proposed 50th anniversary legacy project

Mahurangi Coastal Trail

technical document

May 2016 'elegant footbridge' revision-in-progress

Prepared for the Mahurangi Coastal Trail Trust on behalf of all Aucklanders
Cimino Cole | secretary@mahurangi.org.nz | +64 27 462 4872 | +64 9 422 0872

mahurangi coastal trail trust

mahurangi coastal trail

technical document

May 2016 'elegant footbridge' revision

Contents

Foreword to May 2016 revision-in-progress

The Mahurangi Coastal Trail Technical Document was first published and presented to the parks, recreation and sport committee of the Auckland Council in October 2014.

Although the technical document has undergone numerous minor revisions since, that which is currently in progress is substantive.

Success in February 2016 of the crowdsourcing campaign that added Awaroa Spit to the Abel Tasman Nation Park triggered a rethink of Mahurangi Coastal Trail Trust's fundraising strategy.

On 13 April, trustees met with Adam Gard'ner and Duane Major, the Christchurch brothers-in-law who led the campaign that *Stuff* championed as 'Buy this beach.' The strategy meeting was the first step in planning a crowdsourcing campaign for the Mahurangi Coastal Trail, the major goal of which was to fund the proposed Judge Arnold Turner Footbridge—by far the costliest component of the project.

The meeting was also attended and guided by Steve Bramley, the consultant retained by Auckland Council to progress the creation of greenways, and who reports to the council's chief executive, Stephen Town.

During the meeting, the need to be able show potential supporters a visualisation of an 'elegant' footbridge, appropriate to the pristine estuarine landscape which is being asked to accommodate it, was identified. This, it transpired, was the earnest wish of the trustees present. However, landscape and visual impact had not been acknowledged by the project's self-appointed engineer, despite advice provided by Auckland Council at a meeting in 2014, and at the resource consent pre-application meeting in 2015. This advice was that the structure would be required to meet an extremely high threshold in respect to landscape and visual impact, particularly given the area enjoyed the highest protections available under the existing district plan and draft Auckland Unitary Plan.

The trust subsequently retained Mike Farrow of Littoralis Landscape Architecture, and a fresh approach to design of the Judge Arnold Turner Footbridge was initiated. A consequence of this is that the retired civil engineer who detailed the minimum-cost footbridge described in earlier iterations of this document has curtailed his involvement with the project.

The 'elegant' Judge Arnold Turner Footbridge described in this revision is strictly conceptual, but is sufficiently developed for the verbal opinions of a mechanical engineer, a materials engineer, a marine engineer and two civil engineers to have provided the trust with a high level of confidence that it is buildable and not prohibitively or disproportionately expensive. The trust however, while regarding it as its best-current-thinking on a footbridge crossing of the Pūhoi Estuary, envisages that further options to it, and the minimal-cost option, will be explored with the Auckland Council and the community before a resource consent application is progressed.

Auckland Regional Parks 50th Anniversary Legacy Project

Friends of Regional Parks and Mahurangi Action have proposed that the concept for a Mahurangi Coastal Trail described here be adopted by Auckland Council as *the* Auckland Regional Parks 50th anniversary, legacy project—the trail would link the first parkland purchased by the regional council, Wenderholm, with the last it purchased: The Schischka farm at Te Muri.

The two organisations have further proposed that the project be formally announced, by Auckland Council, in 2016, during the 50th anniversary programme of events, and be dedicated to the vision and actions of the fathers of regional parks network—Fredrick W O Jones and Arnold R Turner CMG—that led to the purchase of that first regional park, and its opening in the summer of 1965–1966. Judge Arnold Turner is unaware that advocates of the Pūhoi Estuary footbridge, independently of his daughter and trail trustee Bronwen, propose that his name be given to it.

Organisational

Friends of Regional Parks and Mahurangi Action have formed the charitable Mahurangi Coastal Trail Trust, to pursue the Mahurangi Coastal Trail as *the* Auckland Regional Parks 50th anniversary, legacy project. The deed-of-trust signatories include: Bill Burrill, long-serving chairman of the Auckland Regional Council's parks committee; Richard Pearson, who until recently was chairman of Ports of Auckland; and Bronwen Turner recourse planner and daughter of one of the two fathers of the Auckland Regional Parks network. Trust chair is United States Presidential Scholars listee and entrepreneur 21-year-old Tessa Berger.

Background

Te Muri is at the centre of three adjoining regional park estates, with Mahurangi to the north and Wenderholm to the south, with a combined total of 900 hectares of regional parkland. Auckland Council currently operates Te Muri parkland as part of the Mahurangi Regional Park.

The coastline of Te Muri was purchased in 1973 as part of the Mahurangi Regional Park, and was extended by a $15 million purchase of 383 hectares of adjacent farmland in 2010.

Te Muri is unique in that it provides a pristine beach that is free of commercial and residential development, and of public road access. It has a charm that approaches that of the much-vaunted New Chums Beach in the Coromandel, yet is less than 40 km from downtown Auckland.

At a meeting of the Auckland Council's parks, recreation and sport committee in October 2014, in response to a deputation organised by Mahurangi Action, it was resolved that the council would proceed with the preparation of a Te Muri Concept Plan, which will include options for how the new and previously purchased parkland might be developed. At a meeting of the Rodney Local Board in March 2015, in response to a joint Friends of Regional Parks – Mahurangi Action deputation, the board resolved to write a letter of support for the Mahurangi Coastal Trail concept.

A principal purpose of this document is to ensure that access to the new Te Muri regional parkland via a Mahurangi Coastal Trail, and Te Muri as a section of Te Araroa, the national walkway, is robustly considered as part of the long-term Te Muri planning process. Te Araroa Trust is aware of this proposal and watches on with interest. Once Auckland Council's position is established, the trust said it will further consider the merits of Te Muri becoming a part of the national walkway. The New Zealand Walking Access Commission has made a submission to the first phase of the planning process, supportive of the coastal trail concept.

Why do anything?

1. To provide better public access to this gem of Auckland Council's regional park portfolio in a way that enhances its charm and its unique location.
2. To address the safety risk of wading across Te Muri Estuary on the falling tide—during the first phase of a falling tide the current can be particularly strong, and the crossing hazardous.
3. To provide a means of crossing the Pūhoi River to and from Wenderholm. The Pūhoi River can only be crossed, by wading, at low tide.
4. To provide access suitable for those using public transport. Wenderholm is only a short walk from Waiwera, which has an hourly bus service to and from midtown Auckland.

Principal options for access to Te Muri include:

1. Do nothing
2. Link the parks together with tracks, and ferries or footbridges
3. Provide a separate road access from State Highway 1 via Hungry Creek Road with on-site parking.

Do nothing

The current access to Te Muri is from the car park above Sullivans Bay within the Mahurangi Regional Park. The access from the car park to the bay is via a metalled farm track to Te Muri Estuary. The stream can be crossed by shallow wading below half tide. On the falling tide between full tide and half tide, the stream flow can be strong, and it can be hazardous to cross.

There is no defined access from the south. At Wenderholm there is a boat ramp with a wharf but no similar access point at Te Muri to the north.

Hungry Creek Road accesses the farm from inland (State Highway 1) but this is a locked private farm road and currently unsuitable as a public roadway for park access.

Possible links within the adjoining regional parks

Within the park at Te Muri This would involve a footbridge crossing of Te Muri Estuary for pedestrians and cycles to provide all-tide access to Te Muri from Ngārewa Drive, Mahurangi West.

To the north Access to Mahurangi East is only by boat. A ferry or water taxi from Sullivans Bay or Ōpahi Bay might eventually be available. It is envisaged that, long-term, a wharf structure at Ōpahi Bay, Mahurangi West would provide public water access to Scotts Landing and Mahurangi Regional Park – West as well as Motuora Island. *Details of linking options are given later in this document.*

To the south Access to Wenderholm could be provided by a track to a wharf structure on the north side of the Pūhoi River to link by ferry or water taxi to the existing wharf at the Wenderholm boat ramp. The extremely tidal nature of the estuary would make this a tide-dependant option. An alternative would be to construct a footbridge across the Pūhoi River near the Schischka Homestead. Wenderholm is only a short walk from Waiwera, which has a one-hour frequency bus (981; NEX) service to and from the Britomart Transport Centre.

Provide separate access with on-site parking

This would involve a major upgrade of Hungry Creek Road from a one-way metalled farm track to sealed two-way road (4.5-km long; total upgrade 5.4km). Car parking for 1000–2000 cars has been suggested in the past. For this option, the road alone is likely to cost in excess of $4 million, as well as destroying the sense of isolation that is a major component of the charm of the location.

Te Araroa – the missing section

The original proposed terrestrial route for this trail between Pūhoi and Wenderholm is along the south bank of the river—the option of hiring canoes is available when tides are favourable. The south bank, however, is currently unavailable because of property holder access issues, and walkers have to walk on the shoulder of a busy road and a motorway on ramp for 5km. An alternative is to use Hungry Creek Road, and the Schischka farm road, provided neither becomes a public vehicle access route to the park. This route would require a crossing of the Pūhoi River by ferry or footbridge to Wenderholm as described above in the Links within the Parks. If the south bank route became available in the future, it could provide loop trail, but the highly scenic Hungry Creek Road route deserves to form the principle Te Araroa section.

Sea kayak trail

The parks with their remote camping experiences are totally compatible with the proposed sea kayak trail similar to that existing southeast of Auckland.

Key linkages for the Mahurangi Coastal Trail

The river crossings of the Pūhoi River and Te Muri Estuary are clearly the critical links.

A Te Muri Estuary crossing is needed to provide all-tide access and options are described below. The crossing proposed is a simple boardwalk structure raised only sufficiently high to allow kayakers passage under it at high tide.

The Pūhoi River crossing is far more challenging and requires a 300-metre plus footbridge. It also requires provision for the navigation of the upper reaches to near Pūhoi, the original limit of navigation.

History of the site

The following information below is mainly taken from *Jade River: A History of the Mahurangi.*

The site has a long history with the mana whenua Te Kawerau and Ngāti Rongo and more specifically with Te Hemara and Pomare of those tribes.

The land was originally purchased by the government as the Mahurangi and Omaha blocks in 1841. Land sales commenced in 1853 after establishing the Parihoro and Hemara reserves. The Hemara Reserve extended from the Pukapuka inlet to the Waiwera River. The far western part of the Hemara block was bought back by the government the following year. Te Hemara and his people had previously sort refuge in the Bay of Islands from warring tribes. Te Hemara returned to the reserve with 100 people and resided at the south head of the Mahurangi Harbour. There was a timber camp at Te Muri in 1859.

In 1866 the balance of the Hemara Reserve was subdivided amongst the chief and the sub chiefs as required by the Māori Land Court. Te Hemara was granted the block from Te Muri to Waiwera together with and a similar size block to the north. Pomare was granted various lands including the Nokenoke block, the site of their kāinga was on the flat behind the cemetery creek at Te Muri. There was a church built in 1868 on the

Pomare kāinga (It is understood that this was later barged to Wenderholm to become the Whitney room at Couldrey house). The kāinga was also recorded as containing 10 whare and orchards and the indications are that this was to the west of the small stream behind the beach, whereas the cemetery was to the east of this stream.

Te Hemara had sold most of his land by 1873. The exception was 85 acres upstream of Wenderholm, which he sold to Schischka in 1895 leaving Te Hemara with just 5 acres. When Te Hemara died in 1896, this land was passed to Schischka to settle a debt. This land became the site of the Schischka family home until the land was finally sold to the Auckland Regional Council.

Greenwood Estate promotional poster (1886).

Section of the Greenwood Estate poster showing details of the Pūhoi River and proposed adjacent subdivisions (1886).

In 1885 Greenwood had purchased most of the Te Muri land. Greenwood had also bought much of the Wenderholm land from Graham and Ryan, with the intention of developing it as a seaside development. A depression occurred shortly after purchase and Greenwood went into bankruptcy. The details of the proposal are shown on the poster displayed in Couldrey House (see previous page). It is not known how much, or if any, of the development was actually carried out.

Te Hemara died in 1896.

Pomare had mortgaged his land in 1878, and when this was not paid off the land was sold to Dufaur in 1884.

The Nokenoke block was passed on to Wenzlick and then to Thomas Ansell and finally on to Edmund Schischka. The Ansell house was on the site of the Pomare kāinga and remained until the 1920s. There is some extant evidence of the house and also of a chimney from a subsequent cottage.

The cemetery has been subject to hearings in 1945 and 1960. The cemetery that is currently fenced may be only a fraction of its original area.

Sixty-four hectares of coastal Te Muri land was purchased by in 1973, by the then Auckland Regional Authority. The balance of the farm, 383 Ha, was the final park acquisition by Auckland Regional Council, for $15 million, in 2010 before that body was absorbed into the new Auckland Council.

NOTES:
1. This plan has been prepared for concept purposes only and is not to be used for any other purpose.
2. Aerial Photo will be subject to scale and rotation distortion.
3. Existing walkway locations are indicative only.

PARALLAX
SURVEYORS AND PLANNERS
PO Box 266 Warkworth 0941, Ph 09 425 8700
www.parallaxsurveyors.co.nz

Project:
Mahurangi Coastal Trail
Greater Mahurangi Regional Park

Plan Title:
Overall Walkway Plan

Original Scale:	Original Size:
1 : 15,000	A3
Date:	Drawing Number:
May 2016	15060-01 Version C

NOTES:
1. This plan has been prepared for concept purposes only and is not to be used for any other purpose.
2. Aerial Photo will be subject to scale and rotation distortion.
3. Existing walkway locations are indicative only.

