ASSESSMENT OF LANDSCAPE AND VISUAL EFFECTS FOR THE PROPOSED MATATĀ WASTE WATER TREATMENT PLANT

providing outstanding ecological services to sustain and improve our environments

Wildlands

R3228a

ASSESSMENT OF LANDSCAPE AND VISUAL EFFECTS FOR THE PROPOSED MATATĀ WASTE WATER TREATMENT PLANT

Contract Report No. 3228a

August 2013

Project Team:
Richard Hart - Report author

Prepared for:
Whakatāne District Council
Private Bag 1002
Whakatāne 3158

WHAKATANE OFFICE: SUITE 4, 108 THE STRAND, P.O. BOX 838, WHAKATANE 3158
Ph 07-308-9791; Fax 07-308-9793

HEAD OFFICE: 99 SALA STREET, P.O. BOX 7137, TE NGAE, ROTORUA
Ph 07-343-9017; Fax 07-343-9018, email ecology@wildlands.co.nz, www.wildlands.co.nz

CONTENTS

Reviewed and approved for release by:

_____
W.B. Shaw
Director/Principal Ecologist
Wildland Consultants Ltd

Reviewed and approved for release by:

_____
Sarah Beadel
Director
Wildland Consultants Ltd

1. INTRODUCTION

Wildland Consultants have been commissioned to prepare an assessment of landscape and visual effects for a proposed waste water treatment plant (WWTP) to service the Matatā settlement, in the Bay of Plenty.

The proposal is to design and construct a WWTP with the following properties:

- 50 × 50 m plant footprint comprising tank(s), pipework and fittings, pumps;
- Building house control equipment;
- Disposal field with drip pipes of about 4 ha (up 6 ha maximum)[1];
- Associated earthworks;
- Associated vehicle access;
- Associated fencing comprising 2 m secure fencing round the plant, and eight-wire agricultural type stock fencing around the disposal field.

The location currently preferred is 1.4 km east of the Tarawera River mouth on the middle dune area (Option 1). The WWTP would be sited roughly centrally along the dune landform, within grazed pasture. Whakatāne District Council have advised that further detail is yet to be developed.

