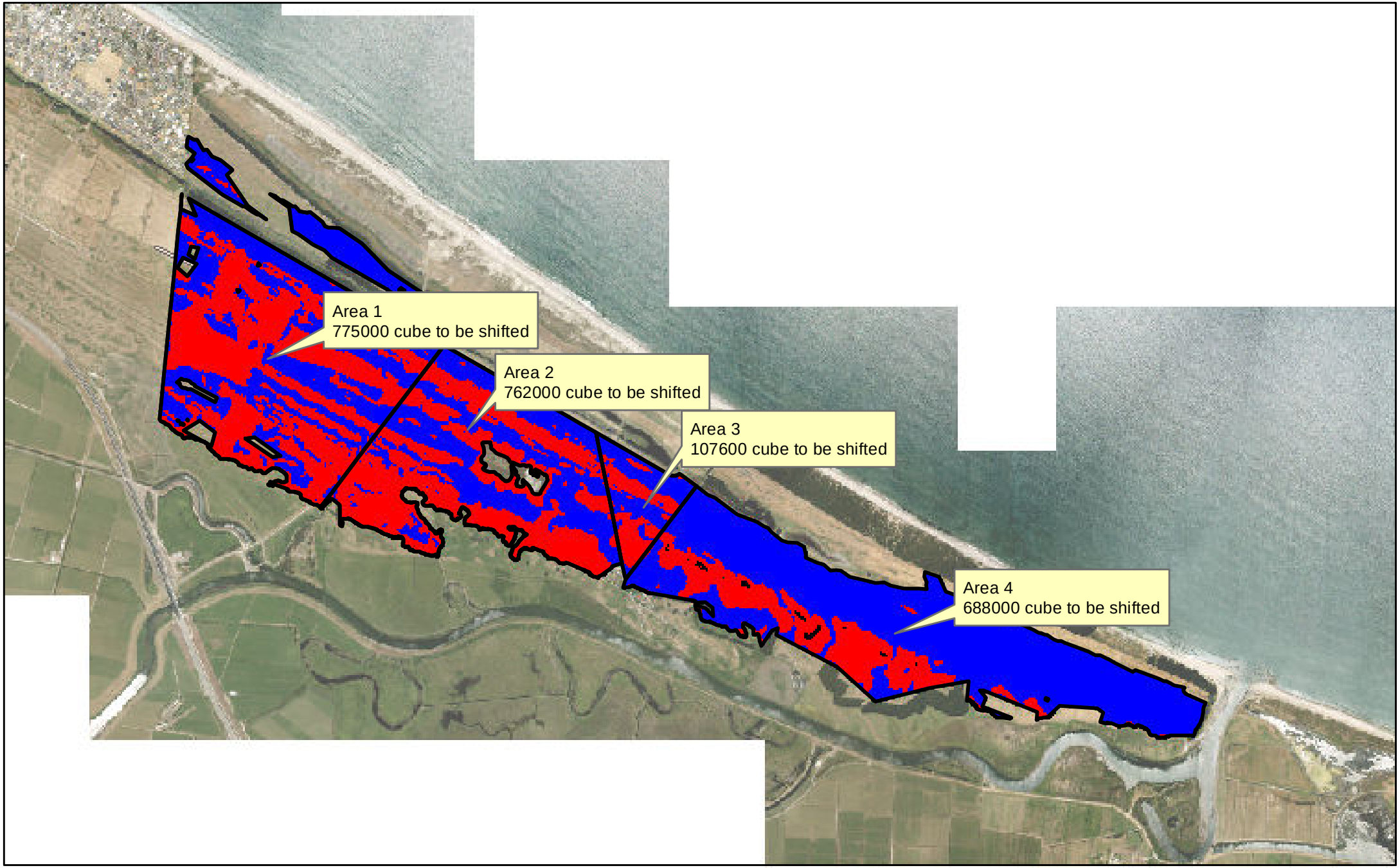
Information shown on this plan is indicative only .The Council accepts no liability for its accuracy and it is your responsibility to ensure that the data contained herein is appropriate and applicable to the end use intended.