PARALLAX
SURVEYORS AND PLANNERS
PO Box 266 Warkworth 0941, Ph 09 425 8700
www.parallaxsurveyors.co.nz

Project:
Mahurangi Coastal Trail
Greater Mahurangi Regional Park

Plan Title:
Diagram Plan 02c
Puhoi River & Wenderholm

Original Scale:	Original Size:
1 : 5000	A3
Date:	Drawing Number:
May 2016	15060-02c Version C

History of the Mahurangi Coastal Trail

Before roads were constructed, travelling was either by boat or via the coastal trail. The construction of the Great North Road was being pursued but this was inland from Pūhoi to Moirs Hill, relatively near the summit. Coach services to Warkworth via this route were established in 1882. Rodney County Council makes reference to the coastal trail and its ferrymen in 1877 and 1888.

The references to the service were to the lack of reliability. The council agreed to pay half the cost of the ferrymen at the Pūhoi River mouth and at Mahurangi (Ōpaheke to Scotts Landing) during that year.

Environmental Issues

Summary of environmental implications, from a historical perspective.

The evidence of a varied occupation by Māori and subsequent Pākehā needs to be respected. The high land to the north of Te Muri Estuary towards the headland was occupied by Māori. This could also include the hill near to Ngārewa Drive.

At Te Muri, the land around the cemetery is inadequately defined. The existing fencing is unlikely to correctly define the area. The main occupation was on the land on the opposite side cemetery creek and this is also best avoided.

South of Te Muri no specific reference of occupation is made but high land has probably been occupied. The hill opposite the Schischka Homestead may also have been occupied by Māori (M Vujcich, pers. comm.). The land south of the Pūhoi River has historical significance both at Wenderholm and at the Schischka Homestead.

In these areas care should be taken. If development is proposed, it should be by filling rather than excavation to avoid destroying any relics.

Proposals for linking elements

Pūhoi River crossing

Crossing points that could be considered are:

Upstream of Schischka House

Downstream of Schischka House

In the vicinity of the boat ramp

At the river entrance, by ferry

At the river entrance, by suspension bridge

The river entrance has to cope with high tidal flows and any crossing structure would have to allow for yacht passage.

The vicinity of the boat ramp would involve a long crossing and the profile of the riverbed in this area is subject to change.

Consideration the options in more detail is as follows:

The 'Elegant' Judge Arnold Turner Footbridge

The environment into which the Mahurangi Coastal Trail Trust proposes to impose a footbridge is a largely unbuilt pastoral and coastal indigenous forest estuarine landscape.

Downstream there is an Auckland Council mooring area, but one that is very sparsely occupied, reflecting the very tidal nature of the estuary, and this latter factor of course, without dredging, rules out a ferry service alternative to a footbridge. It is acknowledged, however, that once multi-metre sea-level rise occurs, a ferry service would be the only viable means of maintaining access across the Pūhoi River.

In order that the landscape and visual impact of the proposed footbridge be minimised, these five substantive changes to the now superseded least-cost option are proposed:

1. The footbridge would be located about 300 metres further upstream, to minimise its visual impact and to remove it from the prime, downstream estuarine vista from Schischka House

2. The southern abutment would visually acknowledge and be located on the solitary headland on the southern side of the Pūhoi Estuary that is within the regional park boundary
3. The route of the footbridge across the estuary would reflect the sinuous underlying estuarine geomorphology
4. The footbridge sections would be much lighter and lower visually; and
5. Single supporting piers would be used, rather than double, to reduce visual clutter.

While the prime objective of these changes is to reduce landscape and visual impact, each brings with additional advantageous attributes:

1. Moving the location upstream and locating the southern abutment on the headland would future-proof the footbridge from the early effects of sea-level rise—the least-cost option has the southern abutment on a shoreline this is already retreating and the road along it has been relocated by Auckland Council
2. The sinuous route across the estuary allows the sections that cross the principal and secondary navigational channels to do so at right angles
3. The shaped undersides of the proposed footbridge sections, and fewer and single rather than paired piers would minimise the tendency of the structure to collect flood debris.

The other major departure from the least-cost option regards the width of the footbridge. The minimal width allowed, 1.46 metres, is little more than half the recommended minimum of 2.4–2.5 metres. Given the length of the bridge, and its use by cyclists as well as pedestrians, the bridge needs to be sufficiently wide for users to feel reasonably comfortable during periods of high usage. The footbridge is a key component of the Mahurangi Coastal Trail, which is intended as the principal means of accessing Te Muri. A too-narrow a bridge would fail abjectly in this goal.

Initial rendering of the proposed Judge Arnold Turner Footbridge by Littoralis Landscape Architecture, focussing on the swing-opening span—'this method is seen as having particular relevance as it reflects the mode of the historic bridge that once existed further upstream.' (See also design outline and underlying principles, pages 16–17.)

An elegant historical opening span

A critical component of the 'Elegant' Judge Arnold Turner Footbridge would be the opening span.

The current campaign for the Mahurangi Coastal Trail began with the purchase of the 383-hectare Peter Schischka farm, and the 18 June 2010 *Mahurangi Magazine* piece that included:

> *Pūhoi River once boasted a turn bridge, as part of the Great North Road. A coastal cycle trail featuring a turn bridge would reward walkers and cyclists and would make a wholesome Mahurangi contribution the '100% pure' promise.*

Mahurangi Action Incorporated was made aware that there had been what bridge engineers term a swing bridge, across the Pūhoi River by Craig Davis, who then had recently been Rodney District Council's coastal engineer, who reported that there were extant photographs of it, and that he considered its historic significance useful in advancing a Mahurangi Coastal Trail footbridge.

Davis Coastal Consultants produced, partly pro bono, a sectional drawing of a Pūhoi River footbridge, but without an opening span, as a baseline from which begin discussions with Auckland Council. At the time Mahurangi Action was in straightened financial circumstances, causing a hiatus in the engineering progress of the project.

In subsequent *Mahurangi Magazine* articles, the proposed opening span is of the swing bridge type, beginning with the 28 September 2010 piece titled Captain Jones' Legacy Complete at Te Muri:

> *While board-walking the upper Te Muri estuary is a trivial matter, bridging Pūhoi River is not. But here, history helps—the Pūhoi once boasted a pivot bridge, as part of the Main North Road. Swinging a pivot bridge open to allow the occasional yacht to venture upriver could conceivably be the highlight of a holiday.*

Te Muri Acquisition Key to Coastal Trail, published 8 February 2011, makes references to a proposed Mahurangi Coastal Trail swing bridge, including this caption:

> *Not the Pūhoi Pivot Bridge: Lacking an image of the bridge that once formed part of the highway past Pūhoi, this on the Chesapeake and Delaware Canal is of a similar era.*

The proposed swing bridge is mentioned in the *Mahurangi Magazine*'s submission on the Draft Auckland Plan, published on 31 October 2011:

> *Mahurangi and Wenderholm exemplify the potential for regional park accessibility. The southern extent of the parkland, Waiwera, is the northern terminus of a public transport system serving nearly 1.5 million people. At present, few people walk the short distance to Wenderholm, much less continue to explore the balance of the parks' 10 kilometres of contiguous coastline. For a very modest expenditure, the Pūhoi River could be crossed with a combination of boardwalk and a pivot bridge, effectively providing access the popular backpack camping sites at Te Muri and Mita Bay, and nearly 900 hectares of parkland.*

…and again on 7 December 2011, in Road Would Ruin Future for Mahurangi Coastal Trail, in the caption:

> *'Historic' Pivot Bridge: The Great North Road crossed the Pūhoi River using a bridge similar to this on the Chesapeake and Delaware Canal of a like era. Given that the span would only occasionally need to be opened—most craft using the Pūhoi would simply sail under it—it could form a practicable and interest-generating feature of the long-mooted Mahurangi Coastal Trail.*

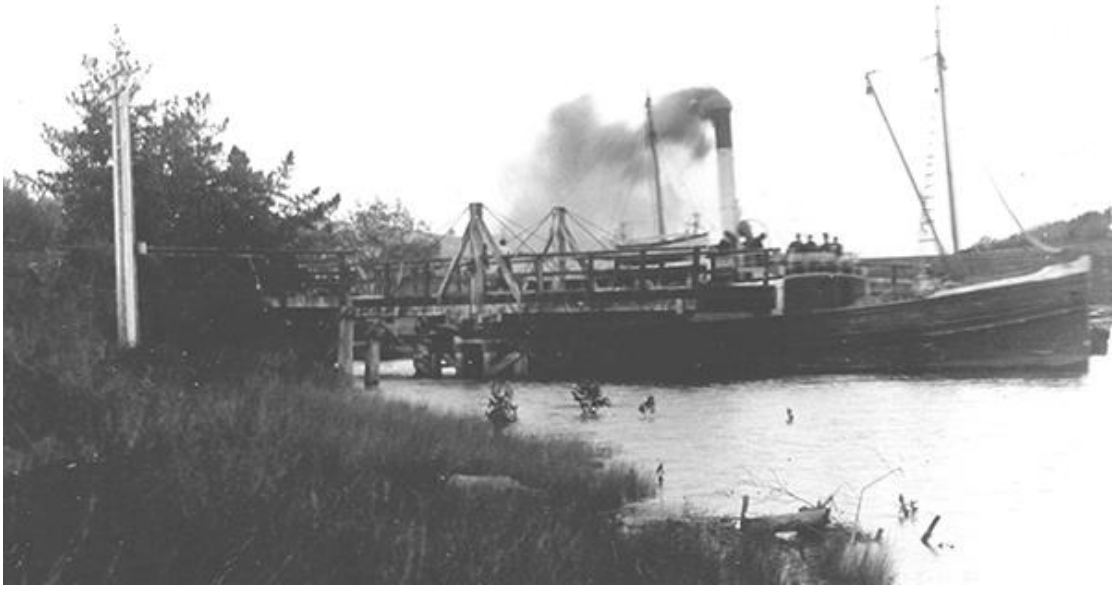
Unfortunately, the project's intervening engineer had developed an aversion to the swing bridge type during his professional involvement with the Kopu Bridge, and would brook no discussion of the type. However, the Mahurangi Coastal Trail Trust, in embracing a fresh approach to the footbridge, and the quest for elegance, has

determined, if practicable, to use the swing bridge type, for its potential elegance of form, but, more importantly, for its historic link with Pūhoi's steamboat era.

A critical advantage of the pivot form over push bridge promoted in the previous version of this technical document, is that the span, in addition to being opening, can readily be arched. This will permit it to visually respect the navigable channel and, practically, provide an additional 1.75 metres of vertical clearance, meaning that the passage of only particularly large craft, or those without folding masts, will oblige the span to be opened.

In addition, the particular swing bridge concept being developed involves what appears to be a unique feature whereby the supporting piers continue up through a stationary circular section of deck to form the masthead to comprehensively cable-stay the swinging span. This allows for the span to be much lighter physically and visually than swing bridges generally, and particularly the rather squat example that served Pūhoi, until the great, 1924 flood. Further, the resultant 'tower' would complement the arched section's self-cueing of the principal navigable channel.

This, now preferred, option for crossing the Pūhoi River is still at the conceptual stage a no attempt has been made to cost it. The cost for this option will, of course, be significantly higher than for the following option. However, this is academic, given the improbability of the following option gaining a resource consent, particularly in respect to landscape and visual impact.



Until the flood of 1924, the bridge three iterations before the present State Highway 1 structure in that location could be swung open to allow access to the township of Pūhoi, as in this image of the *Kotiti* steaming downstream through the opening.
Image **Pūhoi Museum**

Pūhoi River footbridge downstream of Schischka House

The general site is well upstream of typical yacht activity, but would interrupt Wenderholm estuarine vista from the Schischka homestead. Notwithstanding the draft assessment of landscape architect Jan Woodhouse (see appendix), professional advice taken by the trust since is that this option is not considered to be capable of obtaining a resource consent in respect to landscape and visual impact.

The construction costed involved 50 spans of 6 metres. The first and last three spans would have been sloping to achieve 2-metre clearance over the remaining 44 spans. One of the spans over the main channel would have been an opening span designed to be readily relocatable should there be a major channel change at a future date.

From the northern abutment, it is possible to walk the foreshore except at high tide. The foreshore gets muddy as it approaches the side stream (known as Spaniards Creek) and the proposed track needed to link with the onshore track at this point. To create all-tide

access, a linking track over the bluff with some boardwalks and a 12-m footbridge across Spaniards Creek would have been required. *(total $1.0m)*

Pūhoi River ferry from existing boat ramp to wharf to north bank

Alternative wharf structure on north side of Pūhoi River. (30m long) *($100k)*

Pūhoi River ferry closer to river entrance

Medium term additional wharf structure on south side. (20m long) *($50k+ $100k for A2)*

Pūhoi River mouth suspension bridge

While potentially the most efficient point at which to cross the Pūhoi River from a bridge engineering perspective, the landscape and visual impact on the largest number Wenderholm Regional Park users would be greatest, and it would very substantially add to the intensity of use of the most-used area of the park.

Consideration of other footbridge locations

The vicinity of the boat ramp is a long crossing and the profile of the riverbed in this area is subject to change. A footbridge crossing in this location is not recommended.

