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FIRTH OF THAMES

PONUI MARINE FARM

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INTRODUCTION

1. The following assessment of landscape and natural character, and visual effects has been prepared as one of the specialist reports to support an Assessment of Environmental Effects (AEE) for the Ponui Marine Farm application by Takutai Limited.

2. Much of the background information on natural science values used to inform the assessment has been based on research conducted by 4Sight Consulting as part of the AEE and information has been referenced as appropriate. Information gathered during site visits was used to inform natural character, landscape character, and visual amenity commentaries and assessments.

THE PROPOSAL

3. Takutai Limited proposes to establish a marine farm (the proposed Ponui "**Marine Farm**") for the purpose of farming New Zealand greenshell mussels (*Perna canaliculus*) and mussel spat collection. The Marine Farm is located in the north-western portion of extended Firth of Thames, within the Auckland Region (*Figure 1*). The application area is approximately 10km north of Orere Point and 13km west from Matariki Bay, Coromandel Peninsula. The nearest corner of the site is approximately 4km east of Ponui Island. The Marine Farm is four blocks long (east-west axis) by two blocks wide (north-south axis), creating a parallelogram shape 1700m x 1324m. Each block within the Marine Farm will be 350 x 600m, with approximately 100m access ways. The total area of the Marine Farm is 221 hectares, which includes all structures (such as anchors, lines, spat catching frames or ropes, floats and navigational aids) and access ways.

Figure 1: Location map

4. The elements of the Marine Farm proposal which could generate landscape and natural character, and visual effects are:

a) Backbone lines:

- All backbone lines will be surface lines and will be orientated parallel to tidal flows.
- A combination of single and double backbone lines will be used.
- The lengths of longlines will range from 180-220m.
- The density of lines will be approximately 30 lines per block. The separation between the backbone lines will be approximately 25m.

b) Culture ropes:

- The method used will involve a continuous rope dropper, which will be submerged and therefore will not be visible above the water.

c) Floats:

- The floats used to support the longlines will be a mixture of 175 to 300 litres in volume.
- There will initially be approximately ten floats on each longline. Over time there will be more floats added incrementally to support the additional weight from mussel growth. When the mussels are at harvestable size there will be approximately 50 floats per line.
- Floats used will be either orange or dark/navy blue.
- Orange floats will be used:
    - At the end of each longline;
    - in the middle of the seaward most longlines; and
    - in the middle of the landward most longlines.

d) Structure Anchors:

- The anchors used to secure the longline structures to the seabed will be screw anchors, buried to a depth of approximately 9 to 12 metres. At this depth the eye of the anchor will be below mud level and will not be visible, with the only visible aspect being the warp coming through the seabed to the surface. The anchors will have a curved plate which is screwed into the substrate and will have a suction cup effect (*Figure 2*).

Figure 5a: Screw anchor overview

Figure 5b: Base (screw) component

Figure 2c: Eye of the screw anchor, which will be level with the seabed but will not be visible due to the soft mud substrate at the site

e) Lighting:

- The marine farm will have eight lights in total. Four of these are cardinal lights, which will be placed on each corner of the overall block and must shine a distance of 4nm. The northern cardinal light will flash continuously, while the other three lights will flash in a sequence. The other four special lights will be attached in the middle of each side of the overall block and must shine a distance of 1nm, they also have radar reflectors. These will flash in a sequence. The Auckland Council Harbour Master has reviewed and approved the Lighting Plan in principle.

f) Land based facilities:

- The applicant has a private share in the existing Sugar Loaf Wharf (at Te Kouma in the southern part of the Coromandel Harbour) and intends to utilise these facilities for servicing the Marine Farm. The use of Sugar Loaf Wharf is an authorised activity and Mr Bull, on behalf of the applicant, considers that the wharf facility has the capacity to service the additional mussel harvest from the Marine Farm without impacting on the current operations of Sugar Loaf Wharf.
- Additionally, the Coromandel Marine Farming Association is currently considering an extension of the Sugar Loaf Wharf facilities, as well as the facilities at Kopu. As such, Kopu is also being considered by the applicant as a potential future facility for the Marine Farm.
- Mr Bull currently owns and operates five mussel barges, which will be used by the applicant when servicing the proposed Marine Farm.

g) Servicing

- When development begins on the Marine Farm, a vessel will be on site weekly. When the farm is approximately 25 percent developed (60 longlines), it is expected that a harvesting barge will be on site for two days a week for up to 20 weeks. In addition, a maintenance barge will be at the Marine Farm four days a week.

5. This assessment considers the landscape character, natural character and visual amenity effects of all the surface components described above including lines, floats, lights and vessels tending the Marine Farm. It does not consider effects related to wharf and load/unloading facilities as these will continue in areas where such activities are already provided for.

THE STATUTORY CONTEXT

6. The Resource Management Act 1991 (**RMA**), the New Zealand Coastal Policy Statement 2010 (**NZCPS**), the Hauraki Gulf Marine Park Act (**HGMPA**), and the Auckland Unitary Plan (Operative in Part) (**AUP**) provide the statutory context for the application.

Resource Management Act

7. Part 2, Section 6 of the RMA sets out "matters of national importance", while Section 7 sets out "other matters". Considered in relation to this application is Section 6(a) which requires the preservation and protection of natural character, Section 6(b) which requires the protection of outstanding natural features and landscapes, and Section 7(c) which requires the maintenance and enhancement of amenity values.