Document Path: Q:\ServiceDeskRequests\2001-3000\2746\TeTumu_OwnershipBlocks.mxd

Appendix D

Earthwork Cut to Fill Plan

Landowner Development Block	Achieved RL (cm3)
1 Te Tumu Kaituna 14 Block	RL 5.65m
4 Carrus/Hickson Block	RL 5.89m
9 Te Tumu 8B1 Block	RL 6.11m
11 Ford Land Block	RL 6.3m



Tauranga City council

Te Tumu growth area, Cut and Fill areas

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Attachment B – Detailed financial breakdown: Kaituna Link

CO	SECTION NAME	UNIT	QUANTITY	RATE	COST
	KAITUNA LINK CONCEPT ESTIMATE				78,000,000
	TOTALS OF SELECTED SECTIONS				**78,000,000**

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	KAITUNA LINK RIVER CROSSING CONCEPT ESTIMATE				
	Inputs				
	Previous December 2006 prliminary estimate (filed in P:425/Estdata6/Back-up of old projects/3932176 Dec 2006				
	Note this estimate is filed in P:419/Estdata6/3500000-3999999				
	Drawings attached to Kaituna Link Study Report dated 30/1/2007 including; 1. Dwg 3932010-CK02B with route between Kaituna River crossing and Rangiuru Business Park shown 2. Dwg 3932176-CK03C 3. Dwg 3932176-CK02A				
	Scope				
	375m long x 14.03m wide steel I girder bridge with 80m long embankment to 1No. end only				
	New Kaituna Link Rd 1.5km long (from bridge, across Kaituna Rd Extension to new connection with Te Tumu Rd)				
	Widening of existing Te Tumu Rd 1.5km long. Assumes existing road is 6m wide and is widened to 10m wide carriageway (2No. x 3.5m lanes and 2No. x 1.5m shouler/cycleways with footpath one side)				
	New link road to proposed Rangiuru Business Park Interchange 0.75km long. 10m wide carriageway (2No. x 3.5m lanes, 2No. x 1.5m shoulder/cycleways with footpath one side. Assumed 200m long x 6m high embankment to ramp up to Rangiuru Business Park Interchange				
	Assumptions				
	All lengths of the proposed route have been scaled from the 1:40,000 drawings (checked by Google Maps) but need confirmation at developed design stage				
	2m of preload surcharge is assumed to be required for the new Kaituna Link Road only (i.e no preload required to existing Te Tumu Rd or link to Rangiuru Business Park)				
	An allowance of $5M for ground improvements to the new bridge approach embankments has been assumed. Note no geotechnical investigation has been carried out at this stage of the design cycle				
	Undercutting to pavement to Te Tumu Rd				

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	widening and new link to Rangiuru Busiuness Park only The embankment to the Rangiuru Business Park does not require any ground improvement (based on FHHCA design information from Tauranga Eastern Link) A connection only to the proposed Rangiuru Business Park is assumed Pavement construction of 250mm thick GAP65, cement stabilised, 150mm thick AP40 basecouse cement modified with chipseal surfacing Generally feather edge pavement with swale drainage (kerb and channel to bridge embankments only) All other drainage allowances are assumed Property purchase costs, property accommodation works and alterations to driveway entrances, shelter belts are assumed A stock underpass (assumed through the Kaituna River bridge embankment) is required Street lighting to intersections and bridge only (i.e. no street lighting provided to general raod sections) Relocation of existing services is assumed (overhead power and assume underground Telecom/fibre) A traditional consultant design and competitive tender with measure value procurement is assumed. No allowance for Design/Build or alternative forms of procurement have been allowed for **Exclusions** Roading connections either end of project ATMS system and ductwork Variable Message Signage system (VMS) Tolling and associated costs Ground improvements compliant with NZTA Bridge Manual Preload to existing Te Tumu Rd or to new link to Rangiuru Business Park Rangiuru Business Park interchange				