Track within Te Muri regional parkland

Improved farm track up to saddle 400m. (The existing track will require regrading to achieve a 1 in 8 gradient and provide better viewpoints). *($33.5k)*

Benched track in farm paddock 450m (approx 1 in 10, initially grassed but may require metal dressing). *($36k)*

Track in farm paddock behind beach top. Level on sandy base. It is envisaged that this would within a planted pōhutukawa buffer zone from the beach and offer an alternative route to walking along the beach. *($10k)*

Crossing of inlet downstream of the cemetery. 50m boardwalk. *($38k)* (This may not be essential as an alternative track can be provided to a crossing further upstream near the cottage. Note that the existing footbridge at this point needs upgrading to a short boardwalk.)

Paddock perimeter track. Some grading and 1–3m footbridge. Maintenance by mowing. *($10k)*

Te Muri Estuary crossing

Crossing points that could reasonably be considered are:

Immediately upstream of the farm road and adjacent pōhutukawa.

Farther upstream across a small island and to the paddock to the north.

Farther upstream again at the kauri-clad bluff.

Consideration the options in more detail is as follows:

Farm-Road Crossing - estimate $165k

Farm-road crossing of Te Muri Estuary to upstream of the pōhutukawa tree. 150m boardwalk (50 spans of 3m) and 30m footbridge (5 spans of 6m).

Direct Crossing - $196k including access track

Direct Crossing of Te Muri Estuary via small island then to existing paddock access, 45m boardwalk (15 spans of 3m), 20m island, 30m boardwalk (10 spans of 3m), 30m footbridge (5spans of 6m), 99m boardwalk (33 spans of 3m).

Paddock crossing

150m will require some re-contouring to achieve 1 in 8 grade. Metalling will be required. It is envisaged that this paddock could eventually be revegetated with indigenous plants. In the future, the upper part of this area could also be developed as a carpark.

Upper Crossing - $301k including access track

Upper Crossing of Te Muri Estuary. Paddock crossing including a 69m boardwalk (23 spans of 3m), then a 30m footbridge (5 spans of 6m), 69m boardwalk (23 spans of 3m).

Bush track around base of hill to northwest 300m, maybe one third of which needs a boardwalk plus 220m of steep track and 300m of grassed track to Ngārewa Drive.

Existing track to car park. Existing track approx. 1 in 8; no work required.

Ngārewa Drive car park extension, if required.

Comment on Pūhoi River crossing

1. The proposal is to provide a footbridge crossing upstream of Schischka House. The flow here is not as extreme as at the heads and it is well clear of the inshore bar. The riverbed is more stable here than anywhere nearer the entrance. Tidal flows at the entrance move sand in and out of the harbour depending on the prevailing sea conditions. Flows at the entrance have greater velocities and therefore a deeper channel can be expected in that location.
2. The design of the footbridge will be influenced by the historical stability of the channel. This needs a study of historical aerial photos. Flood flows and an assessment of the debris likely to be carried by the river under flood conditions will be required.
3. The main channel is currently closer to the southern bank but at times may have been adjacent the rock shelf at the bluff opposite.
4. This crossing readily links to open country over the bluff to the north and to existing farm tracks that can be connected to form a gentle gradient all the way to Te Muri Beach. No further crossings are required, unless the culvert across Spaniard Creek is daylighted, and consideration should certainly be given to doing that.
5. An alternative, of creating a landing on the north bank from which to operate a ferry, even with a new landing constructed on the south side to minimise the crossing distance, would be unreliable due to the extremely tidal nature of the estuary, without, ahead of multi-metre sea-level rise, considerable and ongoing dredging.

The upstream footbridge (Option 2) is the recommended option.

Comment on Te Muri Estuary crossing options

Background

Safety

Unlike the Pūhoi River, Te Muri Estuary empties almost completely by two hours before low tide, and is then little more than ankle deep—a set of stepping stones are used by some allow crossing without wetting footwear. Crossing at other times can require anything from shallow wading to swimming, depending on how full the tide, on whether tides are neap or spring, and the height of the person crossing. The most potentially hazardous time to attempt to cross is early on an outgoing tide, particularly on a springtide, and particularly for weak- or non-swimmers, or those unaware of how to traverse a rip. Crossing mostly occurs at one of two points: 1.) at the terminus of the farm road, and 2.) at the river mouth. Of the two crossing points, the river mouth presents the greater potential hazard because the flow is concentrated and consequently considerably swifter than the crossing adjacent the farm road terminus. However, despite the potential danger, large numbers of people have enjoyed the challenge of crossing Te Muri Estuary for the 40 years since the parkland was purchased, without serious mishap.

Ecological

Te Muri Beach is partially a sandspit, the head of which is an important breeding area for dotterels and oystercatchers. An unfortunate downside of the two currently most-used crossing points is that they lead walkers close-by these nesting sites. While tape fences provide the nests themselves with some degree of protection, pedestrian traffic

between the nests and the beach where the birds feed is highly disruptive to them. Two of the crossings discussed below (Direct and Upper) would reroute walkers well clear of the spit head and thus the nesting area.

Utility

The lack of an all-tide crossing severely limits reasonable public access to Te Muri regional parkland, particularly in the winter when many walkers are unprepared or unwilling to wade the estuary.

Crossing options

1. Farm-Road Crossing is the lowest-cost option but is visible from existing estuary crossing point, detracting from 'pristine' scenic value of the main body of the estuary, and from wading experience enjoyed by generations of Te Muri beach users. It also fails to adequately divert walkers from the ecologically sensitive spit head. It would, however, provide a conspicuous alternative to risk-taking, such as attempting to cross during a strongly flowing ebb tide).
2. Direct Crossing has less visual impact but is more expensive. To minimise the sorts of risk-taking described above, a 200-metre connecting track immediately above the shoreline to the farm road terminus would be required. However, the main access to the Direct Crossing, from the north, would be via an existing farm road, upgraded, that forks from the metalled farm road at a point 150 metres from the start of the Direct Crossing. Fortuitously, the topography at this fork in the trail is such that the route to the Direct Crossing will naturally capture most park visitors whose objective is Te Muri. The preferred option involves a gently curving alignment to aesthetically better blend with the immediate estuarine environment.
3. Upper Crossing is significantly more expensive and track is difficult to construct.

The Direct Crossing is the recommended option. While the Farm-Road Crossing might, in some scenarios, be more effective in discouraging risk taking—such as where visitors enter the water with the intention of wading or swimming, only to find the depth or swiftness greater than anticipated, and are dissuaded from persisting by the visible presence of an immediately adjacent bridge—the landscape and visual impact, and the diminishment of wilderness ambience, would be significant.

Appendices

Pūhoi Estuary footbridge – a design outline and underlying principles

This brief summary has been prepared for the Mahurangi Coastal Trail Trust, which has a vision for a walking route that would commence with a connection between Wenderholm and Te Muri Regional Parks, spanning on to Mahurangi West Regional Park.

Littoralis Landscape Architecture has been engaged by the Trust to provide preliminary design advice upon the critical crossing of the Pūhoi River. This bridging over the river is envisaged as the primary gateway to Te Muri, providing a unique entrance to a large, diverse park. Ultimately, it may be that a highly successful pedestrian corridor from the south obviates the need for road access, making the experience of visiting Te Muri all the more distinctive and special.

The prospect of crossing the extremely sensitive Pūhoi River in its downstream reaches creates several challenges. This area has been assessed as being an outstanding natural landscape and has comparably elevated levels of natural character. The Pūhoi Estuary's character is highly variable, shifting from a bank-full stretch of sheltered water at the top of the tide, to extensive intertidal flats with a narrow, meandering channel in their midst 6 hours later.

Just downstream of the possible crossing point, Wenderholm is a heavily-used regional park that offers stunning views up the river. Camping facilities now see the northern arm of the park well patronised and increasing numbers traverse the river in kayaks and other small craft. Motorboats are known to sometimes head upstream above the proposed crossing point, and occasionally much larger vessels need to move into those upper reaches too, so any bridge would need to have an opening segment to allow that navigation.

In the context of the area's special characteristics and the value placed on Wenderholm as a treasured destination for many thousands of visitors each year, a prospective bridge structure needs to step very carefully. Littoralis proposes a number of principles to underpin a design. These are that the bridge should:

- be as visually light and transparent as possible. This means stripping back a structure to as few elements as possible and for component parts to be simple and lucid;
- acknowledge natural cues from its setting, such as the meandering, fluid curves of the channel, intertidal patterns and the topographic "launching pads" of the spur landforms on opposing sides of the river;

- respect the nautical heritage of its setting and a history of voyaging up the river that has continued for centuries, including the existence of an earlier opening bridge that was installed to allow boat traffic;
- be robust and carry low maintenance demands;
- recognise that people will want to use the structure for various activities, including walking, cycling, taking in the view, fishing and, perhaps, jumping off of; and
- recognise that the use of the structure is likely to escalate considerably during its life, so ensure that it has adequate width and load-carrying capacity to serve that future demand from the outset.

A sketch elevation of a possible opening segment and approaching portions of the main body of the structure (see page gives an impression of how these principles might be incorporated.

A handrail of galvanised mesh, supported by tapering steel stanchions, is visually light but physically robust. It brings images of a shimmering net slung across the river or dappled light reflecting from the water's surface.

The supporting underbody of the structure is envisaged as a reflection of a skiff hull, decked across its top and gently curving beneath to provide strength to the spine of the structure. At approximately 2.5m wide, the deck would be broad enough to support shared use between cyclists and pedestrians, with room to pass sightseers and fishermen.

To minimise the apparent complexity of the structure, it is anticipated that it might be supported on a single row of driven timber piles, rather than a more conventional approach of using pairs of piles.

The most elevated, opening section of the structure is shown as a pivoting device that rotates around the timber quadpod seen set off-centre from the channel. This method is seen as having particular relevance as it reflects the mode of the historic bridge that once existed further upstream. It is just one option for dealing with the opening span. Further detailed design and costing will ultimately determine which is the most suitable.

This indicative concept needs to be treated as a general statement of intent rather than a detailed proposal. Structural input and further examination of construction approaches will inform the ultimate design.

Mike Farrow Registered Landscape Architect

DAVIS COASTAL CONSULTANTS
P.O. Box 185
Orewa
Phone 09 428 0040
021 627 106
Facsimile 09 428 0042
Email coastal@daviscoastal.co.nz

2nd June 2016

Footbridge - Puhoi Estuary
Comment on Engineering for Mahurangi Coastal Trail Trust

Background

I have been asked by the Mahurangi Coastal Trail Trust to provide a high-level engineering assessment of the current concept for a footbridge to cross the Puhoi Estuary.

In 2012, Davis Coastal Consultants provided Mahurangi Action, then known as Friends of the Mahurangi, with an initial assessment of the viability of crossing the Pūhoi Estuary with a footbridge.

Our Concept Design (attached) provided for a typical pedestrian-scale boardwalk. The maximum height of the structure was set so as to ensure that the proposed walkway provided no greater restriction to navigation than the State Highway 1 Bridge. The road bridge is approximately 5km upstream from the proposed crossing site and approximately 1.4km downstream from the town of Puhoi.

The proposed route lies within an area that has the highest possible landscape protection provisions under current District Plan and Auckland Unitary Plan provisions. The Trust has developed the concept further to improve navigation and address landscape issues. It describes this concept as its "*initial best-current-thinking to address the visual landscape impact requirements of a structure".*

Current Concept

The current concept by Mahurangi Coastal Trail Trust, would cross the Puhoi Estuary at a point approximately 300 metres farther upstream than the 'shortest distance' point involved in 2012 profile. Additionally, the concept involves a snaking route across the estuary.

I understand that this new location and form was chosen to minimise effects on the Landscape Values. It is removed from the immediate vista of Schischka House and tends to "*mimic visual estuarine forms*" having a "*closer visual relationship with the surrounding topography"* The sinuous route also ensures that the section crossing the main channel is at right angles to the current. As well as being good practice, I understand this is a requirement of Auckland Council's harbourmaster,

The proposed footbridge is approximately 400m long comprised of wooden-sheathed laminated spans with a width of 2.7 metres and length of between 6 and 12 metres. An 8 metre nominal span has been adopted for the purposes of a visualisation being prepared by Littoralis Landscape. This route is approximately 100-metre longer than the earlier proposal.

Span length is subject to foundation conditions, construction requirements and aesthetics considerations. Span length will be optimised, during the detailed design phase, to minimise the number of piles while ensuring suitable depth and handling of the spanning structure.

The proposal provides for a 24m opening span over the main channel so as not to limit navigation, particularly for masted vessels, upstream from the crossing. It is proposed that the opening span would be in the form of a swing bridge; opening by "swinging" in a horizontal plane. This is as opposed to a lift bridge that opens by lifting in the vertical plane. I understand that the swing bridge is preferred in this situation for architectural reasons and, in keeping with the rich heritage of the area, because it would be consistent with the early 1900s Pūhoi Swing Bridge.

Engineering Soundness

The main implication of the longer crossing, and the S-shaped route it follows, is on cost. Greater material costs and construction cost would be roughly in proportion with the overall length/area of the structure less establishment costs. We suggest the 400m structure is likely to be 25-30% more expensive than a 300m structure, assuming similar foundation details.

Suggestion has been made that the longer route potentially means a greater number of piles would be impacted by flood debris. Flood debris will tend to be transported within the existing channel areas which differ little between alternate routes. We are therefore of the opinion that the longer structure is likely to be subject to similar flood debris issues as the most expedient route.