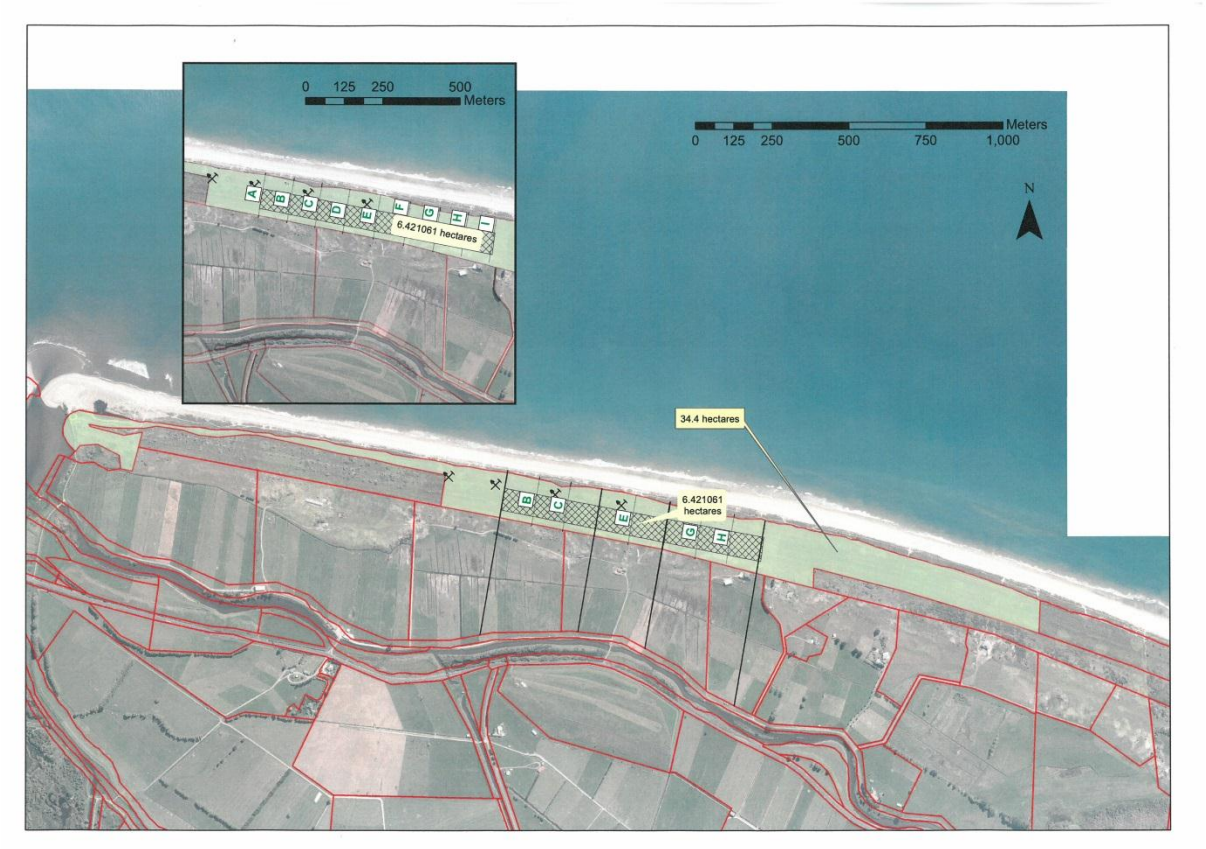


Figure 1: Option 1 showing indicative soakage field. Drawing supplied by Whakatāne District Council.

[1] This may be surface drip pipes laying between indigenous plantings

Several sites have been considered for the WWTP by Whakatāne District Council. This report focuses on Option 1, but includes some commentary on three other Options: 2 and 3, and Site G.

Three of the four sites are on the coastal dunes: Option 1 is 1.4 km east of the Rangitaiki River, the Thornton site (Option 2) is to the west of the sand quarry, and the Walker Road site is to the east of Walker Road (Option 3). The fourth site is south of SH2, adjacent to Thornton Road, on the eastern side of Matatā township.

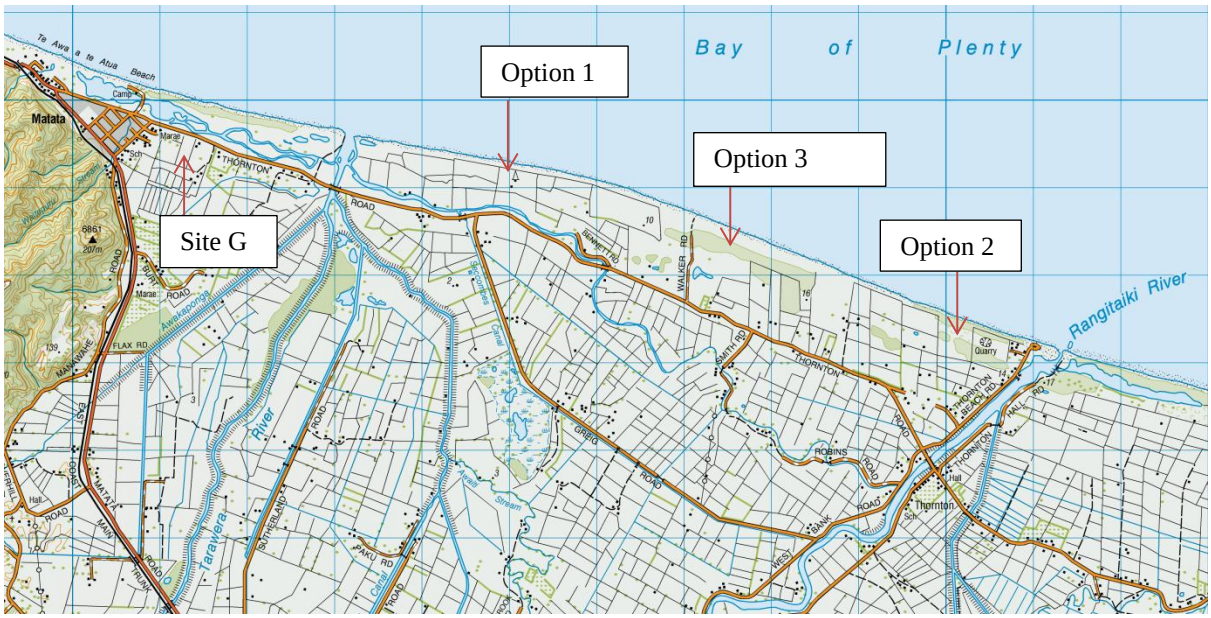


Figure 2: Potential locations shown on topographic map.