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Connection to TCC/ Te Okuroa Drive roading network				
	Alternative Kaituna River crossing through Ford Road (shown as Option 5 on drawing 3932010-CK02)				
	Additional capital funding cost to purchase entire properties including holding costs, subdivision and re-sale costs. Note this may be required as the proposed route divides significant farms and kiwifruit blocks				
	Funding costs				
	Escalation from December 2015				
	GST				
	Accuracy of Estimate				
	This estimate has been prepared from conceptual information. No detailed design or geotechnical information has been provided. Accordingly this estimate has an accuracy range no better than + / - 25%				
	New Kaituna River Bridge				
	Allowance for environmental controls	LS	1	50,000.00	50,000
	Steel I girder bridge structure 375m long x 14.03m wide	m2	5,262	4,000.00	21,048,000
	Abutment walls	m2	290	1,000.00	290,000
	Allowance for training piles at navigation span	LS	1	400,000.00	400,000
	Allowance for flood plain pier protection	no	5	75,000.00	375,000
	Temporary platforms for piling work in river. Assume 2No. x 25m long x 6m wide	m2	300	1,500.00	450,000
	Temporary access road under bridge	m	400	100.00	40,000
	25mm AC levelling to bridge deck (excludes cycleway/footpath)	m2	3,525	24.00	84,600
	40mm SMA surfacing to bridge deck (excludes cycleway/footpath)	m2	3,525	32.00	112,800
	TL5 barriers to bridge	m	790	included	
	TL4 approach barrier - assume 50m long each side	m	200	125.00	25,000
	Barrier TL4 to TL5 transition at bridge	No	4	1,500.00	6,000
	Leading end terminal	No	2	4,000.00	8,000

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Trailing end terminal	No	2	1,500.00	3,000
	Pedestrian/cycle rail	m	375	300.00	112,500
	Balustrade and pedestrian rail	m	375	550.00	206,250
	Lighting to bridge - assume at 50m centres both sides	No	23	9,000.00	207,000
	Traffic management - minimal requirement	LS	1	40,000.00	40,000
	Rounding	sum	1	1,850.00	1,850
	Total of New Kaituna River Bridge	**			**23,460,000**
	Kaituna River Bridge Embankment 80m long x 13m wide (plus 3:1 side batters)				
	Allowance for ground improvement (both ends of bridge. No geotechnical investigation has been completed and this is an item of high risk and cost uncertainty	PS	1	5,000,000.00	5,000,000
	600mm dia stone columns x 12m deep under embankment (assume 1.5 x 1.5m grid)	No	1,000	Included	
	Undercut embankment for raft foundation to waste off site	m3	2,048	Included	
	1000mm thick sand raft foundation	m3	2,048	Included	
	Geogrid reinforcing to raft foundation (assume 3 layers)	m2	6,144	Included	
	General filling to preload embankment (allow for 2m preload surcharge)	m3	6,331	30.00	189,930
	Cut preload surchage to waste off site	m3	3,088	20.00	61,760
	Allowance to remove sand dune at chainage 1300 (assume 5,000m3 to be removed)	m3	5,000	20.00	100,000
	Kerb and channel to sides of embankment	m	160	45.00	7,200
	Allowance for landscaping to embankment	m2	1,600	20.00	32,000
	Traffic management - no requiremens	LS	1	Nil	
	Rounding	sum	1	9,110.00	9,110
	Total of Kaituna Bridge Embankment	**			**5,400,000**
	New Greenfield Kaituna Link Road (1.5km long - measured over bridge embankment)				
	10m wide carriage way including; 200mm thick topsoil cut to waste off-site 2m thick preload surcharge 1.5m thick preload surcharge removal Undercutting (20% of subgrade x 0.5m deep)	m	1,500	2,315.00	3,472,500