Use of support piers comprised of single poles has been suggested and provides aesthetic advantages (Littoralis Report). There may be issues with regard to providing lateral stability and ready connection of spanning structure to the pile capitals. Typically, a double pile system more easily addresses these issues. However, these issues can be readily addressed through the structural engineering of the walkway and as a high visibility relatively long structure. This would be addressed during a detail design phase.

The form of the spanning structure as "*wooden-sheathed laminated spans*" is unusual but potentially consistent with alternative approaches to constructing long span low impact walkways. It is noted that the "Sky Path" walkway crossing the Harbour Bridge is proposed to be of laminated composites similarly analogous to this proposal as I understand it. Again the form of structure form and detail typically requires further investigation at the later design phase.

The opening span also creates an opportunity for a point of interest from both architectural and operational aspects. Conceptually, the swing-opening span proposed is a very efficient means of providing a navigational opening. While it is most efficient when providing

navigational openings both sides of the pivot, as opposed to only one here, a swinging span is still an inherently efficient means of creating a navigational opening. Similar concepts are extremely wide spread within Europe for the gates to canal locks. Detailing of the opening and cost/benefit analysis would need to be undertaken during a detailed design phase.

I do not see any reason a properly engineered and maintained system should not safely and adequately function and operate. Safety features, moving and locking mechanisms could be provided commensurate with the level operator training. A system operated by the general public would need to have a higher level of safeguards than a system operated by Council or similar. The swing bridge has the advantage over a lift bridge system in that there is no potential for harm from sudden falling of a raised weight due to equipment or operational failure.

In summary, provided that Mahurangi Coastal Trail Trust's current proposal is properly engineered; I am of the opinion that it is inherently sound and a viable option for a footbridge to cross the Puhoi Estuary.

Yours sincerely

Craig Davis

Director

Description of least-cost Pūhoi Estuary footbridge construction

Note: This option is not considered to be capable of receiving resource consent, particularly in respect to landscape and visual impact, and is included for comparison purposes only. It is now superseded by the 'Elegant' Judge Arnold Turner Footbridge option.

The bridge consists of 44 spans of 6 metres and an internal clear deck width of 1.4m. This will permit the use of pedestrians, cyclists and quad bikes (regional park operations use only). It is not intended that the bridge be used for larger vehicles such as mules, or by horses,

The bridge is to set to a level that will allow a 2-metre clearance at spring tides. This will be sufficient for kayakers and for most small boat users. An opening span 12m wide is proposed to allow boats up to 9 metres wide and of unlimited height to have passage up to the State Highway Bridge (which has a clearance of approx. 3.5m at a spring tide).

The opening span of the bridge will, most likely be a very simple push over bridge similar to the aluminium truss bridges used to access marina pontoons. The span would have a substantial counterweighted back span. The operation of the bridge would be by a simple winch such as is used by off road SUV's. It is anticipated that opening will be infrequent (maybe only 6-8 times per year and that it would be operated by trained Park Staff or by trained individuals (regular users).

The foundations consist of driven piles probably 6–8m long x 200mm dia. Radiata pine treated H6

There would be 2 piles per pier except at the main span where there would be 4 piles. There would be 6-8 guide piles either side of the opening span to assist with navigation.

This makes a total 108 piles. The piles may be jetted and then driven from a barge or from a ground based excavator depending on tide and ground conditions. The mudstone rock shelf on the north side will need the piles to be augured and these piles cast in.

The piles then need 2 bearers and a brace added. Stainless steel bolts and fittings would be used.

The spans are of a very simple construction from standard 200x50mm Radiata pine H4 in standard 6m lengths. The planks are longitudinal and bolted together to work in unison. The design has already been trialled at 4.8m. The only difference for this bridge is that 3 – RB20 Reidbars have been added to reduce the deflection and increase the strength. These steel bars would be pre-bent then galvanised and epoxy coated to resist the maritime environment. The spans are very easily constructed and could be prefabricated by volunteer labour on shore. The timber components could be prepared and assembled with woodworking tools and moved to storage using a tractor with a forklift.

The spans can be moved into position with a small barge or tug possibly using the tide to assist placement.

The opening span can be made of aluminium truss fabricated off site e.g. by Manson Marine of Henderson, and lifted into position in a similar way to the way the regular spans are to be lifted.

Hydraulic investigations

The history of the site can be traced back to 1885 when the Greenwood subdivision was proposed. The plans of that time show the main channel in its current location and the presence of a low tide ford. This shows the relative stability of the site whereas the downstream channels show evidence of an inshore bar formation with sandbanks and more pronounced channels. There is evidence that the secondary channel towards the north at the crossing site may have been favoured at some time but the current channel has predominated.

One may have expected that the flats around Schischka house would have been periodically flooded but the presence of Schischka House and previous houses owned by Te Hemara with very limited ground clearance (less than 600mm) suggest that this is a very rare occurrence. The proposed bridge clearance of 2 metres above high water spring tides should be ample and also allow for the passage of timber debris under flood conditions.

A limited hydraulic investigation has been carried out on a spring tide. This showed that for the majority of the outgoing tide the current was steady at approximately 1 knot. This infers that the size of the channel has been determined by tidal flows, not flood flows. It was also noted that while the high tide level was similar to Auckland the low tide level was approximately 1.2 metres above the Auckland low tide level. This shows that the entrance of the Pūhoi River 1.3km downstream is the major controlling feature in this reach of the river. The flow there is approximately 4-5 knots on the outgoing spring tide.

This also means that low tide at the site may not start to turn for up to an hour past Auckland LW.

Looking at the size and width of the river at this point and comparing it with Pūhoi Township (where major floods have occurred) it can be seen that the reach of the river where the bridge is proposed is very much dominated by tidal flows. Flood flows, even at High Water Spring Tides will not be a major impact. Flood flows at low tide might be more significant at the proposed bridge site as the water velocity in the reduced channel cross section will be higher.

In the unlikely event of the channel moving it is relatively simple to relocate the lifting span to a better position. This would require the driving of 6 support piles and relocating 16 guide piles. The 6 metre module of the piers remains constant. The opening span is 12 metres span and its adjacent span is 4 metres span. It is proposed to widen the adjacent timber spans from 1.4m to 1.8m wide. This is to allow the 'push over' bridge to be placed and operated within the existing bridge. The widened section, which occurs both at the opening span and the alternative span, to be used for passing on the bridge.

Foundation investigations

At this stage no deep investigations have been carried out but the channel bed is stable with graded shelly sands and very little mud. It is easy to walk across the river at low tide without sinking in. Mudstone is visible for 23m on the northern shore and is approx. 600mm below water level at 30m. A 10mm sounding rod was pushed in finding refusal at depths from 100mm at the south side of the channel to 600mm deep in parts of the main channel. (Tip pressure approx. 500kPa ultimate)

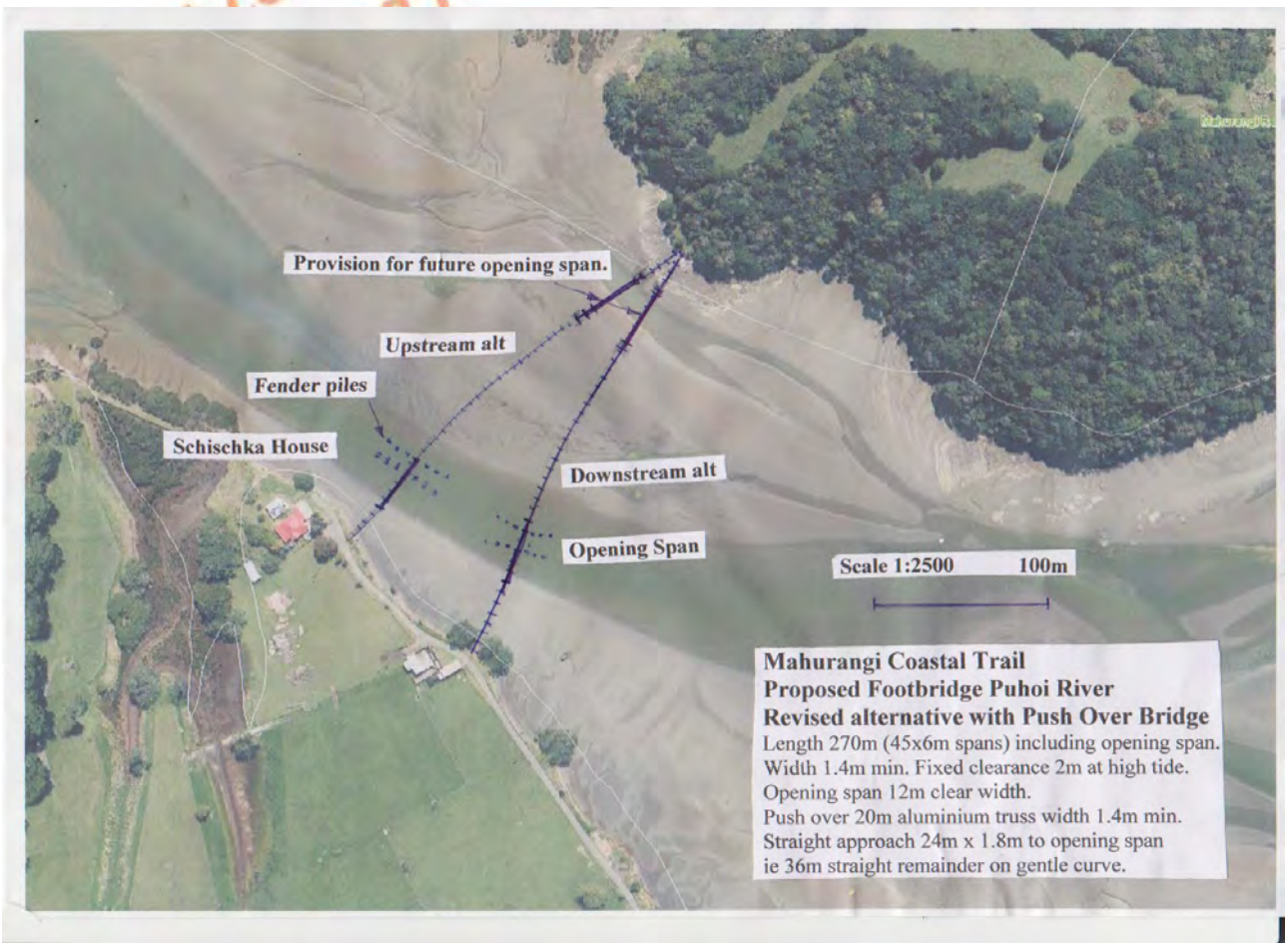
Envisaged Construction Methodology

At this stage only preliminary ideas are being developed. The envisaged procedure is as follows:

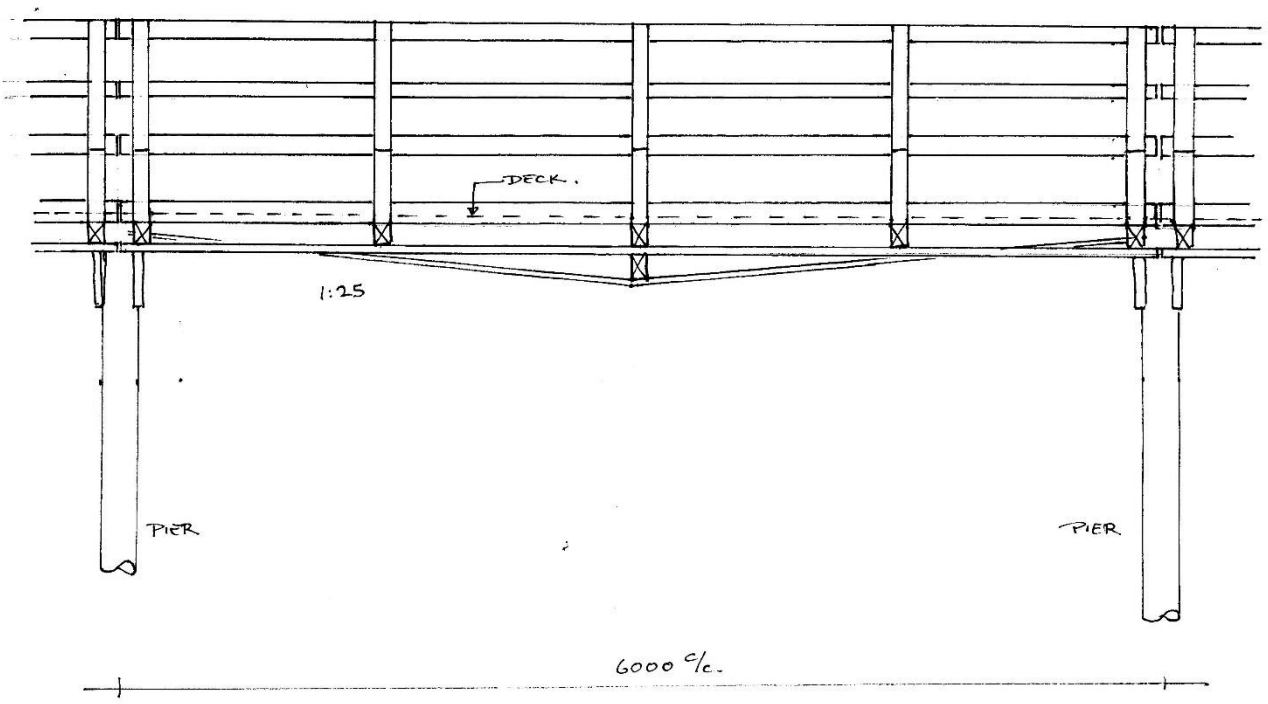
1. Prepare a construction site office (with container as store) adjacent to the existing yards and sheds. Prepare an adjacent metalled working platform.
2. Prepare a temporary metalled access ramp down to the river bed.
3. Construct piles foundations by contract. Piles are likely to be driven from a rig on an excavator for shallow water and from a barge for the channels. The piles will initially be jetted in and then driven to depth. The far bank is in mudstone and it is envisaged that the piles will be drilled at least a metre into the solid and concreted in. Where concrete needs to be poured under water will have to be poured through a tremie (funnel with an immersed nozzle) to avoid mixing with the water.
4. The construction of the bearers and bracing on the piers will have to be carried out from a sledge mounted scaffold that will be dragged from pier to pier by a tractor working on the river bed at low tide. It is envisaged that 2 such sledge scaffolds will be required.
5. The bridge spans will be prepared as deck units on the metalled working platform and stacked on dunnage. A tractor with forks will be used for moving the units.
6. The spans will then be moved onto trestles placed on the river bed near the shore for completion of the handrails. The handrails will be precut before assembly. There may be two or three units on trestles at any one time.
7. The spans will then be moved to the piers by tractor forks or by barge depending on the tide. Lifting arrangements to be agreed.
8. The spans will be secured from the deck to the bearers and linkage bars added.
9. The lifting span will be delivered to site and lifted into position in a similar way.
10. The remaining spans will be erected sequentially.