New Zealand Coastal Policy Statement 2010

8. The NZCPS, adopted in 2010, also has provisions relating to natural character and landscape. The most pertinent of these are listed below but they should be considered with the enabling provisions of Objectives 2 and 6, and Policies 6 and 8.

Policy 13 Preservation of natural character

(1) To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;

Policy 15 Natural features and natural landscapes

To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment; and

(b) avoid significant effects and avoid, remedy or mitigate other adverse effects of the activities on other natural features and natural landscapes in the coastal environment;

Hauraki Gulf Marine Park Act and Marine Spatial Plan

9. The HGMPA promotes a co-operative approach to the integrated and sustainable management of the Hauraki Gulf. The HGMPA, in section 7 and 8, has the status of an NZCPS.

Section 7

10. Section 7 recognises the national significance of the Gulf and emphasises the life-supporting capacity of the Hauraki Gulf and in particular identifies that this:
    "…includes the capacity –
    (a) to provide for the… relationship of the tangata whenua of the Gulf with the Gulf… and the… wellbeing of people and communities,
    (b) to use the resources of the Gulf… for the economic activities and recreation… and
    (c) to maintain the… water and ecosystems of the Gulf".

Section 8

11. Section identifies management objectives. These relate to a range of environmental, Māori and community matters. The protection of kaimoana is one objective. Sub-section 8(e) recognises the importance of the social and economic well-being of the people and communities of the Hauraki Gulf.

Auckland Unitary Plan

12. The AUP was made operative in part on 15 November 2016, there are no appeals relevant to the site or surrounding area. The application site is within the General Coastal Marine Zone of the AUP (*Figure 3*) and aquaculture is specifically provided for under section F2.15. In addition, there are three distant overlays (Outstanding Natural Features (**ONF**), Outstanding Natural Landscapes (**ONL**), and Outstanding Natural Character (**ONC**) and High Natural Character (**HNC**) within the AUP which are considered in relation to the Marine Farm resource consent application site. However, these overlays do not extend over the application area.

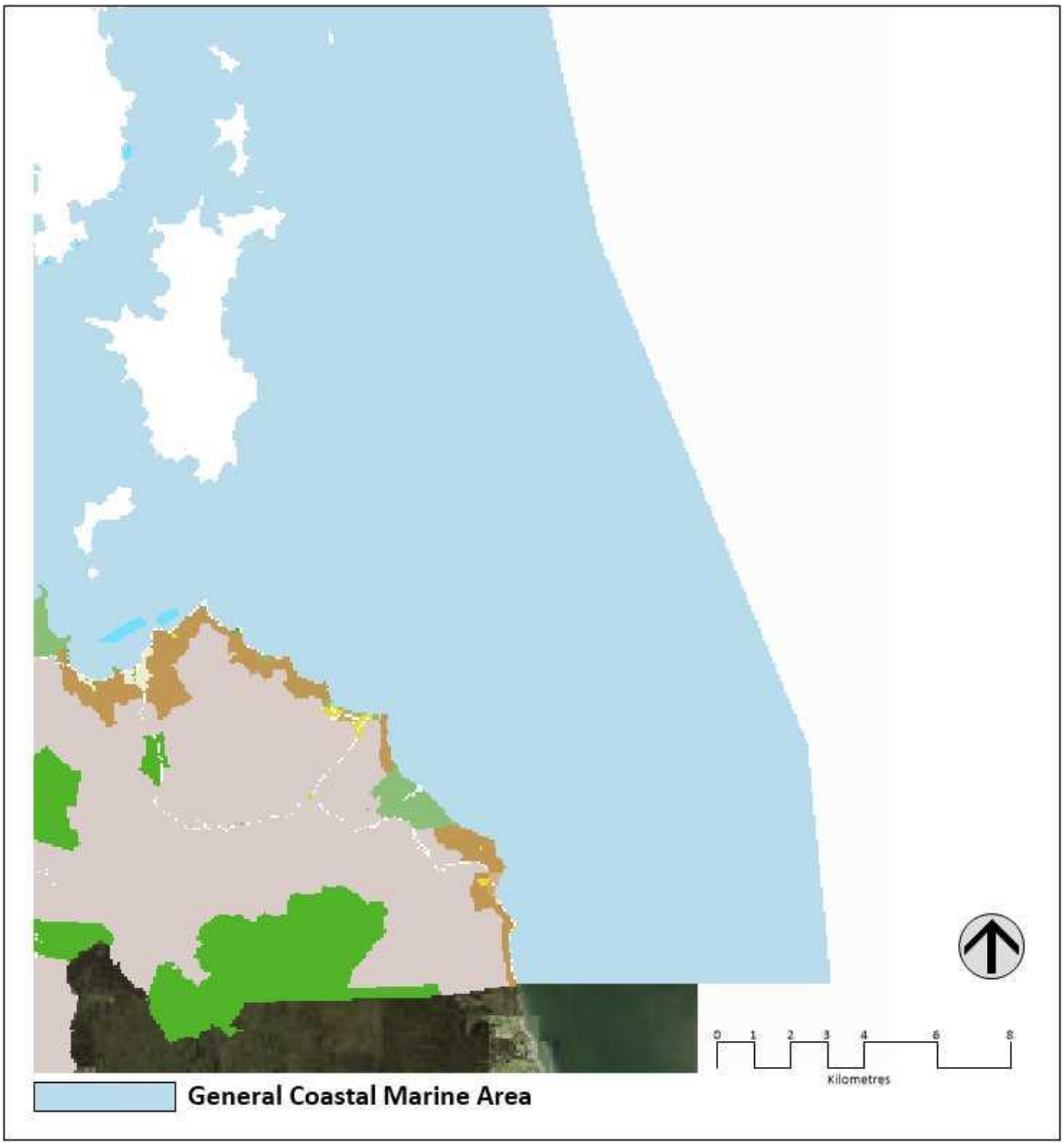

Figure 3: Auckland Unitary Plan map (extract)