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Subgrade trimming 250mm thick GAP65 sub-basecourse Cement stabilising to sub-basecourse 150mm thick AP40 basecoures cement modified First and second coat chipseal Drainage swale both sides 3m wide pedestrian cycleway one side Topsoil and grass reinstatement Road markings Allowance for edge barriers to 20% of road Sediment control				
	Allowance for upgrade of intersection of existing Kaituna Rd with new Link Rd including street lighting	LS	1	205,000.00	205,000
	Allowance for signage	LS	1	5,000.00	5,000
	Allowance for drainage and stormwater treatment	LS	1	100,000.00	100,000
	Allowance for property purchase (generally farm land) - assume 20m wide	Ha	3	350,000.00	1,050,000
	New stock fencing	m	3,000	16.00	48,000
	Allowance for stock underpass. Assume located in new Kaituna River bridge embankment	No	1	500,000.00	500,000
	Allowance to relocate existing farm race and stock fencing both sides - assume 1,000m	m	1,000	87.00	87,000
	Traffic management - minimal requirement	LS	1	40,000.00	40,000
	Rounding	LS	1	2,500.00	2,500
	Total New Greenfield Kaituna Link Road	**			**5,510,000**
	Upgrade and Widening of existing Te Tumu Rd, 1.5km long				
	10m wide carriage way including; 200mm thick topsoil cut to waste off-site Allowance for earthworks Scarify existing surfacing Undercutting (20% of subgrade x 0.5m deep) Subgrade trimming 250mm thick GAP65 sub-basecourse Cement stabilising to sub-basecourse 150mm thick AP40 basecoures cement modified First and second coat chipseal Drainage swale both sides Allowance to relocate existing overhead power lines Allowance to relocate existing underground Telecom 3m wide pedestrian cycleway one side Topsoil and grass reinstatement Road markings Allowance for edge barriers to 20% of road	m	1,500	1,490.00	2,235,000

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Sediment control				
	Allowance for signage	LS	1	5,000.00	5,000
	Allowance for drainage and stormwater treatment	LS	1	100,000.00	100,000
	Allowance for upgrade of existing drive crossing and culvert	No	12	5,000.00	60,000
	Allowance for property purchase (generally kiwifruit orchard) - assume 5m wide along entire route	Ha	1	500,000.00	500,000
	Allowance to remove and replace existing shelterbelt	m	1,500	250.00	375,000
	Traffic management - assume 9 months construction with Level 1 stop/go management	Day	270	1,250.00	337,500
	Rounding	LS	1	17,500.00	17,500
	Total Upgrade and Widening of Te Tumu Rd	**			**3,630,000**
	New Greenfield Rangiuru Business Park Link Road (750m long - measured over embankment up to Business Park interchange)				
	10m wide carriage way including; 200mm thick topsoil cut to waste off-site 2m thick preload surcharge 1.5m thick preload surcharge removal Undercutting (20% of subgrade x 0.5m deep) Subgrade trimming 250mm thick GAP65 sub-basecourse Cement stabilising to sub-basecourse 150mm thick AP40 basecoures cement modified First and second coat chipseal Drainage swale both sides 3m wide pedestrian cycleway one side Topsoil and grass reinstatement Road markings Allowance for edge barriers to 20% of road Sediment control	m	750	1,180.00	885,000
	Allowance to undercut embankment (assume 20% of area x 1m deep)	m3	410	52.00	21,320
	General filling to Business Park embankment	m3	5,280	27.50	145,200
	Kerb and channel to sides of embankment	m	160	45.00	7,200
	TL4 barrier - to embankment - assume 50m long each side	m	100	125.00	12,500
	Leading end terminal	No	2	4,000.00	8,000
	Trailing end terminal	No	2	1,500.00	3,000