Equipment Required (excluding piling equipment, barge for above and small tug hire)

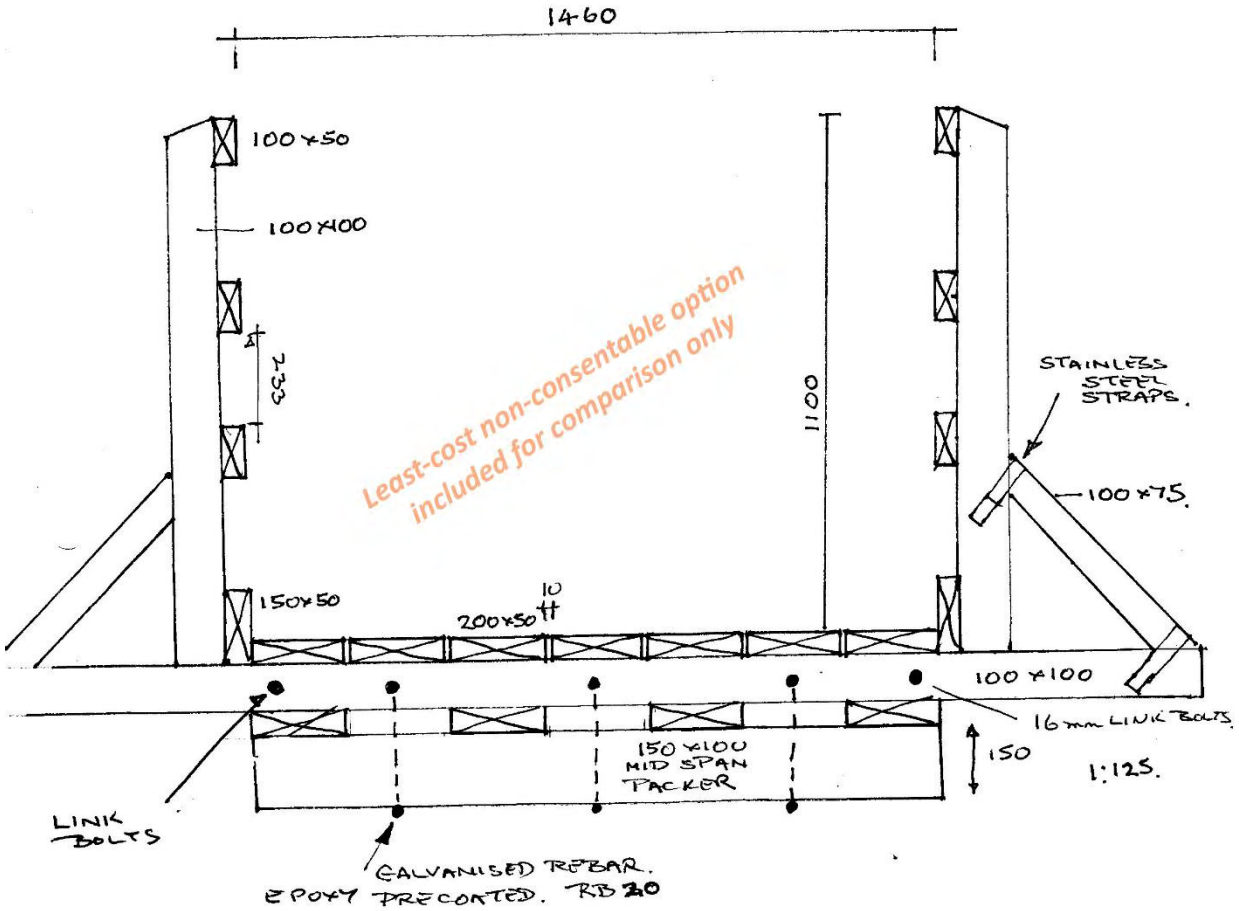
1. Container for office/secure store.
2. Power supply to working area (The nearby power line has been used as a supply in the past but is currently disconnected).
3. Power saws, radial arm saw with bench, and power drills.
4. Water supply.
5. Safety equipment for woodworking, lifejackets, portable radios, first aid equipment etc.
6. Old tractor with forks that can be used in the yard or on the river bed.
7. 6 trestles that can be placed on the river bed without floating away.
8. Portable generator for remote working.
9. Scaffolding mounted on sledge, pair of.
10. Block and tackle sets - 2.
11. Builders laser level.
12. Theodolite
13. Small barge with outboards, anchors etc.
14. Aluminium dinghy with outboard for access.
15. An Argo amphibious ATV would be an advantage to have to access and work the sandbank.

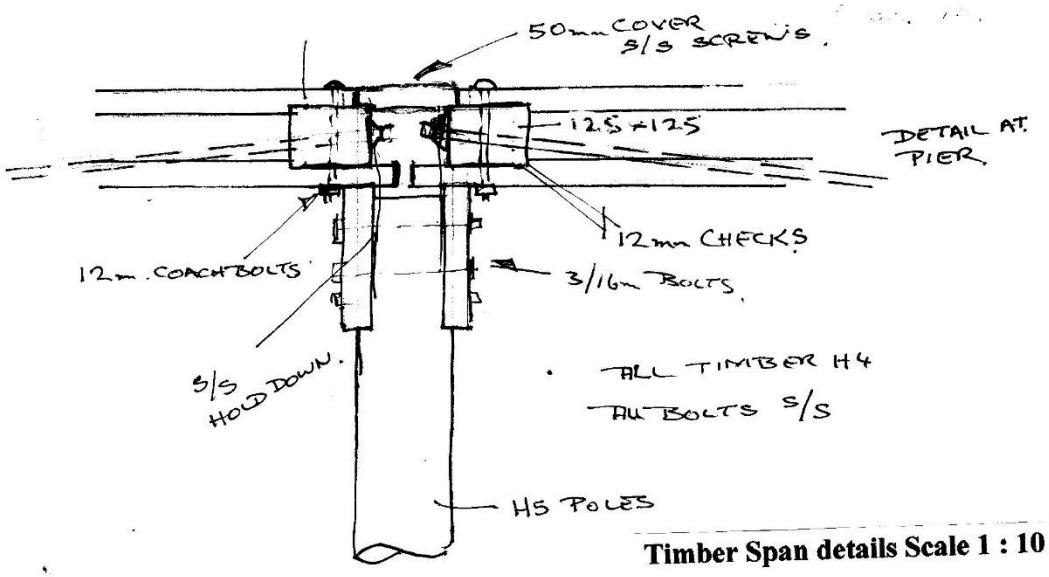


Least-cost non-consentable option included for comparison only

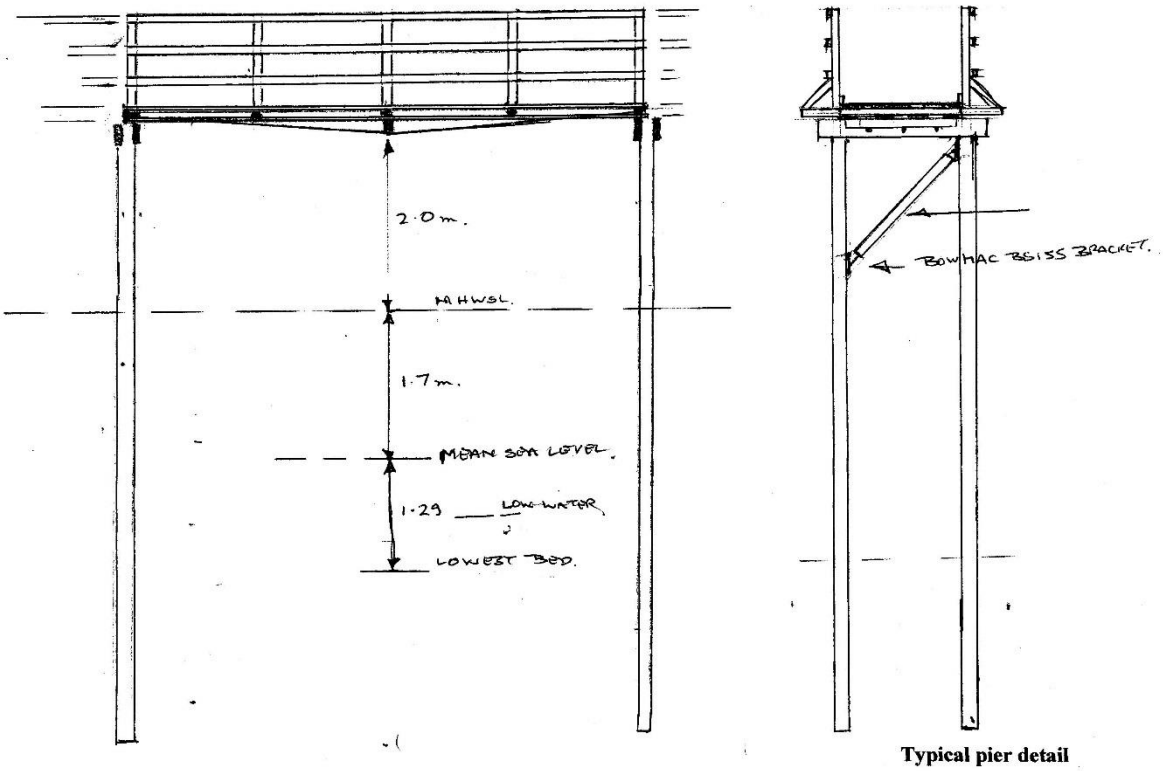


Typical 6 metre timber span Scale 1:25





Timber Span details Scale 1 : 10



Typical pier detail

MAHURANGI COASTAL TRAIL

PROPOSED PŪHOI ESTUARY FOOTBRIDGE

Landscape and visual impact assessment – DRAFT

Draft

Woodhouse
associates landscape architects

TABLE OF CONTENTS

INTRODUCTION

In July 2015, Cimino Cole, secretary of Mahurangi Action Incorporated asked Woodhouse Associates, Landscape Architects, to prepare a Landscape and Visual Impact Assessment (LVIA) of the Mahurangi Action proposal to construct a footbridge across the lower Pūhoi River.

I visited the site With Mr Cole on the 12 October 2015 and walked along the southern side of the estuary. I was shown the alternative routes for the footbridge that were under consideration. I identified the physical and vegetative features and the views into and out from the site. I also drove into the reserve behind the foreshore and along the Hibiscus Coast Highway to define the viewing catchment and the degree of effects that might result from installing a footbridge across the river. I have since been back to the site to review my initial findings.

The photographs attached to this evidence were taken during the site visits. They were taken with a digital SLR camera set to approximately 50 degrees. Single frame photographs blown up to A4 held at normal reading distance—about 360 mm—approximates what can be seen from the viewing point.

An aerial photograph showing the site in the context of the wider area, the photographic viewpoints and the location of potentially affected parties is attached as Figure 1. Photographs labelled Figures 2–8 illustrate the text.

SCOPE

1. This report forms part of the suite of technical reports prepared for Mahurangi Action Inc. to support the Assessment of Environmental Effects (AEE) and to support the resource consent applications.
2. The proposal is described. The LVIA describes the physical landscape around the site, (Contextual setting) and the site using a set of factors now known as the Wakatipu Environmental Society Incorporated (WESI[1]) factors. These factors include Natural Science Factors: Geological, Topographical, Ecological and Dynamic. The factors are also used to describe the character and quality of the existing environment with specific regard to natural character, landscape and amenity values including Aesthetic values. Aesthetic values are identified as Memorability, Naturalness, Expressiveness and Transient.
3. The statutory context as it applies to the landscape is described. The assessment of effects process is also briefly described and an assessment of the environmental effects that will result from the change; including the

[1] Emerging from Pigeon Bay Aquaculture Ltd v Canterbury Regional Council (1999) (NZRMA 209) case (Pigeon Bay) and subsequent Wakatipu Environmental Society ltd v Queenstown Lakes District Council (Environment Court Decision No. C180/99) cases ("WESI")

4. Nature and extent of visual effects on the main audiences within the receiving environment is considered. The appropriateness of the proposed connection between Wenderholm and Te Muri is also discussed and finally conclusions are drawn.