2. LANDSCAPE CONTEXT

2.1 Biophysical

Matatā is on the Pacific Ocean in the north-west corner of the Rangitaiki Plains, some 25 km west of Whakatāne. The township of Matatā nestles below the Matatā Scenic Reserve (370 m), at the eastern end of the Matatā escarpment and dunes and behind the Matatā wetlands. The adjacent 51 km long beach - Te Awa-a-te-Atua - extends from Pukehina to Whakatāne.

Figure 3: Te Awa-a-te-Atua Beach looking west towards Matatā from adjacent to the proposed WWTP site (Option 1).

Three major rivers cross the Rangitaiki Plains to exit along this beach: Tarawera, Rangitāiki, and Whakatāne. The site proposed is between the Tarawera and Rangitaiki Rivers. Both of these rivers meander through the Rangitaiki Plains, with the Tarawera originating from and draining Lake Tarawera, and the Rangitaiki originating in the central North Island near the Napier-Taupo Highway.

Figure 4: The Tarawera River mouth from access track.

Figure 5: Looking west towards Matatā from dunes, across coastal dune lagoon and the Tarawera River mouth.

There are other significant water bodies associated with these rivers and coastline in the locality. Coastal waterways and wetlands in the locality include:

- The Matatā wetlands; a large wildlife management reserve with notable habitat and birdlife.
- The old Rangitaiki River channel (pumped into the Tarawera River near the site).
- The Awakaponga and Awaiti canals feed into the Tarawera River upstream of Thornton Road.
- Various dune lagoons near the river mouth.
- The Rangitaiki River mouth wetland (east of the river mouth).

The white sand beach, Te Awa-a-te-Atua, rises steeply from the coast into the dunes. The coastal dunes are some 200-300 m deep and run in a series of dune ridges and hollow strips parallel with the beach. The highest dunes are just over RL 10 m[1] above MHWS, these being to the rear, nearest Thornton Road. The dune landform has a generally elevated area (RL 6 m+) that is over 100 m deep between the foredune and foredune plain (as defined in Hesp 2000). Behind the dune landform extensive coastal flats extend inland across the Rangitaiki Plains at close to sea level (RL 1 m).

[1] Reduced Level (RL) Heights based on Whakatane District Council LIDAR drawings. WDC 1m float.

Figure 6: Te Awa-a-te-Atua beach looking east towards Whakatāne and Motuhora. Note steep beach and incipient dune.

Figure 7: Elevated portion of dunes showing indigenous coastal vegetation on foredune with pasture on the foredune plain. Motuhora on the horizon, and test pit showing as sand mound left.

Views of Moutohora (Whale Island) and the more distant Whakaari (White Island) feature in views when looking offshore and along the beach. Some smaller rocks and islands (e.g. Rūrima) are also visible in clear weather.

2.2 Vegetation

The vegetation is described fully in Wildland Consultants Contract Report No. 3228: "Ecological Assessments of Proposed Sites for the Matatā Waste Water Treatment Plant and Disposal Field", dated August 2013.

In landscape terms, the vegetation can be summarised as follows:

- Indigenous dune vegetation on the foredune, and toe of the foredune plains.

- Poor quality weedy pasture on the rear part of the foredune plains.
- Pasture on the coastal plain with scattered exotics.

The Matatā wetland has very high quality vegetation and habitat. Thornton kānuka (*Kunzea ericoides* (d)) habitat in the vicinity of Walker Road is regionally and nationally significant with Te Awa-a-te-Atua Dunes being the main stronghold of this species. Thornton kānuka is unique, with significant ecological value. It also has real character with twisted stems and branches, gnarly dieback, flush young growth. There are areas of swampy rushes to the south and low dune vegetation beach-ward. This special vegetation needs space to migrate along the dunes as habitat conditions change.