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Allowance for landscaping to embankment	m2	1,600	20.00	32,000
	Allowance for signage	LS	1	10,000.00	10,000
	Allowance for upgrade of intersection of existing Te Tumu Rd with new Business Park Link Rd including street lighting	LS	1	150,000.00	150,000
	Allowance for drainage and stormwater treatment	LS	1	100,000.00	100,000
	Traffic management - minimal requirement	LS	1	40,000.00	40,000
	Allowance for property purchase (Kiwifruit orchard) - assume 20m wide	Ha	2	500,000.00	1,000,000
	New shelterbelt	m	1,000	200.00	200,000
	New stock fencing	m	2,000	16.00	32,000
	Rounding	LS	1	3,780.00	3,780
	Total New Business Park Link Road	**			**2,650,000**
	Sub Total Physical Works	##			**40,650,000**
	Preliminary and General				
	Allowance for P&G	%	41,150,000	0.25	10,275,000
	Adjust P&G measured on land	%	-2,100,000	0.25	-525,000
	Total P&G	**			**9,750,000**
	TOTAL PHYSICAL WORKS ESTIMATE	##			**50,400,000**
	Fees				
	Allowance for Investigation and Reporting	LS	50,400,000	0.02	1,000,000
	Allowance for geotechnical investigation	LS	1	200,000.00	200,000
	Allowance for Design and Project Documentation	LS	50,400,000	0.05	2,530,000
	Allowance for MSQA fee	LS	50,400,000	0.04	2,020,000
	Allowance for TCC direct costs	LS	1	200,000.00	200,000
	Allowance for resource monitoring fees	LS	1	30,000.00	30,000
	Allowance for Resource and Consent fees	LS	1	120,000.00	120,000
	Total of Fees	**			**6,100,000**
	TOTAL OF BASE ESTIMATE	##			**56,500,000**
	Contingency Allowance				

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Allowance for project contingency (20%)	LS	56,500,000	0.20	11,300,000
	Total of Contingency Allowance	**			**11,300,000**
	TOTAL OF EXPECTED ESTIMATE	##			**67,800,000**
	95th Percentile Funding Risk				
	Allowance for 95th Percentile funding risk (15%)	LS	67,800,000	0.15	10,200,000
	Total of 95th Percentile Funding Risk	**			**10,200,000**
	Totals for Section "-'KAITUNA LINK CONCEPT ESTIMATE'				**78,000,000**

Attachment C – Financial Viability Flow Chart

Financial Viability Assessment

Development Contributions Calculation

Development Plan/Structure Plan
- Determine Roading alignment and widths.
- Determine Wastewater provision and design.
- Determine Water provision and design.
- Determine Stormwater design.
- Reserves

- Determine Quantities (size/length)
- Determine Timing for Delivery of Infrastructure.

- Determine Unit Rate Costs.
- Establish which projects are TCC and which developer funded
- Determine rollout of development

Outputs:
Calculation of Development Contribution and developer funded large works (per hectare charge).

Stage One – Calculation of Large Infrastructure Costs

Development Feasibility – Growth Area

Development of Assumptions:
- Determine Allotment Typology (size/zone). (i.e. dwellings per hectare).
- Determine Rate of Development.
- Determine Contingency Costs.
- Determine design and Supervision Costs.
- Determine expected cash-flow of sales

Development of Inputs
- Determine Expected Sales Prices.
- Determine Costs:
  - Earthworks Costs.
  - Developer Funded Works.
    - Per ha (road/water/wastewater);
    - Per lot (power/phone/lighting etc).
  - Consent Fees and Processing Costs.
  - Project Management.
- Development Contribution and developer funded large works (as a per hectare charge) – refer Stage 1.
- Individual landowner information
  - Undevelopable Land
  - Land area and terms of purchase
  - Completion of Construction of Individual Allotment
  - Sales by Number of Allotments
  - Development Set Up Costs
  - Capital Funding Requirements
    - Land Purchase
    - Development
  - Borrowing Rate
  - Gross Margin required (must be plus 20 – 25%)

Outputs:
Calculation of Growth Area Development Feasibility.