PROJECT FEATURES

5. Subject to refinements at the detailed design stage, the key features of the proposal area:
    - A two-metre wide wooden footbridge with appropriate safety railings either side.
    - Up to 50 spans of 6 metres.

- A two metre clearance below the footbridge decking above mean high water springs to allow kayaks, small boats and flood debris to pass under the bridge, with sloping ramps down to land either side of the bridge.
- A lifting span over the channel that may be cranked open to allow larger boats to continue up the river channel to Pūhoi. This span will be relocatable should the channel move.
- A linking track over the slopes between the river and Te Muri bay with some boardwalks and, depending upon route, a 12-metre long footbridge across Spaniards creek.
- The connection of one of the most highly used regional parks with one of the most underused regional parks, both within 30-minutes' drive of downtown Auckland, via a 20-minute easy walkway.
- Creating a walkway section of Te Araroa, the national walkway, where no other walking alternative is available.

Location

6. The Pūhoi River is located to the north of the settlement of Waiwera and the catchment is separated from the Waiwera River catchment by a low ridge The Hibiscus Coast Highway (HCH) winds along the coast from Ōrewa and Hatfields Beach to the south and it turns west along the ridge before winding north inland from the coast. The Wenderholm Regional Park is located across the mouth of the Pūhoi River and it incorporates a headland between the rivers to the south. A headland separates it from the beach known as Te Muri to the north.

7. In 2010 the Council purchased the 400Ha Schischka farm on the northern side of the Pūhoi River to extend the park and connect with other regional parkland further to the north.

8. The proposed footbridge will be located on the lower part of the Pūhoi River just to the west of the estuary area in the vicinity of the Schischka homestead and about 1.2km to the west of the beach at Wenderholm. Three potential routes are currently under consideration and all cross at a relatively narrow point on the river. All three options will curve across the river – at right angles to the flow over the channel—making landfall on a small promontory on the northern side of the river. (See Figure xx)

Landform and Hydrology

9. Each of the southern landing points is located on flat land just above Mean High Water Springs (MHWS). The bridge will be 2 metres above the water at high tide and will be designed and built to accommodate a 1-metre increase in MHWS levels. The bridge will also be designed to withstand flooding.

10. The land along the south bank is flat and just above MHWS. The land on the north bank where the footbridges might land is also flat and is at a similar elevation.

Access

11. The options are all easily accessed by foot on an existing formed shingle road from the public parking area in Wenderholm Park.

12. Option 1 is located to the east of the Schischka homestead and the south bank landing point is located between two mature pōhutukawa just to the north of an old woolshed. The northern landing point is on a small point on the edge of the bush.

13. Option 2 is located just to the west of the homestead. The south bank landing point is approximately 40 metres away from the homestead and the footbridge

curves in a north easterly direction towards the northern bank. The landing point on the northern bank is on a small point just to the west of the option 1 landing point.

14. Option 3 is farther up river and the south bank landing point is at the base of a small cliff formation approximately 150 metres west of the homestead. The north bank landing point is on the same point as option 2.

Vegetation

15. No significant vegetation will be removed. Tree and or shrub and groundcover planting appropriate to whichever site is chosen will be undertaken to ensure the footbridge is anchored visually into the landscape.

LANDSCAPE AND VISUAL CONTEXT (See photographs 1—8)

Analysis of the Existing Landscape

16. The Pūhoi River catchment can be described in terms of natural science factors or the biophysical elements, patterns and processes that formed it—landform, land cover and land use. These descriptions are used to gain a full understanding of the potential landscape and visual effects that might be generated by installing the footbridge into the landscape.

17. It is acknowledged that the landscape has a readily distinguishable landscape character that is homogenous and consistent and the character has been recognised by Council which has applied several layers of outstanding landscape zoning over much of the area via both the District and Proposed Unitary plans. Nonetheless it is worth repeating the descriptions to identify the key elements in the landscape.

Natural Science factors

Landform

18. The coastal landscape north of Ōrewa is comprised of a sequence of cliffs and headlands with wide sandy beaches between the headlands. The Pūhoi River catchment and adjacent landforms are part of this sequence. The landform throughout the river catchment is comprised of relatively sharp ridges with rolling to moderately slopes intersected by a series of gullies and valleys. The land is unstable and there is visible evidence of slipping and slumping and again there is evidence of sediment build up throughout the estuary area. The physical landscape either side of the lower river is also reasonably complex with the major ridges close to the coast having a west to east orientation that ends abruptly either side of the rivers in the sequence of broad headlands.

19. The Pūhoi River is the dominant feature in the Pūhoi River catchment as it twists and turns in its journey to the sea. It is tidal as far upstream as Pūhoi and the channel is relatively small and sinuous. However, it is flanked by wide margins of tall mangrove forest through the upper reaches—east of the highway—and shallow mudflats and sandbars flank it through the lower reaches. Its passage is blocked at the eastern end by a wide shallow ancient dune system which spreads across the ‘river mouth’ as a spit between the

headlands confining the exit point for the river to a narrow channel at the northern end of the spit.

Vegetation

20. Some climax bush remains across the steeper land in the heads of the gullies and along the escarpment on the northern side of the river; across the headlands either side of the river mouth and up the valleys on the southern side of the river. The quality of this bush is reasonable and the bush forms an identifiable but disconnected mosaic in the landscape.

Ecological connections and linkages

21. Almost all of the bush, the estuarine area and its margins are identified as being Significant Ecological Areas (SEA). The SEA overlay does not cover small, regenerating or relatively young areas of bush. The areas of bush, although not large, are reasonably close to each other and provide a reasonably contiguous link of native vegetation that extends from the headland on the northern side of the river up the northern edges of the river. The bush areas have the potential to evolve into good quality bush over time, given the close proximity of climax species.

Land use

22. Multiple sites of significance to iwi (Ngā Pā o Te Hēmara Tauhia) are located along the estuary. There are also a number of sites of historic interest because of their settler origins.

23. Most of the land holdings around the site are lifestyle blocks with kikuyu dominant pasture providing rough grazing for a few animals. On the southern side of the river to the south of Hibiscus Coast Highway (HCH) dwellings are generally tucked into the bush cover with no, or very little grazing. The balance of the land on the north side of the river now owned by Council is used agricultural purposes and the stated intent is to combine a continued agricultural land use with public access for activities such as mountain biking, horse riding and walking.

The extension to the Northern Motorway, Ara Tūhono – Pūhoi to Warkworth, is due to begin construction in late 2016. The proposed alignment deviates to the west from the existing SH1 alignment as it leaves the Johnstones Hill tunnels. The motorway viaduct will be visible from parts of the estuary—above the mangroves—and from some of the sloping landform either side of the river. Although it is unlikely to be seen from the land in the lower valley, it may be seen from the water and the footbridge.

24. Wenderholm Reserve across the mouth of the river is a much loved and well used Regional Park. It is visited by many including individuals, tourists and large family groups throughout the year. The reserve also includes the Schischka homestead which is available for short term holiday rental; a campground on the southern banks of the river, just to the east of the homestead, yards and an old shearing shed—also to the east of the homestead, a boat launching ramp and boat trailer parking area on the eastern side of the spit, sundry picnic facilities beneath the scattered pōhutukawa that are located along the spit, a park works depot and boat mooring facilities in the estuary. The ocean beach is wide and shallow particularly at low tide and the Pūhoi River can be waded at low tide, although there is no formed track through to Muri Beach to the north.

25. Muri Beach is another long sweeping stretch of sand which is again bookended by two rocky headlands. However, the pōhutukawa and coniferous species along its foreshore have all been planted and it has a

background of grazed pasture. A casual campground dotted with stunted pōhutukawa planting is located just behind the beach and a farmhouse and sheds are visible from the beach area. Its charm is highlighted by its relative isolation. There is no vehicular access to the campground other than through the Te Muri Stream at the northern end at low tide or through the farm on the farm track.

Landscape character

Aesthetic factors including Memorability and Naturalness and Expressiveness and Transient values. (See appendix for definitions

26. Landscape character is derived from the physical characteristics of the land combined with land use. The common elements in the Pūhoi landscape are as follows:

- The sequence of ridges and valleys with forest clad hills across the steeper land and pasture on the easier land. (The enclosing ridges and their subsidiaries create distinctive landscape units in the landscape and each of these units have their own particular quality whether it be an enclosed river valley, an open sequence of rolling spurs or the steep faces around a basin landform.)
- The extensive areas of remnant bush mixed with pasture together with stream corridors leading down to shallow bays and mangrove colonies
- The dynamic and dramatic sequence of terrain and remnant forest interacting with and framing local stream valleys;
- The memorability of the very clearly articulated sequence of hill and river valley topography combined with forest remnants and natural coastal margins;
- The naturalness of the forest streams and mangrove forests;
- How expressive these landscapes are of Auckland combining as they do, the key elements of bush and coast fringe creating a strong sense of structure and sequence and
- The transient values of the interplay between the coast and the open waters of the Hauraki Gulf.

27. The landform, the patches of remnant bush located across the upper margins of the gullies and the lower estuary area with its fringe of pōhutukawa dominant vegetation have the most readily identifiable values in this area. The landscape can be described as expressive of its geological origins and subsequent land use.

28. The identification of most of this landscape as either Outstanding Coastal Natural Character Areas,(OCNC) Outstanding Natural Features (ONF) and Outstanding Natural Landscape (ONL) is a response to values that have been associated with it but these values also include its scale, the composition of the patterns created by the relationship between the open space and the bush, the enclosure between the ridges or the openness of the flatter land and the river and beaches. The landscape is expressive of its origins and reasonably natural, although it is certainly not pristine.

29. The transient qualities of this landscape also contribute to its value—the ebb and flow of the tide across the estuary, the call of a sea bird or the successive bursts of yellow flowering kowhai, white flowering clematis and red flowering pōhutukawa along the coast at different times of the year. The landscape can also therefore be described as being vivid with a high degree of detailing.

30. The landscape is also vulnerable. Fierce north easterly storms often result in slips and damaged trees, floodwaters spread across the flats damaging pasture and native vegetation. Kikuyu inhibits natural regeneration across under-grazed pastureland and pastureland grazed too heavily slides into the nearest gully at the merest hint of rain.

31. Clearly the physical constraints of this landscape and its aesthetic and transient values need to be protected and enhanced. Detailed assessment reveals that the patterns created by the remnant bush respond to landform – they cover most of the steeper land and gully systems resulting in a reasonable level of intactness and naturalness in the landscape. The character of the wider Pūhoi area is heavily influenced by the estuary in particular, and the relative sensitivity of the physical development along its margins.

Amenity values

32. Section 7 of the RMA specifically requires that particular regard is had to "the maintenance and enhancement of amenity values" Amenity as a resource management issue is comprised of attributes and perceptions. Attributes include tangible and measurable elements such as dust, noise, odour and density of development. Amenity values are also derived from the natural or physical qualities and characteristics of an area that contribute to peoples' perception or appreciation of its pleasantness, aesthetic coherence and cultural and recreational values.

33. Visual values are a subset of amenity and visual effects have the potential to affect amenity values. Visual amenity values associated with rural environments invariably involve open space and a lack of people, buildings and other structures, generally in contrast to urban environments.

34. The amenity values of this landscape are based on the interface between the landform and the sea and these are influenced by the river, the estuary and the bush. The wider landscape is still distinctly rural when viewed from HCH and SH1 yet the Wenderholm Reserve is a highly modified landscape and rural residential development density is low. (The Schischka land is one of only two large landholdings left between Auckland and Te Arai) The dwellings that are located along the edge of the river are limited in number, located below the ridge and they have been integrated into the landscape by judicious planting.

35. The landscape covering the Wenderholm Reserve as seen from the HCH has long been recognised as an Outstanding Landscape. The composition of the view contains all the elements that are commonly held to result in scenic beauty: dominant ridges, the sequence of spurs and gullies rolling down to the water, the wide sweep of ever-changing estuarine water held behind the spit, the bush flanked escarpment flanking the river to the north, the bush clad headlands truncating the ridges and the almost continuous pōhutukawa canopy along the spit separating the estuary from the sea beyond. The landscape is extraordinarily complex with many component parts and the collective parts result in a landscape offering a high degree of visual amenity.

STATUTORY CONTEXT

36. Council indicated in a pre-development meeting held on the 28 August 2015 that the effects of the proposed footbridge would need to be assessed against the relevant objectives and policies of the New Zealand Coastal Policy Statement, the Auckland Regional Policy Statement, the Auckland Council Regional Plan: Coastal the Auckland Council District Plan (Rodney Section)

and the Proposed Auckland Unitary Plan. They also advised that particular regard should be given to the wording of the relevant objectives/policies, and in particular to the word 'avoid'.