The area south of the dunes is predominantly pasture, with kikuyu (*Cenchrus clandestinum*) dominant on the dry elevated dune areas. Boxthorn (*Lycium ferocissimum*), a shrubby woody weed, is common with large clumps along the elevated dunes. Boxthorn is also scattered through the indigenous vegetation.

Figure 8: Elevated dune showing pasture and weedy boxthorn. Indigenous dune vegetation to right.

On the coastal plain various exotic trees have been planted including isolated Norfolk pine, and shelterbelts. Extensive grey willow forest with an indigenous understorey is common in wetter parts of the plains.

Figure 9: Coastal plains in pasture with area of Thornton kānuka near SH2 Thornton Road, dunes distant left to middle.

2.3 Modification

The dunes have been modified by past grazing and by four wheel drive (4WD) vehicle tracks that extend along the top of the dunes the full length of the beach from the Tarawera River to the Rangitaiki River at Thornton. Existing and remnant fences are also present along old paddock edges and across the leased part of the dune reserves. Notwithstanding, the dune landform is largely intact and would easily revert to indigenous dune vegetation, if allowed.

The main modification is the result of farming. Indigenous vegetation was cleared and grazed for farming. Farming modification is expressed as the pattern of paddocks and fences, with pasture at various stages of growth, herds of farm animals, and associated farm buildings and often exotic plantings of shelterbelts, shade trees and sometimes wetlands. Farming generally retains the natural landform and has high landscape character in its own right. Farming is the dominant land use in the area, being a very extensive and coherent landscape. This rural landscape is highly representative of the Rangitaiki Plains.

3. OPTION 1 ASSESSMENT

3.1 Built environment

Option 1 is some 3.5 km to the east of Matatā, the nearest settlement. There are scattered farm buildings on the coastal farmland between Matatā and Whakatāne. Part of the Thornton coastline nearer Whakatāne has been subdivided into lifestyle blocks.

In the immediate locality scattered buildings include the Old Rangitaiki River pump station and outlet structure, a cell phone mast, radio transmitter mast, and shed, plus various houses and farm buildings. The house on the foredune plain east of Option 1

belongs to Mr Paul Knight. All farmland to the south of the site west to the Tarawera River belongs to the Robinson family.

Figure 10: Elevated dune - pasture typical of area proposed for WWTP.

Figure 11: Robinson farm homestead and building on coastal flats near SH2 Thornton Road taken from dunes.

3.2 Visual catchment and viewing audience

The visual catchment is the northern Rangitaiki Plains from the western escarpment behind Matatā to the eastern escarpment near Whakatāne.

The viewing audience for the proposed site is very small. The potential viewing audience is limited to travellers on SH2, Thornton Road and two or so immediate neighbours: Knight and Robinson. There are also occasional users both pedestrian and vehicular on the dune-top 4WD tracks.

An urupā (cemetery) is located on the right bank of the Tarawera River mouth, on the high part of the dunes, with high cultural significance.

Figure 12: Urupa on dunes adjacent to Tarawera River mouth.

3.3 Natural and landscape character

The natural character of the proposed site is Coastal Duneland. The Thornton Dunes have very high natural character.

South of the largely indigenous dunes is a rural pastoral landscape. This farmed portion has lower natural character but still retains significant landscape value as part of a larger rural landscape. The landform is substantially intact and the stands of Thornton kānuka are highly significant. This section of coastline is largely unbuilt.

Figure 13: Foredune plain looking south adjacent to the Thornton site.

Figure 14: Foredune and beach looking east adjacent to the Thornton site.

The Thornton Dunes have very high natural character[1].

"The Thornton Dunes comprise the natural dune system located between the Rangitaiki and Tarawera Rivers. A unique species of manuka exists in this section of the coast, known as "Thornton Manuka" and is a dominant part of the vegetation cover in parts of this feature. Modification of farming land use and some residential housing adjoining the feature has also occurred.