13. There are several landscape related provisions for activities located in the coastal environment and General Coastal Marine Zone. These are included in the list below, followed by a further outline after the list:

- Chapter B Regional policy statement (B4 Natural heritage and B8 Coastal environment);
- Chapter D Overlays (D10 Outstanding Natural Features Overlay and Outstanding Natural Landscapes Overlay (D10.2 and D10.3) and D11 Outstanding Natural Character and High Natural Character Overlay (D11.2 and D11.3));
- Chapter E Auckland-wide (E18 Natural character of the coastal environment and E19 Natural features and natural landscapes in the coastal environment); and
- Chapter F Coastal (F2 Coastal – General Coastal Marine Zone (F2.15.2 and F2.15.3).

Chapter B and E: Natural character and amenity values

14. The AUP addresses natural character within Chapter B – Regional policy statement (B4 and B8) and Chapter E – Auckland-wide (E18 and E19). These chapters address the intentions of the AUP and collectively give effect to the RMA in relation to the natural character of the coastal environment and of outstanding natural features and landscapes, as well as the maintenance and enhancement of amenity values afforded protection under Section 6(a) and (b), and Section 7(c) respectively.

Chapter D10 Overlay: Outstanding natural features and outstanding natural landscapes

15. The relevant provisions for ONF and ONL include:

Objective (D10.2)

(1) *- Auckland's outstanding natural features and outstanding natural landscapes are protected from inappropriate subdivision, use, and development.*

Policies (D10.3)

(1) *– Protect the physical and visual integrity of outstanding natural landscapes by:*

(a) avoiding the adverse effects of inappropriate subdivision, use and development on the natural characteristics and qualities that contribute to the values of the outstanding natural landscape;

(b) maintaining the visual coherence and integrity of the outstanding natural landscape;

(c) maintaining natural landforms, natural processes and vegetation areas and patterns;

(d) maintaining the visual or physical qualities that make the landscape iconic or rare; and

(e) maintaining high levels of naturalness in outstanding natural landscapes that are also identified as outstanding natural character or high natural character areas.

(3) *– Protect the physical and visual integrity of outstanding natural features, including volcanic features that are outstanding natural features, by:*

(a) avoiding the adverse effects of inappropriate subdivision, use and development on the natural characteristics and qualities that contribute to an outstanding natural feature's values

16. Areas identified as outstanding natural features are assessed in Schedule 6 of the AUP (Outstanding Natural Features Overlay Schedule). Six distant features are identified in the Schedule are ONF 190 (South Rotoroa Island boxwork

weathering), ONF 182 (Rotoroa Island, South Kaheno Cove coastal stack), ONF 181 (Rotoroa Island, North Kaheno Cove folded greywacke), ONF 189 (South Pakatoa shore platform), ONF 25 (East Pakatoa Island broken formation), and ONF 145 (Orere River terraces) (*Figure 4*).

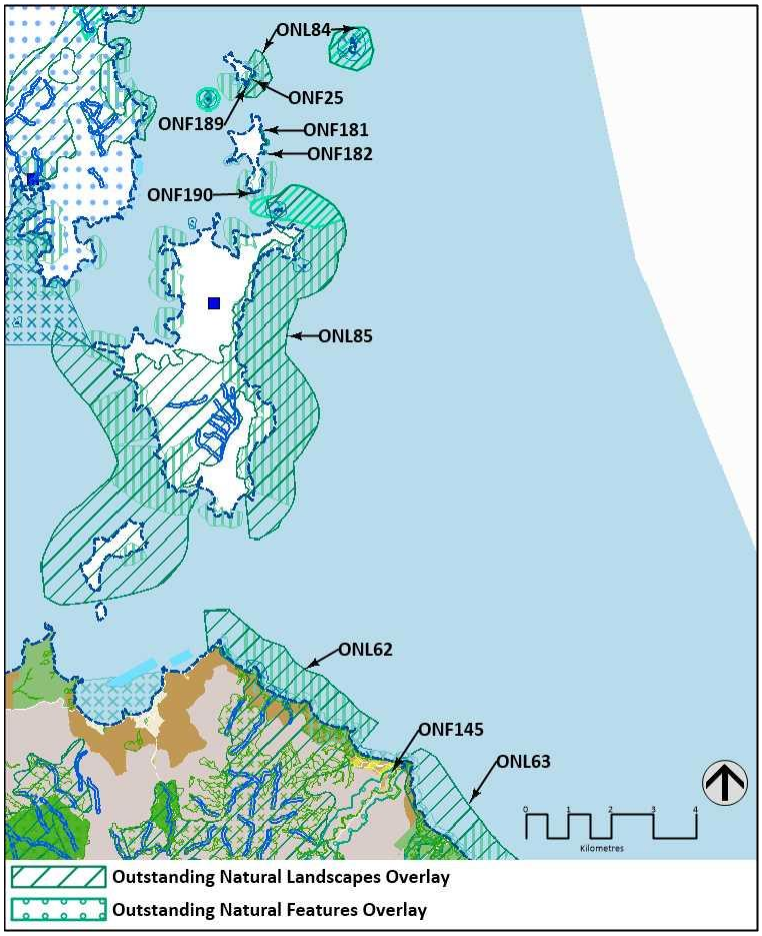

Figure 4: Auckland Unitary Plan map – outstanding natural landscapes overlay schedule (extract)