Resource Management Act (RMA) (1991)

37. The primary aim of the RMA is the sustainable management of natural and physical resources and it allows for the use, development and protection of natural and physical resources in a way or at a rate that enables people and communities to provide for their physical economic and cultural wellbeing and for their health while, sustaining the potential of natural and physical resources, safeguarding the life supporting capacity of air, water soil and ecosystems and avoiding, remedying, or mitigating adverse effects on the Environment

38. The Provisions of Part 2 of the RMA of specific relevance to the landscape and visual assessment includes Section 6, which sets out matters of national importance that must be recognised and provided for, including:

- *s(6)a – The preservation of the natural character of the coastal environment, wetlands, and lakes and rivers and their margins, and the protection of them from **inappropriate** subdivision, use and development.*
- *s(6)b – The protection of outstanding natural features and landscapes from **inappropriate** subdivision, use and development.*

39. And Section 7, which sets out matters to which particular regard shall be given, including:

- *s(7)c – The maintenance and enhancement of amenity values.*
- *s(7)f – The maintenance and enhancement of the quality of the environment.*

The key messages taken into consideration in this LVIA are therefore the:

- *preservation of the outstanding natural features and landscapes, significant natural areas, and the coastal environment from **inappropriate** use or development and*
- *the avoidance of adverse effects on elements, features and patterns that contribute to the quality of the landscape.*

New Zealand Coastal Policy Statement (2010)

40. The New Zealand Coastal Policy Statement provides overview policies at a national level for the management of New Zealand's coastline and reflects the RMA.

Auckland Council Regional Policy Statement

41. The Auckland Regional Policy Statement (Proposed Change 8) (ARPS) identifies the Lower Pūhoi River as being an Outstanding Natural Landscapes (ONLs) Mahurangi-Waiwera. (44) Policies relating to development in this areas focus on preserving the natural character of the coastal environment, protecting outstanding natural features and landscapes and avoiding adverse effects on elements, features and patterns that contribute to the quality of the landscape character area.

Auckland Council Regional Plan: Coastal

42. The sections of the Regional Plan: Coastal that are most relevant to the assessment of landscape and visual effects of the Project are 3.0 – Natural Character and 4.0 – Landscape and the objectives and policies reflect the regional policy statement.

43. The footbridge is located in the East Coast Rural Zone. Some of the objectives and policies for this zone relate specifically to landscape and visual effects and they have taken into consideration.

EVALUATION OF EFFECTS

Landscape and Visual Effects Assessment

44. The main potential landscape and visual effects considered were:
    - Effects on the natural character of the river and its margins;
    - Effects on outstanding natural features and landscapes;
    - Effects on amenity values;
    - Landscape and visual effects during construction.

45. Landscape and visual effects were first assessed by considering how the footbridge would affect the **Biophysical elements in the landscape.** In other words, to what extent would the construction of a footbridge modify landforms, watercourses and vegetation and how significance would the modifications be. The degree of the effect is generated by the physical sensitivity of a site and its surrounds and this in turn influences landscape quality and vulnerability, and may expose landscape character and values including OCNF, ONF, ONLs etc. to the risk of change.
46. **Effects** on amenity values will be generated by the visual response that the footbridge to the landscape may generate. A proposal's effect on visual amenity and landscape character is dependent on:
    - The visibility of the project;
    - The nature and extent of the viewing audience – type, size and level of exposure;
    - The visual qualities of the landscape e.g. visual amenity, aesthetic and landscape value;
    - The Visual Absorption Capability (VAC), or the ability to visually assimilate change without significant modification to the character and quality of the landscape (influenced by land use, vegetation and topography); and
    - The ability to mitigate any adverse effects through mitigation techniques.

47. In order to gain a fuller understanding of the potential visual effects of the footbridge, some simple visual simulations were prepared by the engineer and photographs were taken from a number of representative public and private viewpoints—selected as a representative location to depict various views of the footbridge

Effects Rating

48. The following five-point scale can has been used to rate the Project's potential landscape and visual effects, based on the scale provided in the New Zealand Institute of Landscape Architects Best Practice Note – Landscape Assessment and Sustainable Management: (2010: The total ratings given in the descriptions denote the overall landscape and visual effects rating, which has the following range of potential ratings and effects.
    Negligible Effect *The project has discernible effects but they are too small to have adverse landscape or visual effects.*

    Low Effect *The project constitutes only a minor component of the wider view. Awareness of the project would not have a marked effect on the overall quality of the scene or create any significant adverse effects.*

Moderate Effect *The project may form a visible and recognisable new element within the overall scene and may be readily noticed by the viewer. The project may cause an adverse impact but these effects could be mitigated or remedied.*

High Effect *The project forms a significant and immediately apparent part of the scene that affects and changes its overall character. The project may cause a high adverse impact on the environment but could be mitigated or remedied.*

Significant Effect *The project becomes the dominant feature of the scene to which other elements become subordinate and it significantly affects and changes its character. The project causes extensive adverse effects that cannot be avoided, remedied or mitigated.*

49. In terms of s104D of the RMA, we consider effects moderate and above to be 'more than minor'.

The Visual Catchment (*See Photographs P3 and P5)*

50. The visual catchment is the physical area that will be exposed to visual changes. The development area has a relatively small visual catchment due to it being located in the bottom of the valley with most of it hidden behind landform. Therefore the primary viewing points for deciding what areas might be affected were from the land adjacent to the alternative landing points on the south bank, from the reserve looking upstream from the spit and from HCH to the south of the site. The area considered to be potentially affected also includes the neighbouring rural land to the south and north, and the river.

Viewing audience

51. Fundamental to the assessment of the effects of the proposal on rural landscape character and on visual amenity values is the identification of representative location of viewpoints within this visual catchment. They are especially important as landscape and visual effects can be a development's most critical effect. The viewing audience comprises those individuals or groups of individuals living or working within the viewing catchment who will see all or part of any development at any one time either from their dwellings, the land surrounding the dwellings or the roads passing the site.

52. The potential viewing audience therefore comprises the following groups:
    - Group A Motorists to the south west of the site
    - Group B Landowners to the south west of the site
    - Group C Visitors to the Schischka homestead
    - Group D Visitors to the Wenderholm Scenic Reserve to the east of the site
    - Group D Users of the campground
    - Group E Recreationalists—kayakers and yachts on the Pūhoi River.

53. Viewpoints have been selected as follows:
    - From the layby on HCH as the motorist heads eastward. This viewpoint has also been used to assess the effects on residents living on properties along the edges of the highway.
    - From the boat launching ramp to the east – representing the views form the spit and the estuary area.
    - From the land on the south bank adjacent to each of the options for the crossing route representing holiday makers in the homestead, campground users and hikers.

EVALUATION

Group A Motorists to the south of the site

54. Hibiscus Coast Highway is a relatively narrow winding road that runs between the motorway to the west and Waiwera to the east. It runs along the ridge that separates the Waiwera and Pūhoi catchments. The road corridor is intermittently confined by either landform or vegetation for most of the distance along the ridge, however motorists may see the lower section of the Pūhoi River briefly points through the middle of the ridge as they move eastward. A layby / pullover spot has been formed on top of the ridge to the west of number 1276 HCH. This area was used frequently by travellers (until the formation of the northern motorway diverted them off the highway) as the view down the river is spectacular.

55. The angle of the view is too acute for motorists to see as they travel westwards.

Analysis

56. The lower Pūhoi River and the regional park first become visible on the ridge in the vicinity of the layby. The footbridge elevation will be over 1km to the northeast, will be 120 metres below the layby elevation and only the northern half of it (whichever option is chosen) will be visible from the road. The southern half will be screened by landform and vegetation. The Schischka homestead, the infrastructure around the homestead, the causeway, the park access road and the camping ground will all be screened from this viewpoint by an intervening ridge and trees along the eastern edge of the ridge in the midground and the infrastructure around the picnic facilities in the reserve will be too far away to be seen, so the bridge will be seen as a sculptural element in an otherwise undeveloped landscape. The footbridge will have a very low profile, will be simple in form, will respond to the sinuous curves of the river channel and adjacent landform and will be small scale compared to the much larger scale of the wider landscape. It will be contained within a very discrete and relatively complex wider physical and visual catchment. It will have strong physical boundaries, will be seen against a background of water and vegetation and will be framed by the landform.

Evaluation

57. Although the footbridge will become a permanent fixture in the composition of the view, motorists will be transient and even those who travel over the road frequently will only experience the change for a short period of their travel time. The key elements of the view; the enclosing landform; the fundamental landform shape, and the natural patterning of the bush and the river will be retained. Furthermore, the landscape has the ability to assimilate the footbridge without significant modification to the character and quality of the landscape. Although the footbridge will form a visible and recognisable new element within the overall scene and will be readily noticed by the viewer, it will not be an incongruent structure. It may be compared with similar structures in similar outstanding landscapes (national parks and reserves) throughout New Zealand. It will constitute a minor component of the wider view and awareness of it will not have a marked effect on the overall quality of the scene nor will it create significant adverse effects.

Group B Landowners to the south and south west (See photographs xx)

58. There are three dwellings visible along the eastern slopes below HCH and two above the road. The dwellings on the lower side of the road area as follows:

59. 1276 – Located about 200 metres off the road on a slight spur. It is separated from the lower river by a shallow valley and the subsidiary ridge and vegetation to the east and it cannot be seen from the river edge in the vicinity of the Schischka Homestead.

60. 1254 – Located about 20 metres north of the road and on the western side of the crest of the dominant ridge that separates the upper catchment from the lower Pūhoi catchment. Residents of the dwelling may look down on the river and they will see all or part of the footbridge wherever it is located.

61. 1218 – Located further east on a knoll close to the road and 1227 and 1229 located on elevated land on the south side of the road. The residents of these dwelling will look directly down onto the lower section of the river and will see most of the footbridge whichever option is chosen. [Further verification pending.]

Analysis

62. The footbridge will be visible as a thin line curving across the river just above the surface of the water. It will be seen in the mid ground of the view on the southern side of the river. It will be seen association with the Schischka homestead and associated sheds, the causeway across the inlet, the access road and the camping ground; which will be covered in tents and caravans through the summer and on holiday weekends throughout the rest of the year. It will also be seen against the surface of the water and against an almost black background of bush covered landform to the north. It will be located at a lower elevation than the viewpoint. It will be contained within a very discrete and relatively complex wider physical and visual catchment. It will have strong physical boundaries, will be seen against a background of water and vegetation and will be framed by the landform. The proposed development will be simple in form, and small scale compared to the much larger scale of the wider landscape.

Evaluation

63. Again, this sector of the viewing audience will see the footbridge as a permanent fixture in the composition of their view. However, the key elements of the view; the enclosing landform; the fundamental landform shape, and the natural patterning of the bush and the river will be retained. Although the footbridge will form a visible and recognisable new element within the overall scene and will be readily noticed it will not be an incongruent or inappropriate structure. Its associative qualities will include the provision of access to the other side of the river and memories of similar structures in outstanding landscapes (National parks and reserves) throughout New Zealand. It will not necessarily create an adverse impact because the essential qualities of the view and its relative naturalness will not be altered.

Group C Visitors to Schischka Homestead

64. The Schischka Homestead is located on the southern bank of the river about 1.1km upstream of the Wenderholm beach. It is an old wooden house with a large deck which extends out towards the river bank. The house is orientated towards the north east and the focus of the view from the house is the river and a bush covered embankment on the northern side of the river.

65. Views from the homestead deck are extensive ranging from a north-northwest view up the river—slightly restricted in its expanse by tall mangroves adjacent

to and to the west of the house—to a south east view down the river to the spit. The view eastward from the house includes the boat launching ramp, the spit with all its activity and the camping ground.

Analysis

66. The footbridge will be located at approximately the same level as the deck around the homestead. It will be a simple wooden structure with railings. However it will be in the focus of the view from the house whichever option is chosen.

67. If it is located to the east of the dwelling it will form a visual barrier between the house and the lower Pūhoi River landscape. If it located adjacent to the house to the west, it will also be in the focus of the view as it is likely to curve eastwards across the river before landing on the northern bank opposite the dwelling.

68. If it is further to the west it will be screened initially by mangroves but will then become a focus of the view as it curves across the river to the northern bank.

69. Visitors to the homestead use it for short periods of time and their visits are occasional. The scenery from the homestead is spectacular but it is not pristine and the landscape around the homestead is characterised by other farm sheds and fencing, by the temporary tent and caravan cities of the campground through holiday seasons, by the intensive day to day activity in the Wenderholm Regional Park and by the activity on the river.

Evaluation

70. Although the footbridge will be a permanent and dominant fixture in the composition of the view from the homestead, it will not be an incongruent or inappropriate structure. *It will form a visible and recognisable new element within the overall scene and will be readily noticed by the viewer, however,* the key elements of the view; the enclosing landform; the fundamental landform shape, and the natural patterning of the bush and the river will be retained. It may have moderate effects on those who were familiar with the pre-construction view from the homestead, however the number of potentially affected parties of this nature will be extremely small and any new visitors to the site will accept the footbridge as an integral and appropriate part of the landscape.

Group D Visitors to Wenderholm Regional Park to the east of the site

71. All visitors to the reserve will see the footbridge wherever it is located, whether it be in the foreground of the view from the campground of the Schischka homestead or in the midground of the view up river from the spit, or form the boat launching ramp.

Analysis

72. The focus of views for visitors to the reserve will be the recreational activity being undertaken. However they will see the footbridge as a thin dark line across the river up to a kilometre to the northwest of west of their location.

Evaluation

73. Viewers will be aware of the structure as it will be a constructed element in the landscape, however it will be seen in association with the campground and the homestead and associated sheds and it will be seen just skimming the surface of the river against a background of landform and vegetation. Although its association with the existing park infrastructure means it will not be incongruent from these viewpoints, it will form a visible and recognisable

new element within the overall scene and it will be readily noticed by the viewer. Effects will be noticeable but they should not be adverse.