- *Native dune vegetation.*
- *Endemic native vegetation cover exists.*
- *Secondary and tertiary dune profiles remain intact.*
- *Minimal modification to the natural coastal edge exists*".

(Boffa Miskell 2013)

This area has very high attribute ratings for: coastal waterscape, reserve land cover and land use - habitat and vegetation, terrestrial biotic systems - native dune species, abiotic systems and landform - dune system and perceptual - natural patterns and dynamic processes displayed.

The landscape character is also very high hence its inclusion in the proposed Whakatāne District Plan as a significant amenity landscape (SAL9). To achieve this status it was assessed against recognised criteria as follows:

- Long sweep of dramatic beach, and duneland
- Distinctive dune formation strongly representative of coastal processes
- Dunes in relatively good state of preservation except for 4WD tracks
- Extensive and coherent duneland vegetation
- Vivid coastal landscape with drama and open aspect to Pacific and offshore islands
- Highly naturalness and powerful ocean landscape
- Intact landform with natural coastal processes dominant
- Diverse seascape - powerful breaking waves, mist, calm provide a transient changing scene
- Favoured for recreation, notably for coastal surf fishing.

3.4 Policy

The site is within the coastal environment so the NZ Coastal Policy Statement and the Bay of Plenty Regional Coastal Environment Plan need to be considered.

[1] Natural Character Assessment Bay of Plenty Coastal Environment, Boffa Miskell, March 2013

The site has no specific regional landscape significance in the Bay of Plenty Regional Coastal Environment Plan, but is a Site of Significance on land SSL42, SSL43, and SSL44 for its ecological values.

The Proposed Whakatāne District Plan identifies the area as a Significant Amenity Landscape as proposed in the Whakatāne District Landscape Review. This is a new designation that is not used in the operative District Plan.

The Whakatāne District Landscape Review (Boffa Miskell 2009) identifies this area as a Significant Amenity Landscape. SAL9 - Matatā to Thornton Dunelands (3.5.9, SAL9) and is described as follows:

"Highly regarded and recognised beach environment with diverse recreational amenity values. Moderate natural science and geomorphological values, due to modifications within the dunelands. High expressive values of a distinct landscape feature with cultural, historical and association values."

3.5 Landscape assessment

Actual and potential landscape effects involve the following:

- Natural and landscape character; and,
- Visual effects.

3.5.1 Effects on natural and landscape character

Option 1 is within the coastal environment and part of an area of very high natural and landscape character.

Development in such a high value landscape would normally be avoided. However this site has been identified as the preferred location by the District Council, for engineering and cost purposes, and through consultation. In this circumstance adverse effects will need to be remedied, to ensure that overall effects are no more than minor.

The WWTP structures are modest in size, although the disposal field is up to 6 ha. The structures can be designed and constructed to have very minor adverse landscape effects, and there is potential for the disposal field to have some positive effects in terms of restoration of natural character.

Option 1 is a reasonable one for the WWTP because:

- The site is within the more modified grazed portion of the dune.
- The site is on a remote section of coastline with very low public use.
- The site is generally hidden from public view.
- No favoured public viewing locations will see the development.
- The site is largely screened from neighbours and SH2 by the higher rear dunes.

Visual effects can be remedied as follows:

- Site WWTP structures, earthworks, and fencing out of sight of SH2, the urupā, and the Tarawera River.
- Site buildings and structures behind the higher dunes, as viewed from SH2 and by neighbours.
- Ensure that buildings, main structures, and taller security fences are constructed in the lowest parts of the dunes, or partially dug into the ground.
- Ensure that buildings and structures are not prominent, as viewed from the top of the foredune and 4WD tracks.
- Ensure that all constructed items, roofs, and fence tops are below a certain height, e.g. RL 7.5 m.
- Include habitat reconstruction as a core part of the disposal field design using locally representative dune species so that it appears to be a seamless part of the dune vegetation. This will be a positive outcome and constitute restoration of natural character in the coastal environment. Habitat reconstruction should be undertaken between the coast and the development, and between the development and SH2, e.g. establish Thornton kānuka forest in these areas, which will help to screen the development from the beach and the road.
- Disposal field should be fenced using conventional rural post and wire fencing, e.g. eight-wire fence.
- Fence alignment should follow natural landform and extend well beyond the disposal field, to incorporate a buffer of natural vegetation to blur the boundary.