17. The factors in Chapter B4 Natural heritage (B4.2.2(4)), as part of the regional policy statement, have been used to determine the features that are in Schedule 6. ONF 190 (South Rotoroa Island boxwork weathering) is closest to the application site (approximately 6km away to the nearest corner of the Marine Farm), while the other ONFs are located further to the north of the Marine Farm, apart from ONF 145 (Orere River terraces) which is located to the south of the site. Copies of the assessment sheets can be found in *Figure 5*.

ID	Name	Location	Site type	Description	Unitary Plan criteria
25	East Pakatoa Island broken formation	Pakatoa Island	D	A world-class example of broken formation in argillite and greywacke rocks, exposed in extremely fresh high tidal exposures. A wide variety of structural features is visible in the base of the cliff and out onto the shore platform.	a, c, i
145	Ōrere River terraces	Orere Point	A	The Ōrere River valley contains excellent examples of terraces cut into alluvial gravel and sediment along a section approximately 4km long from the river mouth at Ōrere Point. Stream terraces are rare in the Auckland region.	a, b, e, g, h, l
181	Rotoroa Island, North Kaheno Cove folded greywacke	Rotoroa Island, Hauraki Gulf	D	Excellent fresh exposures of multi-phased folds in thin-bedded argillite and greywacke occur in the shore platform and cliff base for 400m northwards from the north end of Kaheno Cove.	a, c, i, l
182	Rotoroa Island, South Kaheno Cove coastal stack	Rotoroa Island, Hauraki Gulf	E	At the south end of Kaheno Bay, an excellent example of a coastal stack with an arch and guts are eroded in greywacke with well-exposed faults and folds of varying kinds.	a, c, e, l
189	South Pakatoa shore platform	Pakatoa Island	B	This is a good representative example of a high tidal shore platform eroded into thin-bedded argillite and greywacke. An incipient sea stack has almost formed by erosion on the end of the point.	a, c, l
190	South Rotoroalsland boxwork weathering	Rotoroa Island, Hauraki Gulf	B	Located in coastal cliffs, this is an excellent example of boxwork weathering (a	a, c, i, l
				characteristic rectangular weathering pattern) in jointed greywacke.	

Figure 5: Extract from schedule 6 of the Auckland Unitary Plan

18. Areas identified as having outstanding natural landscapes are assessed in Schedule 7 of the AUP (Outstanding Natural Landscapes Overlay Schedule). Three areas in the wider proximity identified in the Schedule are ONL 85 (Ponui Island), ONL 84 (Pakatoa Island and Tarahiki (Shag) Island), and ONL 62 (Hunua Ranges) (*Figure 4*).

19. The factors in Chapter B8 Coastal environment (B8.2.2(1)), as part of the regional policy statement, have been used to determine the areas that are in Schedule 7. The same criteria are used as those in NZCPS Policy 13(2), aside from point (g) of the NZCPS[1] which has been omitted from B8.2.2(1) of the AUP. In addition, 'WESI'[2] criteria have been considered in the assessments in Schedule 7 (these are included in policy B4.2.2(1)). ONL 85 (Ponui Island) is located nearest the application site, while ONL 84 (Pakatoa Island and Tarahiki (Shag) Island) is located further to the north of the application site, and ONL 62 (Hunua Ranges) is to the south. Copies of the assessment sheets can be found in *Figure 6*.

ONL Description					WESI Criteria						
ID	Name	Location	Landscape type, Nature and Description	Elements patterns, processes	Natural Science Factors			Aesthetic Values		Expressiveness	Transient values
					Geological Topographical	Ecological	Dynamic	Memorability	Naturalness		
62	Hunua Ranges	Franklin (Part in Manukau area)	**Hill country Cultured nature/wild nature (hill country)** Second major hill range flanking Auckland's metropolitan area: dominated by native forest and water catchments focusing upon lake reservoirs and strong connection with the margins of the Firth of Thames. Combines relatively high relief with significant areas of native forest & maturing vegetation; only low levels of built modification (houses).	Interplay of intact mature indigenous forest and forest remnants with pasture, reinforcing topography. Strong engagement between the hill country and native forests with the waters of the Firth of Thames. Awareness of the Coromandel Peninsula containing the Firth's sea surface.	**High** Strong elevated relief as part of wider hill sequence. Sequence of headlands and coves, and stony beaches framing the Firth of Thames.	**High** Extensive areas of native forest, native shrubland and stream corridors.	**High** Interaction of the waters of the Firth of Thames with the rocky coastline at the eastern end of the Hunua Ranges.	**Very high** Very marked naturalness values and strong interplay of underlying topography with areas of bush and more peripheral pockets of pasture. Very pronounced interaction between the Firth of Thames and the hill country margins that enclose and engage with it. Clearly visible Coromandel Peninsula across	**High** Strong sense of naturalness evident in the forest and shrubland areas, together with the terrain. Largely natural sea area, although existing marine farming is clearly visible within the Firth of Thames near Matingarahi Point.	**Very high** Very apparent greywacke hill landform overlain with scrub/ forest/ stream corridor sequence. Dramatic interaction of hillcountry with the Firth of Thames, and enclosure of that sea body by both the Hunua and Coromandel Ranges.	**High** Native birdlife. Including sea birds along the Firth coastline. Tidal variations and Weather conditions altering the state of the Firth of Thames water area.
63	Orere Point - Waimangu	Manukau	**Harbour & estuary Wild nature (coastal)** Strongly defined, cliffed, coastal landscape that is backed by	Coastal landforms. Interplay of indigenous forest remnants and pasture, reinforcing topography.	**High** Sequence of gently shelving beaches with shelves with cliff faces		**High** Dramatic interaction with the waters of the Firth of Thames, especially within	**High** Archetypal east coast coastline with series of bays and headlands and cliffs backed by stream	**High** Series of tracts of native bush and remnant forest extending down to the edge of the	**High** Combination of elevated coastal edge/ topography and remnant bush patterns	**High** Sea birds along the Firth coastline. Tidal Variations and weather conditions altering the