Group E Visitors to the campground

74. All visitors to the campground will see the footbridge wherever it is located, whether it be in the foreground of their view from the campground itself or in the midground of the view up river from the spit.

Analysis

75. The focus of views for these visitors will be the campground and the consequential recreational activity being undertaken whether that be on the river or the beach. The footbridge will be viewed as a black line across the river to the north west of west of their location in the campground.

Evaluation

76. Campers will be aware of the structure as a constructed element in the landscape, however it will be seen in association with the homestead and associated sheds and it will be seen just skimming the surface of the river against a background of landform and vegetation. It will not be an incongruent form from the campground viewpoints as it will represent new opportunities for recreational activity. Although it will form a visible and recognisable new element within the overall scene and it will be readily noticed by the viewer, the key elements of the pre development views: the enclosing landform, the fundamental landform shape, the enclosing bush and the stream will be retained within a very discrete and relatively complex wider physical and visual catchment with strong physical boundaries. It will be seen against a background of landform and bush and will be framed by the landform. The landscape is capable of absorbing development and although development will be noticeable, it will not generate significant adverse effects.

Group F Kayakers and boat visitors on the river

77. Anyone using the river will see the footbridge wherever it is located. Boat users' experience of the river is confined to the river and the immediately adjacent land through the upper sections of the river because the fringe of mangroves screens views out. However, through the lower reaches, boat users experience is also influenced by the surrounding hill slopes covered in pasture and trees and the influence of the activity and structures associated with the reserve, campground and holiday facility.

Analysis

78. The footbridge and its potential impediment to access up or down the river will initially become the focus of the view experienced by boat users. However, once it is realised that it will allow boat users up or down the river its importance as a landscape element will diminish. Although it will remain a strong constructed element in the landscape, it will be associated with the homestead and adjacent sheds and the recreational options available in the area. It will also be seen against the background of landform and vegetation.

Evaluation

79. It will not be an incongruent form in this landscape. However, it will form a visible and recognisable new element within the overall scene and it will be readily noticed by the viewer. Development will be noticeable, but it should not generate adverse effects because the key elements of the pre development views: the enclosing landform, the fundamental landform shape and the enclosing bush and the stream will be retained within a very discrete

and relatively complex wider physical and visual catchment with strong physical boundaries.

Effects on LANDSCAPE CHARACTER (See all of the photographs)

Analysis

80. The RMA, the NZ Coastal Policy Statement, the Regional plan, the District Plan and the Proposed Auckland Unitary plan all seek to sustainably manage the natural and physical environment in a way that enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while (of direct relevance to the footbridge) sustaining the life supporting capacity of the air, water soil and ecosystems: and avoiding, remedying or mitigating any adverse effects on the environment.

81. In particular, they seek that natural character, natural features and landscapes, significant indigenous vegetation and habitat, the relationship of Mā ri and their culture with their traditions with their ancestral lands, water, sites, wā i tapu and other taonga and the protection of historic heritage should be preserved and that they be protected from **inappropriate** use and development. The Pūhoi Estuary area is considered to be within the coastal environment and it is regarded as having a high degree of landscape character as evidenced by the ONL identification.

82. The key questions that therefore arise are therefore whether or not the development is appropriate and whether or not the effects it might have are adverse and whether or not they can be avoided, remedied or mitigated.

83. The Schischka property – now known as Te Muri Park—was purchased several years ago by Council to add to the regional park network. The characteristics that presumably made it attractive were its location—close to Auckland; its proximity to Wenderholm, the connection that could be made through it to the Mahurangi West regional park, its size— one of only two large areas of land east of SH1 between Auckland and Wellsford, the lack of development on it, the areas of bush, and the remote and beautiful beach

84. In July 2015 Council approved public notification of its intention to vary the Regional Parks Management Plan 2010 to incorporate Te Muri regional parkland into its system. Public ‘consultation” has been undertaken and the key themes arising from this consultation include providing pedestrian and vehicle access to the park, the development of recreational activities such as horse riding, cycling, and camping, development of a coastal trail connecting Te Muri with Wenderholm and the Mahurangi West Regional park, and utilising the park as part of the Te Araroa trail instead of the current proposal to boat down the Pūhoi River. The retention of the remote feeling of the park and the provision of access over the Te Muri Stream and the Pūhoi River were also significant issues identified. Council has subsequently developed a plan for the park which includes opening it up for recreational use. This use hinges on improvements being made to Hungry Creek Road, upgrading the farm access track through to the beach, and provision of a primary arrival area at the beach.

85. Proposals include the development of a track network that caters for walkers, horseriders and mountain-bike riders and it that links Te Muri with the adjacent regional park networks. Councils Local Board, Parks, Culture and Community Development Committee met in September 2015 and they discussed the main themes arising from the public feedback received. They expressed

concern about the footbridge proposal, particularly in relation to perceived development and maintenance costs, visual impact, and health and safety issues. But they resolved to support pedestrian and operational access across Te Muri Stream at the northern end of the beach, provide practicable access to the park for families, the elderly or infirm, support the park use by walkers, cyclists and horseriders, and support using proposed and existing walkway connections to add to the national walkway network all of which may present similar development issues. Despite Councils intention of also providing vehicle access off Hungry Creek Road, the Board also acknowledged the need to retain the remote feeling of the park.

86. The potential effects that accommodating the wish list of public facilities plus the necessary infrastructural items including parking and roading might have on the fundamental character of the landscape does not appear to have been considered, and there are a number of clear potential use conflicts including:
    - The effects of the provision of infrastructure on natural character including ONLs, Coastal Natural Character Areas and Outstanding Natural Features,
    - The potential for conflict between those who wish to hike across this landscape and those who wish to ride horses or cycle in it.
    - The potential for conflict between continuing the farming operation and increasing the intensity of public use.
    - The potential for conflict over important historic sites.

87. It is apparent from the minutes of a meeting dated 15 November 2015 that detailed analysis of the landform, cultural significance, natural heritage and recreation potential of the Te Muri regional parkland has already been undertaken. At the same meeting Council also resolved to investigate methods of crossing the Pūhoi River taking into consideration a range of factors including
    - Environmental heritage and landscape impacts,
    - Impacts on estuarine and river hydrodynamics
    - The impacts of river flow dynamics.
    - The impact on the navigability of the river,
    - Buildability (geotechnological considerations)
    - Options available including barges and water taxis and any alternative routes not requiring a crossing

88. And they also resolved to upgrade the access to the park from the north across the Te Muri Stream with parking, public toilets, visitor information and a public telephone, to investigate locating a bridge across the Te muri Stream, and to relocate the Te Muri campground with an arrival area vehicle parking, visitor information, public toilets and water supply and that they would investigate and if feasible provide a self-contained campground.

89. All of this development will occur in a landscape with multiple Outstanding Landscape overlays. It is apparent that no analysis of the physical and visual characteristics of the landscape has been undertaken. Such a study would identify the environmental, visual, cultural and land use constraints across the land. It would also identify the values and attributes that should be retained and it should result in a development plan that is landscape led ensuring that the important values that make Te Muri special are retained and enhanced.

90. Despite the lack of such a report a management process has already been outlined – and whilst it does no doubt cover the essential physical requirements to create a sustainable landscape, it does not combine these

with consideration of the outstanding landscape values and the retention of them.

91. Wenderholm is accessible by bus, via Waiwera, from Auckland. Public transport will play an increasingly important role in our recreation and Wenderholm and Long Bay to the south have similar roles as recreation resources for a wider section of the community and in particular community groups.

92. Whilst many visitors to Wenderholm may never use a footbridge or wish to explore a bay further to the north, others including visitors to this country and those who enjoy remote and active experiences may well use public transport to Waiwera, crossing a footbridge, walking through forest to enjoy the magic of Te Muri and the promised trails. Despite the council's desire to be inclusive, accommodating the infirm and disabled, it is also effectively disenfranchising those who do not have private transport.

93. As the documents accompanying this report illustrate a footbridge can be built across the Pūhoi River without it creating significant adverse effects on the physical, visual and cultural landscape. The effects on the amenity enjoyed by a small sector of viewing audience may be more than minor, but these effects must be balanced against the positive outcomes the construction of a foot bridge would have for the wider community. It would physically link Wenderholm and Te Muri Parks. It would also provide a missing link in the Te Araroa trail. It would provide logical pedestrian access to the wider Te Muri Park landscape and it would provide a link to an existing pedestrian network along the coast.

94. The elements that contribute to identification of the ONL area will not be affected by the development. An ONL or any other outstanding landscape designation does not mean that the landscape should be frozen in time or that development will detract from its character. This proposed footbridge is a simple structure; appropriate to the purpose and it does not conflict with underlying landscape values or native biodiversity. Vegetation along the river and the estuarine margins will be protected. Areas of cultural significance will be avoided. The landing points on the edge of the e river will be sensitively integrated into the landscape with appropriate landscape elements including planting as required. Therefore, it can be concluded that the footbridge proposed will not detract from the natural character values of the lower Pūhoi River to a more than minor extent.

Landscape Amenity

95. The footbridge will constitute a small section of the wider landscape in the catchment, and it will not generate dust, noise, or odour. Development should not affect neighbouring property holders' appreciation of the pleasantness, aesthetic coherence and cultural and recreational values of the wider environment to a more than minor extent because their wider outlook to river and surrounding rolling hills pasture, areas of native bush and the sea will remain.

LANDSCAPE EFFECTS

96. A landscape assessment also investigates whether the proposal will have adverse effects on the nature and quality of the environment. The degree to which a particular landscape will be affected by change will specifically depend on the effects of the development on:

i). the pattern and scale of the landscape – landform, land cover and natural features;

ii). existing land use;

iii). expressiveness (legibility);

iv). rarity;

v). naturalness; and

vi). the scope for mitigation, which would be in character with the existing landscape.

97. Landscape effects also take into consideration the impact upon amenity values. Assessments therefore investigate the likely nature and scale of changes to individual landscape elements and characteristics, the consequential effect on the landscape character, and the perceptual responses that the proposal evokes.

Evaluation

98. The patterns, scale and naturalness of the landscape will not change, and its legibility as a landform derived from processes over time will not change. No native bush will be removed.

MITIGATION

99. Provided care is taken during the construction process no mitigation will be required. Retention of the bush and individual trees either side of the river will emphasise the integration of the footbridge into the environment.

CUMMULATIVE EFFECTS

100. Cumulative effects as defined by the RMA as

a. '*any cumulative effect, which arises over time or in combination with other effects'*

101. Cumulative landscape effects are considered to be those that affect the physical landscape such as earthworks for access roads, building platforms, and ancillary structures. They involve the introduction of new features into the landscape and may involve clearance of existing vegetation. Cumulative visual effects can affect visual amenity values and it is generally recognised that this can occur in three ways. These are:

102. Combined effects – resulting from a greater density of development being seen from one viewpoint in the human field of vision (i.e., spanning 124 degrees horizontally)

103. Succession effects – resulting from a greater density of development being seen from one viewpoint but not in the human field of vision, i.e., the observer has to turn to see another or other development.

104. Sequential effects – resulting from the observer moving to another view—point and then seeing a greater density of development. Sequential effects are most commonly experienced along regularly used routes such as roads, railways and walkways or in this case they might be experienced from the harbour.

105. Cumulative effects are not anticipated as there will be no other structures on the river.

CONCLUSIONS

106. It is clear that there are four issues, which should be addressed by this assessment. These are:

- The effects on the amenity values of the people who will see the footbridge either from their dwellings, the Hibiscus Coast Highway, the park or the river.
- The maintenance of landscape character including effects on the outstanding landscapes up and down the river and along the coast
- The physical effects resulting from constructing the footbridge
- The appropriateness of the footbridge.

Amenity

107. The footbridge will quickly become an integral part of the landscape because of its purpose and design. It will be low-key and simple and it will be seen against a background of water or landform and vegetation. It will be a small part of the wider landscape. The potential adverse effects on those using the homestead or the campground will be balanced by the benefits it affords to the wider community.

Landscape character

108. The value of the wider landscape is already recognised. Landform, bush, the bush and the coastal edge dominate the existing landscape and create a landscape with high character values. The overlays over most of the landscape identify it as being sensitive to development, but they do not preclude development. The development proposed will not be incongruent or inappropriate as it will be regarded as a logical extension to the facilities already provided in the park. The scale of the development although it completes a span across the river will not be not large when compared to the scale of the surrounding landscape and it will not affect the dominant characteristics of the landscape.

Physical effects.

109. Whilst the physical effects that might be generated by the construction of the bridge are mostly dealt with by others, land based development will be simple, low key and will touch lightly on the land. Although earthworks will be required to construct the footbridge, these will be strictly controlled. Excess fill will be disposed of offsite and the land will be returned to a state commensurate with the existing—albeit slightly modified to provide pedestrian access Development in the wider area already reflects and responds to recreational use and expectations rather than those of landscape protection.

The appropriateness of the development

110. The purpose of the Act is the sustainable management of natural and physical resources. Development of a foot bridge is a low key and appropriate method of providing foot access to a recreational area valued for its outstanding landscape qualities. It sustains the potential of the natural and physical resources along the river; it meets the needs of existing and future generations; it does not affect the life supporting capacity of air, water, soil or ecosystems and in balance the effects of the activity on the environment are less than minor.

Jan Woodhouse, FNZILA,

Registered NZILA Landscape Architect