It is very important to maintain natural character and also the appearance of a rural unbuilt landscape in this locality, provided that buildings, structures, fences, and earthworks are hidden from general view. Some minor visibility of buildings and structures in the immediate vicinity will be necessary and acceptable.

The remedy for this potentially adverse effect will be to restore indigenous duneland vegetation. The aim is to create a seamless continuum with the dune landscape. Irrigation provided by WWTP disposal field provides an opportunity to plant Thornton kānuka, and other dune vegetation.

There is a risk that the additional moisture will favour exotic weeds. It is important that exotic grasses are not used (indigenous grasses such as *Microlaena stipoides* or *Poa imbecilla* would be appropriate), and that no topsoil is imported. Sand is best. A study is required to ensure duneland habitat will be created or the remedy will not occur.

To integrate the reconstructed dune vegetation it may be necessary to manage some of the adjacent duneland by selectively removing weed species and to plant locally-sourced indigenous species. It is important that the vegetation does not change at the fence line but rather follows the natural patterns of the dunes.

The following conditions and design guidelines are recommended to avoid visual effects and to remedy natural character effects:

- Site development in pasture, to avoid clearance of indigenous vegetation.
- Site the buildings, structures, fences, and roading clear of ridgelines, to be hidden from SH2.
- Utilise higher ridges for screening, and hollows for built items.
- Provide a maximum RL for human-made items - suggest RL 7.5 m maximum.
- Buildings and structures should be of a recessive design and low visibility: low roofs with shadow features like eaves, low reflectivity colours that match the dunes, and visually permeable fencing.
- The disposal field should be planted to become part of the natural duneland habitat.
- Disposal field fencing and soak pipe layout should follow the natural landform, rather than straight lines, if possible.
- Restore natural character to the modified pastoral areas utilised.
- Pest and weed control should be undertaken as mitigation, in the locality.
- Suitable areas shall be planted within Thornton kānuka, grown from local seed.
- Establish areas of Thornton kānuka forest in the reserve (on what is currently pasture) between the beach and the development, and also between the development and SH2.

3.5.2 Visual effects

The viewing audience is small, and most visual effects can be avoided.

Visual effects should be avoided by locating built items out of public view from SH2, the beach, the neighbours, and the urupā, and from the Tarawera River. Most of the WWTP site is screened from SH2 by the higher rear dunes. The WWTP site is more than one kilometre east of the Tarawera River and will not be visible from there. Beach users cannot see over the steep dunes, except while using the higher dunes tracks to get there. Visual effects from these locations can be avoided with the conditions proposed above.

Some visual effects are inevitable in the general proximity. Built items will be visible in the immediate locality of the generally flatter dune tops and the 4WD tracks. It is understood that the 4WD tracks are used mainly by fisher-people with Te Awa-a-te-Atua beach being a nationally significant surf fishing venue, especially in the spring and summer spawning season. This is still a small viewing audience and many of the potential audience are local fisher-people. In any event, these effects can be remedied by the restoration of natural duneland character across and adjacent to the disposal field.

The disposal field should be acceptable and could have positive benefit if planted in indigenous dune vegetation, rather than pasture grasses. This assumes a thorough ecological restoration plan is prepared and implemented that follows natural ground contours. For example, the main pipe feeding the soak pipes could follow the high points such as along a local raised dune and have satellite laterals down the fall line from there. This could be repeated from all high points without earthworks. This pattern would be asymmetric and potentially more natural in terms of the resulting vegetation pattern.

Buildings should be located in the hollows, and/or partially buried, and not be visible as part of the skyline form any public viewing location. Options to avoid seeing the built items include: careful siting, digging any buildings partially underground, and localised shaping. Disturbance of indigenous vegetation should be avoided.

4. ALTERNATIVE SITES

Alternative sites have been considered as part of this assessment. Two alternative sites were visited: one west of the Thornton sand quarry (Option 2), and the other at Walker Road (Option 3). A third site, Site G, is located immediately east of the Matatā township.