[1] NZCPS Policy 13(2) (g): 'a range of natural character from pristine to modified'.

[2] Environment Court decision Wakatipu Environmental Society Inc v Queenstown Lakes District Council C 180/1999 [2000] NZRMA 59 ('WESI') included a set of factors for assessing landscape significance. These are included in policy B4.2.2(1).

			significant areas of tall, predominantly native, vegetation, which interacts very strongly with the Firth of Thames. Some low density, subservient housing at Orere Point.	Strong engagement between the headlands and native forest remnants with the waters of the Firth of Thames. Awareness of The Coromandel Peninsula Containing the Firth's sea surface.	leading into ridges pronounced.		Tapapakanga Regional Park and the engagement of its series of cliffed headlands with the Firth of Thames.	corridors and bush remnants.	Firth; Relatively undeveloped beachfronts and cliff-line.	(pōhutukawa) creating a clear landscape structure along the Firth of Thames coastline.	state of the Firth of Thames water area.
					slopes (adjacent to some future residential sites).						
84	Pakatoa Island & Tarahiki (Shag) Island	Hauraki Gulf Islands, Auckland Area	**Islands Wild nature (coastal)** Eastern coastline of Pakatoa Island, together with Tarahiki (Shag) Island comprising a sequence of headlands that are dominated by bare exposed rock and cliffs – contrasting with areas of pasture, pines and visitor accommodation on the rest of Pakatoa.	Retention of interplay between coastal landforms and indigenous vegetation.	**High** Series of prominent rock/ cliff headlands at the eastern end of Pakatoa Island and a nearby island that clearly express the natural geological and weathering processes associated with all of the Hauraki Gulf Islands.	**High**	**High** Very dramatic interaction between the headlands and island extending out into the eastern Hauraki Gulf. Exposed, raw and elemental interaction of these features with the sea and weather.	**High** Both the eastern headland and Tarahiki Island are notable for their cliffs, shoals and dramatic uplift from the waters of the Hauraki Gulf. This is, to a degree, accentuated by the native vegetation on both features.	**High** Essentially comprising a very raw and natural sequence of landform features that interact directly with the CMA. The cliff/ bush sequence at the eastern end of Pakatoa contrasts with its more pastoral/ developed hinterland and pines.	**High** Dramatic interface between land and sea expressive of coastal processes, which has a very raw, wild character that contrasts with - in the case of Pakatoa - the more sheltered, protected nature of adjoining bays and coves.	**High** Highly atmospheric interaction with the eastern Hauraki Gulf, affected by weather and light conditions, time of year/ day. Abundant coastal birdlife.
85	Ponui Island	Hauraki Gulf Islands, Auckland Area	**Islands Wild nature (coastal) Wild nature/cultured nature (hill country)** Very extensive island feature, comprising a natural sequence of coastal headlands, cliffs, bays and beaches framed by and inland backdrop of rolling hill country that contains a mixture of remnant native forest and open pasture.	Retention of coastal landforms and interplay between indigenous vegetation and rural pasture reinforcing topography.	**High** Large island flanked by an almost continuous sequence of natural beaches, bays, rock shoals, cliffs and headlands linked with a rolling series of ridges and stream valleys in the coastal hinterland. The landform pattern is complemented by areas of forest remnants, stream corridors and wetlands.	**High/ mod** Strong interconnection between forest remnants stream corridors and natural coastal margins of Ponui Island	**High/ mod** Very exposed, indented coastline that interacts dramatically with the waters of the eastern Hauraki Gulf, an interaction that is often accentuated by the cliffed margins and headlands of the island's coastline.	**High** Very large island that expresses many of the endemic values of the Hauraki Gulf through the combination of its largely natural coastal edge and the strongly patterned/ structured interplay between its open pasture and native forest remnants.	**High/ mod** Very clear sense of connection between Pounui's forest /shrubland /wetland and stream environments and the natural sequence of promontories, cliffs, and bays that define its coastal edge and interaction with the Hauraki Gulf.	**High** Extensive and relatively cohesive combination of remnant forest, open pasture and natural coastal margins contribute to a landscape that displays many of the hallmarks of the archetypal Hauraki Gulf landscape.	**High** Highly atmospheric interaction with the eastern Hauraki Gulf, affected by weather and light conditions, time of year/ day. Abundant coastal birdlife.