Stage Two – Calculation of Developer Costs

Development Feasibility – Sensitivity Analysis

Development of key variables to be tested:
- Sales price.
- Individual development feasibility.
- Impact of some developments not occurring
- Cost of infrastructure
- Speed of Development

Outputs:
- Key aspects that may put development at risk

Stage Three
Sensitivity Analysis

Attachment D – Base model Financial Summary

Scenario Summary

Total Area being developed	262	ha
Density of development	15	lots per ha
Section Selling Price	225,000	per lot (inc GST)
Land purchase Price	379,070	per ha
Basis of Land Purchase	Land purchased upfront	

Financial Summary

		Value	%	per lot
Total Revenue		768,913,043		195,652
Construction Costs				
Land Purchase	99,316,279		17.8%	25,271
Construction Costs	273,688,363		49.0%	69,641
Total Construction Cash Outflows		373,004,642		94,912
Council Charges				
Development Contributions	89,588,942		16.0%	22,796
Other Council Fees	9,885,197		1.8%	2,515
Council Charges		99,474,139		25,311
Operational Cash Outflows				
Direct Sales Costs	33,985,957		6.1%	8,648
Developer Mgt and Project Mgt	29,987,609		5.4%	7,630
Rates	1,728,395		0.3%	440
Other Costs	20,220,000		3.6%	5,145
Bank Interest	393,296		0.1%	100
Total Operational Outflows		86,315,256		21,963
Total Costs		558,794,038		142,187
Profit/ (Loss)		210,119,006		53,465
Gross Margin		37.60%		37.60%

Internal Rate of Return

Internal Rate of Return (excl Bank Interest)	11.7%
Internal Rate of Return (inc Bank Interest)	11.7%
Internal Rate of Return (on Equity)	11.7%

Item	Development costs		Costs/ Revenue per lot	Contingency on
1	land purchase		25,271	
2	clear land		0	
3	earthworks		4,500	*
4	containated topsoil to landfill		0	
5	Standard Civil works (local roads, water, wastewater and stormwater)		24,750	*
6	Extended Civil works (infrastructure traditionally constructed by TCC)		24,395	*
7	Consents (including Des & Supervision and Subdivision legal fees)		3,660	
8	Design & Supervision of Construction		2,500	*
9	power/telecom/gas		4,600	*
10	streetlights		960	*
11	lanscaping - streets		1,000	*
12	Other per lot charges (Regional, LINZ,Incidentals,Iwi)		605	*
13	development contributions		22,796	
14	project management		7,630	
15	overheads (legal, accounting, project advisory/development management, rates)		4,000	
16	marketing/sales (incl. Commission and legal fees)		8,648	
17	project contingency	5.8%	6,331	10.0%
18	Operating Costs (rates etc)		440	
19	Project Finance Cost (weighted cost of capital)	6.0%	100	
20	**Total development costs**		**142,187**	
21				
22	**Revenue**			
23	Average section value		225,000	
24	**less GST**		29,348	
25	**Total revenue**		**195,652**	
26				
27	**Return on cost**		53,465	
	Gross margin		37.6%	
	Sensitivity analysis			
	cost -10%		52.9%	
	cost -5%		44.8%	
	cost +5%		31.0%	
	cost +10%		25.1%	
	cost + 20%		14.7%	
	Sale price (inc GST) to give a 20% Gross Margin		193,465	

Attachment E – External High Level Revue

MEMORANDUM

Attention Campbell Larking, Tauranga City Council

Date 28 May 2016

From Martin Udale

Subject Te Tumu Development Viability – High Level Review

1.0 Background and Task

The Te Tumu urban growth area is an area of land adjoining and east of Papamoa and Wairakei. It comprises a total area of approximately 746 ha of which approximately 344 ha are assessed as unconstrained and of which approximately 262 ha is assumed to be residentially developed over a 15-20 year period commencing in 2021. It has been assessed that this area is capable of providing in the order of 3,930 lots/dwellings of residential development at a density of 15 dwellings per hectare.

Tauranga City Council (TCC) is investigating the development potential of the area including consideration of its commercial viability.

TCC have requested a high level review of the development viability model developed for the Te Tumu urban growth area. This high level review is based on internal feasibility modelling undertaken by TCC which has been informed by inputs from both internal TCC resources and external parties. This has included developers/landowners, and their advisors who are currently active in the Tauranga development market, and in particular those familiar within the Wairakei/Te Tumu urban growth areas. As such the principal purpose of this high level review is to consider the assumptions/inputs made within the modelling and the outputs derived from it and to make recommendations in regard to any changes suggested and the reasons for such changes.