4.1 Thornton site (Option 2)

The site to the west of the Thornton sand quarry is generally similar to Option 1, being on grazed foredune plain behind the indigenous reserve vegetation. The dunes extend further inland at Thornton. The level of modification is greater as a result of quarrying and subdivision and building development. There are several lifestyle properties adjacent to the rear dunes that could view the WWTP and become affected parties.

This site is somewhat less sensitive than Option 1 and would be a better site because:

- There is greater modification (quarry, subdivision, and housing).
- The dunes are deeper.
- The site is completely screened from SH2 and Thornton Road.

If natural character cannot be restored on the disposal field at Option 1, then Option 2 would have less adverse landscape and visual effects.

Figure 15: Alternative site west of Thornton Camp (Option 2) and quarry has several potentially affected neighbours.

4.2 Walker Road site (Option 3)

The Walker Road site (Option 3) is highly sensitive, ecologically, being the 'heartland' for Thornton kānuka. This is the largest contiguous area of Thornton kānuka in existence. This area also has very high natural character and landscape values and is visually interesting. Any WWTP siting and access would need to ensure that any adverse effects on this habitat and its conservation are avoided.

Figure 16: Thornton kānuka near Walker Road (Option 3). View from Walker Road with rushes and cabbage tree in the foreground.

This site is not favoured and should only be used as a last resort.

4.3 Site G - east of Matatā

This site is located on the inland side of SH2, adjacent to Thornton Road, near Matatā, and is currently pasture. Site G is above SH2 and completely screened from the road by a relic dune ridge. There is some housing development along this dune ridge, to the east of the site. The settlement of Matatā is about 200 m west of this site. The closest neighbours are two Burt properties 200 m to the west and the east. Rangitihi Marae is more than 450 m to the west of the site.

This site, especially the rear portion further from the beach, has much lower natural character values than the duneland sites because it is not within the coastal environment. The duneland sites (Options 1-3) all require considerable remedies and mitigation to make them acceptable, whereas this site could be developed in a more conventional manner without adverse effects on natural character.

There are, however, potential adverse landscape effects on the nearby residents. If this site is acceptable to the nearby residents then this site is preferred over the other three (Options 1-3), on the basis of avoiding effects on natural character and the coastal environment.

5. CONCLUSIONS

Options 1-3 are located within a section of coast line that is highly significant because it:

- Is within the coastal environment (BOPRCEP).
- Has very high landscape values (SAL9, Proposed WDP).
- Has very high natural character (BOPRCEP).

It is not an Outstanding Natural Landscape. The less modified parts of the dunes that are naturally vegetated dune area should be avoided.

Conditions and design guidelines for Options 1-3:

- Site built items on pasture, to avoid clearance of indigenous vegetation.
- Site the buildings, structures, fences, and roading clear of ridgelines, and hidden from SH2.
- Utilise higher ridges for screening, and hollows for built items. Dig down if necessary.
- Provide a maximum RL for human-made items - suggest RL 7.5 m maximum.
- Buildings and structures should be of a recessive design and designed to be low visibility: low roofs with shadow features like eaves, low reflectivity colours that match the dunes and visually permeable fencing.

- The disposal field should be developed to become part of the natural duneland habitat.
- Consider disposal field fencing that extends to natural landform rather than straight lines.
- Requirement to restore natural character to modified pastoral areas.
- Ecological design of the disposal field - soak pipes placed on natural lines (rather than a geometric pattern).
- Pest and weed control shall be undertaken in the locality as mitigation.
- Suitable areas shall be planted in Thornton kānuka grown from local seed.
- Avoid the use of introduced soils, and conventional exotic grasses.
- For Option 1, screen development with Thornton kānuka forest to the north and south of the site on pasture within the reserve.

Overall, Site G is the lowest impact site, followed by Options 2 and 1 respectively. Option 3 is a high impact site, in terms of effects on landscape and natural character.

REFERENCES

Hesp P.A. 2000: Coastal sand dunes - form and function. *CDVN Technical Bulletin No. 4*. Forest Research, Rotorua. 29 pp.