Figure 6: Extract from schedule 7 of the Auckland Unitary Plan

20. ONL 85 (Ponui Island) includes the eastern coastline of the island and extends approximately 1km into the water. The area also covers the middle of the island, stretching south-west into the adjacent water. The assessment refers to the coastal character of the ONL in terms of its landforms, coastal vegetation, largely natural coastal edge, and the interaction of the island coastline with the Hauraki Gulf waters. The closest edge of the proposed application site will be located approximately 3km beyond the eastern seaward boundary of the ONL.

21. ONL 84 (Pakatoa Island and Tarahiki (Shag) Island) include the south and east sides of Pakatoa Island (extending approximately 400m from the coastline into the water), and Tarahiki Island (extending in a circumference approximately 400m from the coastal edge of the island into the water). Again, the assessment refers to the coastal character of the ONL in its landforms, and coastal vegetation, as well as the interaction of the coastline with the sea of the Hauraki Gulf. The closest edge of the ONL is approximately 7km from the closest point of the application site.

22. ONL 62 (Hunua Ranges) covers an extensive area of land, including two pockets of land south-west and inland of the Firth of Thames, as well as an area to the west of the Firth which, in areas, extends approximately 800m into the water and inland to the west as far as around 12km. The AUP assessment refers to the coastal character of the ONL in terms of the strong connections of the water catchments, hill country and forests with the Firth of Thames, views of water in the Firth (including visibility of marine farming in some areas), as well as landforms and the coastline and their interaction with water in the Firth. The closest point of the proposed application site will be located approximately 8km beyond the northern seaward boundary of the ONL.

23. ONL 63 (Orere Point) covers the coastline from Orere Point to Waimangu, as well as extending approximately 800m into the water. It is recognised for its coastal landscape, which interacts strongly with the Firth of Thames. The ONL is around 9.4km from the application site.

Chapter D Overlay: D11 Outstanding natural character and high natural character

~~22.~~24. The provisions for coastal natural character effectively have three frameworks to which provisions of the AUP apply. These are:

- outstanding natural character areas;
- high natural character areas; and
- general coastal environment.

~~23.~~25. The relevant provisions for natural character include:

Objective (D11.2)

(1) *– The natural characteristics and qualities of areas with outstanding natural character, or high natural character values are preserved and protected from inappropriate subdivision, use and development.*

Policy (D11.3)

(1) *– Subdivision, use and development in areas scheduled in Schedule 8 Outstanding Natural Character and High Natural Character Overlay Schedule must:*

(a) avoid adverse effects on the natural characteristics and qualities that contribute to the natural character values of outstanding natural character areas;

(b) avoid significant adverse effects, and avoid, remedy or mitigate other adverse effects, on the characteristics and qualities that contribute to the natural character values of high natural character areas;

~~24.~~26. Areas identified as having outstanding or high natural character are assessed in Schedule 8 of the AUP (Outstanding Natural Character and High Natural Character Overlay Schedule). The five areas within the wider proximity identified in the Schedule are HNC 131 (Pakatoa Island (south)), HNC 132 (Rotoroa Island (south)), ONC 133 (Tarahiki Island), ONC 156 (Ruthe Passage Islands), and HNC 157 (Eastern Ponui Island) (*Figure 7*).