2.0 Use of Feasibility Model

TCC staff have developed a feasibility model for Te Tumu based on their prior involvement and familiarity with having developed feasibility models for similar large greenfield development areas in recent years, in particular the Wairakei urban growth area. The author is familiar with the model previously developed for the Wairakei urban growth area viability assessment, undertaken in 2011/12, and is comfortable that such a model is appropriate for the Te Tumu assessment noting that the model was subject to a robust peer review process at that time.

3.0 Review of Model Assumptions and Outputs

It is noted that assumptions have been based on information from a number of sources including commercial landowners/developers currently active in both the immediate district and the wider sub-region, Council's own internal infrastructure assessments and prior feasibility investigations undertaken by Council for this area.

Council have undertaken an assessment of major earthworks to test the ability to achieve a balanced cut and fill within the various ownership parcels, the potential road network requirements and likely water supply and wastewater infrastructure requirements to the boundary of the development area. All internal infrastructure construction is assumed to be undertaken by the land developer at their cost, excluding two main wastewater pump stations that would be required to service the growth area. It is noted that more detailed investigations will be required to validate such assumptions if the decision is made to take this area forward.

Overall - the inputs for the feasibility model appear reasonable and generally in line with costs associated with the development of other larger scale greenfield residential projects in the region. The nature of developing this form of land and underlying soil/geotechnical conditions is well understood in the Tauranga context and thus the cost assumptions should be comparable to recent and current projects being undertaken within the wider "Papamoa/Wairakei" area.

The extent to which soil conditions are known, or not, for matters such as extent of peat should be considered and reflected in an appropriately set level of contingency to reflect the level of risk, or unknowns, in this regard. It is understood that TCC has undertaken a range of assessment work in respect of ground conditions to understand potential effects and these are reflected within the inputs to the model. It would be useful to note in any output reports the parameters used to calculate costs (i.e. no peat deposits present etc) together with the respective contingency allowances provided for.

The feasibility modelling reports an unusually high Gross Margin (GM), of almost 40% overall, is achievable. This level of return reflects particular assumptions made in respect of land acquisition/holding cost that are unusual, and particular to the circumstances of current landowners within the Te Tumu urban growth area. Further comment on this is provided below. Given that the inputs overall are considered reasonable the level of profitability derived provides a level of comfort that even with quite significant changes to cost or revenue parameters the area is likely to remain viable for development purposes.

Recommendation on base assumptions - It is good practice to note where and when assumptions have been sourced from for future reference and should at any time these need to be reviewed or questioned. It is recommended that they be captured within the project master file and/or within any output report.

Comments in relation to specific input elements within the feasibility model follow below: -

Land Acquisition – of the 262 ha assumed to be residentially developed most is already owned by the expected end developer, or where it is yet to be acquired, the acquisition price is already known based on a pre-agreed and long-standing arrangement – the Carrus/Hickson block. Much of the land held for development has been in the ownership of the likely end developer for many years and the historic acquisition costs are not known/nominal. Therefore it is understood that within the model, for the purposes of establishing an assumed land acquisition price for viability assessment, the acquisition cost for the Carrus block (approximately 30% of the overall area) has been applied to the total development area. This establishes a per lot land cost of just over $25,000 at 15 lots per ha.

On the basis that all other cost inputs are reasonable the derived GM suggests that were any of the landowners to decide not to develop and to bring their landholding to the market, and assuming a reasonable level of competitive interest in the land and that all other input costs are fair and reasonable, then land cost is likely to be "bid up" to a level reflecting a gross margin on the project more in the order of 20 to 25%. This would provide a short term and less risky value uplift of some significance to the current landowner; however for the purposes of this viability assessment it is also reasonable to assume that any developer purchasing the land would only do so at a level, and on terms, which delivered an acceptable level of risk and return to them. As such whilst the reported GM would suggest that the land value input might be low in an open market context, any increase in the land cost would only be to a level that maintained the overall project viability.