LANDSCAPE ASSESSMENT PHOTOGRAPHS

Richard Hart
Registered Landscape Architect

MATATA WASTE WATER TREATMENT PLANT - LANDSCAPE ASSESSMENT PHOTOGRAPHS, pg.1

Richard Hart
Registered Landscape Architect

MATATA WASTE WATER TREATMENT PLANT - LANDSCAPE ASSESSMENT PHOTOGRAPHS, pg.2

Te Awa-a-te-Ahua beach looking west towards Matata from adjacent to WWTP site

Te Awa-a-te-Ahua beach looking east towards Matata from adjacent to WWTP site

Richard Hart
Registered Landscape Architect

MATATA WASTE WATER TREATMENT PLANT - LANDSCAPE ASSESSMENT PHOTOGRAPHS, pg.3

Alternative site west of Thornton sand quarry showing coastline

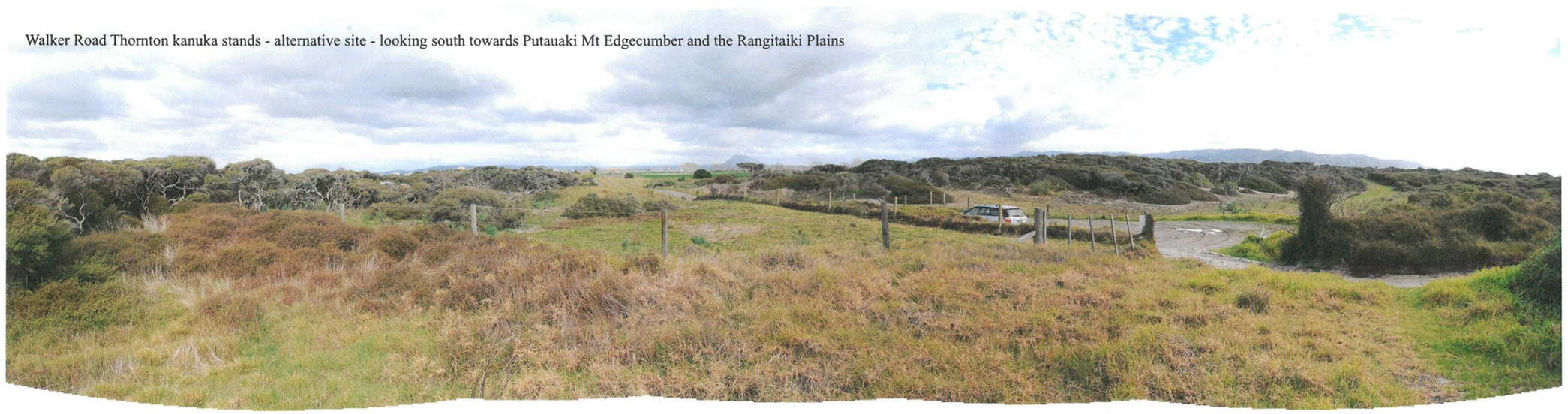
Alternative site west of Thornton sand quarry - sand quarry visible right side of photograph

Richard Hart
Registered Landscape Architect

MATATA WASTE WATER TREATMENT PLANT - LANDSCAPE ASSESSMENT PHOTOGRAPHS, pg.4

Walker Road Thornton kanuka stands - alternative site - looking towards beach from Walker Rd

Walker Road Thornton kanuka stands - alternative site - looking south towards Putauaki Mt Edgecumber and the Rangitaiki Plains



Richard Hart
Registered Landscape Architect

MATATA WASTE WATER TREATMENT PLANT - LANDSCAPE ASSESSMENT PHOTOGRAPHS, pg.5

Providing outstanding ecological services to sustain and improve our environments

Call Free 0508 WILDNZ
Ph: +64 7 343 9017
Fax: +64 7 3439018
ecology@wildlands.co.nz

99 Sala Street
PO Box 7137, Te Ngae
Rotorua 3042,
New Zealand

Regional Offices located in
Auckland, Hamilton, Tauranga,
Whakatane, Wellington,
Christchurch and Dunedin

ECOLOGY RESTORATION BIODIVERSITY SUSTAINABILITY

www.wildlands.co.nz