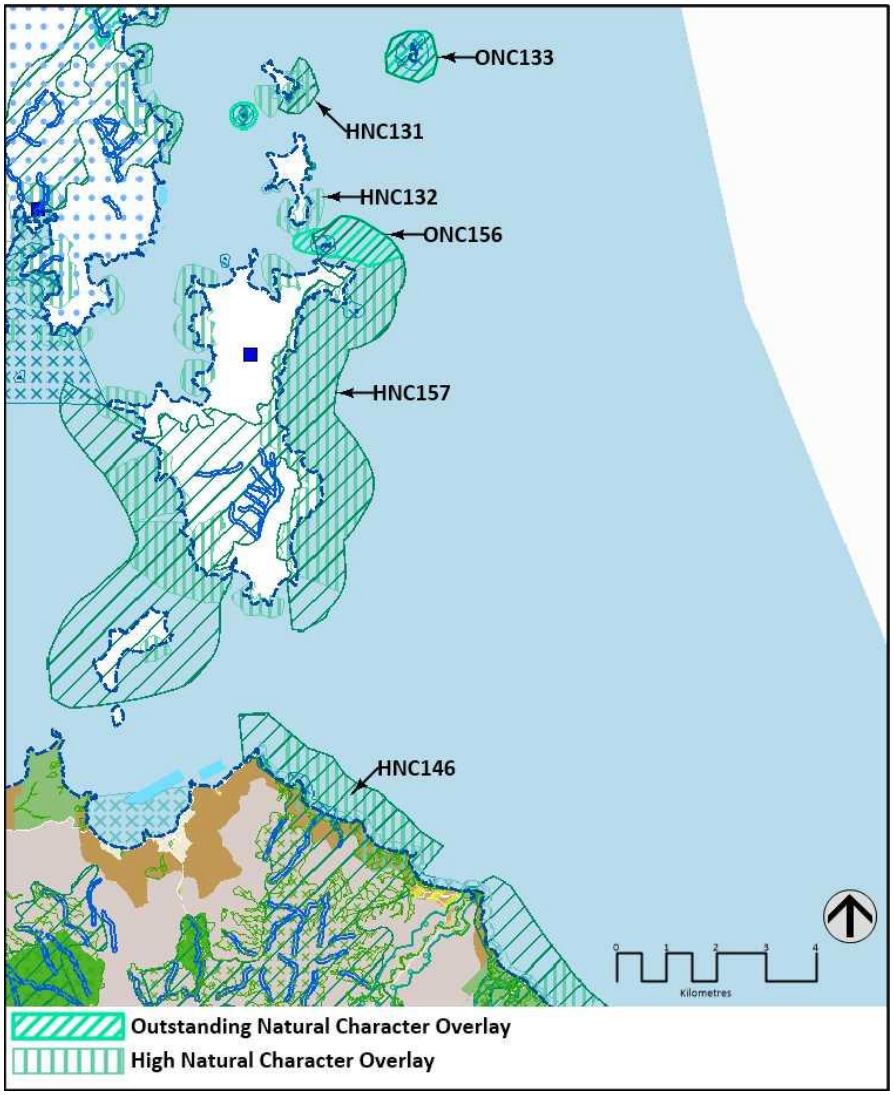

Figure 7: Auckland Unitary Plan map – outstanding natural character and high natural character overlay schedule (extract)

~~25.~~27. The factors in Chapter B8 Coastal environment (B8.2.2(1)), as part of the regional policy statement, have been used to determine the areas that are in Schedule 8. They are the same criteria as those under NZCPS Policy 13(2), aside from point (g) of the NZCPS[3] which has been omitted from B8.2.2(1) of the AUP. HNC 157 (Eastern Ponui Island) is located nearest to the application site, while the other ONC and HNC areas are further north of the application site. Assessments for all the ONC and HNC listed above refer to coastal character in terms of landforms and coastal vegetation, which interact with the open water of the Hauraki Gulf. Copies of the assessment sheets can be found in *Figure 8*.

[3] NZCPS Policy 13(2) (g): 'a range of natural character from pristine to modified'.

Schedule ID	Name	Location	Description	Natural Character Values
131	Pakatoa Island (south)	Hauraki Gulf	A sequence of rocky shoals, well vegetated coastal scarps, craggy headlands, exposed bays and sandy beaches. The margins of this coastal environment adjoin the residential areas of Pakatoa Island and whilst this impacts on the sense of seclusion and remoteness, their intrusion, and the apparent level of modification, is lessened by the intervening coastal vegetation. As such, the development is recessive and does not detract from the integrity of the remnant native forest and landforms, nor the interplay of remnant coastal vegetation, the craggy landforms and the open waters of the Hauraki Gulf.	**Bio-physical characteristics:** / **Key Values** Geomorphological / landform features & characteristics Vegetation type, cover & patterns Habitat / ecological values Water bodies & the movement of water & sediment **Bio-physical values:** Low……High **Perceptual Values:** / **Key Values** The CMA & wider coastal 'context' / setting Experiential attributes **Perceptual Values:** Low……High **Overall Natural Character Evaluation:** HIGH / OUTSTANDING

Schedule ID	Name	Location	Description	Natural Character Values
132	Rotoroa Island (south)	Rotoroa Island	A prominent headland, sequence of rocky shoals, vegetated coastal scarps, and rocky outcrops. Although the pine shelterbelts that once dominated the coastal edge of this Island have only recently been removed they have revealed its highly expressive craggy shoreline and a number of surviving mature poutukawa. Recent re-vegetation across much of the island in native coastal species has reduced the level of perceived intrusion, and the apparent level of modification particularly on the southern headland. The current building development near the centre of the Island is recessive and does not detract from the integrity of the craggy landforms to the south, nor the interplay of remnant coastal vegetation, recent re-vegetation, the craggy landforms and the open waters of the Hauraki Gulf. The resulting coastal landscape is now one that imbues a very endemic character to this coastline.	**Bio-physical characteristics:** / **Key Values** Geomorphological / landform features & characteristics Vegetation type, cover & patterns Habitat / ecological values Water bodies & the movement of water & sediment **Bio-physical values:** Low……High **Perceptual Values:** / **Key Values** The CMA & wider coastal 'context' / setting Experiential attributes **Perceptual Values:** Low……High **Overall Natural Character Evaluation:** HIGH / OUTSTANDING

Schedule ID	Name	Location	Description	Natural Character Values
133	Tarahiki Island	Hauraki Gulf	An exposed and dramatic island landform that combines exposed rock formations and extensive rock shoals that stretch out from the island. The craggy island and rocky shoals interact dramatically with the open waters of the Hauraki Gulf. The amalgam of well defined natural landforms and seascape is further enhanced by the ephemeral qualities resulting from atmospheric conditions, variations of day / year, tide and wildlife. The islands exposure to the Hauraki Gulf has also resulted in the native vegetation atop the small landform becoming knarled and sculptured, enhancing the islands sense of wildness, rawness and exposure.	**Bio-physical characteristics:** / **Key Values** Geomorphological / landform features & characteristics Vegetation type, cover & patterns Habitat / ecological values Water bodies & the movement of water & sediment **Bio-physical values:** Low……High **Perceptual Values:** / **Key Values** The CMA & wider coastal 'context' / setting Experiential attributes **Perceptual Values:** Low……High **Overall Natural Character Evaluation:** HIGH / OUTSTANDING