Civil Works/Other Development Costs – it is noted that the development costs have been sourced from and/or agreed with local developers currently active in the market and the relevant area – as such they should form a reasonable basis for the assessment of the overall viability of development within Te Tumu. A review of these cost allowances also suggests that they are broadly in line with similar costs for large greenfield development projects and industry standard allowances for this stage of viability assessment.

Project Contingency – an initial review of the model inputs questioned the level of contingency provided. Further advice from TCC staff indicates that a range of contingency allowances are provided for across a number of differing inputs – these contingency allowances range from 10–37.5 % depending on the relevant input factor. Given this further advice the current contingency levels are considered acceptable.

Recommendation on Project Contingency- It is noted that some of the contingency allowances are grossed up in the rate adopted within the model and thus not easily identified. In general it would be better if the model could show the net cost for different input rates with the contingency factor then separately shown against that factor – this provides greater transparency and understanding to the casual viewer and also prevents inadvertent provision of further contingency amounts on top of those already provided for –

which could unintentionally and negatively impact project viability. If this cannot be easily done within the existing model then it is important to make sure that these are clearly articulated within any output report and / or project master file for future reference and understanding.

Project Finance – project finance costs provided for appeared low upon initial review. Further advice form TCC staff clarified that the underlying assumptions were that land was acquired on an all equity basis and that all other development costs were funded as to 50% equity and 50% senior bank debt with an interest rate of 6%. Such a funding structure would be unusual within more typical greenfield land development projects. To test the impact of alternate funding structures TCC re-ran the model assuming land acquisition is funded as to 50% equity and 50% bank debt with all other development costs funded with 100% senior bank debt at an interest rate of 8%. This provides a result more inline with "normal" expectations at $5,037 per developed lot. Whilst this is a significant increase in finance costs, overall the impact on the project viability is marginal with a resultant overall GM of 33% - this suggests that project finance should be readily secured if required and subject to normal lending criteria.

Revenue – revenue assumptions are understood to be based on recent sales of similar residential sections both within the district and the views and assumptions being adopted by the landowners/developers themselves. Modelling shows that the average assumed lot sale price of $225,000 (inc GST) could fall as far as $193,000 (inc GST) and still maintain an overall GM of 20%. This suggests that the viability of the Te Tumu development is relatively robust in terms of revenue assumptions.

Sales rates are assumed at 200-250 lots per year across the development period. Clearly these will be informed by both the rate of population growth within the region and changing demographic mix of that population over time and this should be monitored on an ongoing basis. If the assumption holds good that the current landowners, with a low level of land cost, remain as the long-term developers then the ability of the developer to ride out property cycles is likely to be more resilient and less susceptible to annual fluctuations in sales rates. Clearly a lower rate of sales will have an impact on funding cost recovery for TCC's lead infrastructure, and thus this assumption should be robustly tested as to impact on both the developer and TCC if a lower level of annual sales were to be adopted.

Various – the initial review identified questions around a number of other more minor inputs and outputs. These were not material within the overall assessment of viability and have been satisfactorily answered by relevant TCC staff involved with the project. As such they are not repeated here, they are held on TCC files should there be any need to review these further in the future.

4.0 Summary

In summary, and noting that this assessment is still based at a fairly high and conceptual level, it appears that the development of the Te Tumu urban growth area for predominantly residential development is likely to be viable and return a level of GM to the developers significantly above normally acceptable returns. This in turn could mean that such developers would favour this area and potentially accelerate its development once enabling planning controls and infrastructure are in place.

Clearly the usual range of project and market risks will impact the rate at which this land is developed. Given the size of the area in question, and that it will take many years to develop, it will be subject to the normal market cycles – good and bad – that the development sector is subject to. Hence, market conditions may have a significant impact on the final development capacity/output within the growth area and the rate at which it is developed. Council should be cognisant of this in considering its infrastructure investment in to opening up the area for development.

Martin Udale