Schedule ID	Name	Location	Description	Natural Character Values
146	Te Kaiahorawaru Point	Orere Point	A series of coastal ridgelines that back two broad sweeping beachfronts and rocky shoals, separating them as they protrude out into the Hauraki Gulf as Te Kaiahorawaru Point. The coastal margins and rolling hinterland landforms are extensively vegetated in remnant and regenerating native forest. Although some of the hinterland vegetation in the north has been cleared for pasture, and an exotic woodlot is planted on the western side of the headland, this does not undermine the integrity of the underlying landforms or the cohesion of the coastline as a whole. The amalgam of mature pohutukawa, exposed coastal escarpments, clearly defined headland, sweeping beaches and rocky shoals imbue the coastal environment with an endemic character and sense of wilderness and remoteness.	**Bio-physical characteristics:** / **Key Values** Geomorphological / landform features & characteristics Vegetation type, cover & patterns Habitat / ecological values Water bodies & the movement of water & sediment **Bio-physical values:** Low.....High **Perceptual Values:** / **Key Values** The CMA & wider coastal 'context' / setting Experiential attributes **Perceptual Values:** Low.....High **Overall Natural Character Evaluation:** HIGH / OUTSTANDING
156	Ruthe Passage Islands	Hauraki Gulf	Exposed and dramatic island landforms that combine large rock shoals and craggy rock formations with knarled and sculptured pohutukawa and other re-emergent coastal vegetation. The rocky shoals that surround much of the islands interact dramatically with the open waters of the Hauraki Gulf and Ruthe Passage. The well defined coastal landforms and their direct engagement with the sea surrounds, clearly express the erosive ebb and flow of the Hauraki Gulf and the ephemeral qualities that result from atmospheric conditions, variations of day / year, tide and wildlife.	**Bio-physical characteristics:** / **Key Values** Geomorphological / landform features & characteristics Vegetation type, cover & patterns Habitat / ecological values Water bodies & the movement of water & sediment **Bio-physical values:** Low.....High **Perceptual Values:** / **Key Values** The CMA & wider coastal 'context' / setting Experiential attributes **Perceptual Values:** Low.....High **Overall Natural Character Evaluation:** HIGH / OUTSTANDING
157	Eastern Ponui Island	Ponui Island	An extensive assemblage of headlands, steep cliffs and rocky shoals with sweeping ocean beaches and bays. Ponui Island's east coast enjoys a dynamic interaction with the open waters of the Hauraki Gulf including variation resulting from atmospheric conditions, time of day / year, tide and wildlife. The unit is almost entirely free of development or modification and extensive areas of native vegetation reveal the harsh sculpturing effects of the coastlines exposure to the Gulf, heightening its sense wilderness, remoteness and wildness.	**Bio-physical characteristics:** / **Key Values** Geomorphological / landform features & characteristics Vegetation type, cover & patterns Habitat / ecological values Water bodies & the movement of water & sediment **Bio-physical values:** Low.....High **Perceptual Values:** / **Key Values** The CMA & wider coastal 'context' / setting Experiential attributes **Perceptual Values:** Low.....High **Overall Natural Character Evaluation:** HIGH / OUTSTANDING

Figure 8: Extract from schedule 8 of the Auckland Unitary Plan

~~26.~~28. HNC 157 (Eastern Ponui Island) includes the eastern coast of Ponui Island and extends approximately 1km east into the water, roughly following the shape of the coastline. The closest point of the proposed application site will be located approximately 3km from the eastern edge of the HNC.

~~27.~~29. ONC 156 (Ruthe Passage Islands) is next closest to the application site and is situated between the northern tip of Ponui Island, on the eastern side, and Rotoroa Island. The area extends approximately 1km east of the Ponui Island coastline. The closest point of the proposed application site will be located approximately 3.5km from the most eastern point of the ONC.

~~28.~~30. HNC 132 (Rotoroa Island (south)) starts almost midway on Rotoroa Island on both the east and west sides of the island, wrapping around the southern end of the island to create a 'U' shape. The eastern side of the HNC is approximately 5km from the closest point of the application site.

~~29.~~31. ONC 133 (Tarahiki Island) covers Tarahiki Island and extends approximately 400m into the water in a circumference around the island. The most southern edge of the ONC is approximately 7km from the closest point of the application site.

32. HNC 131 (Pakatoa Island (south)) covers the southern end of Pakatoa Island, extending approximately 400m into the water. The seaward side of the HNC is approximately 7.5km from the application site.

33. HNC 146 (Te Kaiahorawaru Point) is at Orere Point and extends around 900m into the water. The seaward side of the HNC is approximately 8.4km from the applications site.

~~30.~~34. The eastern coast of the Firth of Thames, which is opposite the application site (approximately 13km away), is within the Waikato Region as part of the Thames-Coromandel District. In comparison, the Marine Farm is approximately 4km east of Ponui Island and approximately 10km north of Orere Point on the western Firth of Thames shoreline, both areas of which are within the Auckland Region. This assessment has not focused on the policy context of the Waikato Region as the application site is located within the Auckland Region.

Chapter F2 Coastal – General Coastal Marine Zone

~~31.~~35. The relevant provisions specific to aquaculture (F2.15.) include:

Objective (F2.15.2)

(2) *– New aquaculture or the expansion or realignment of established aquaculture activities, occurs in appropriate locations and at appropriate scales that avoid, or where appropriate minimise, conflicts with ecological, social and cultural values and other uses*.

Policies (F2.15.3)

(1) *– Require new aquaculture activities be located and designed to avoid adverse effects on those characteristics and qualities that contribute to the identified values of:*

(d) D11 Outstanding Natural Character and High Natural Character overlays; and

(e) D10 Outstanding Natural Features Overlay; and Outstanding Natural Landscapes Overlay

***(2)** – Require, in addition to Policy F2.15.3(1), that new aquaculture activities be designed and located to avoid significant adverse effects, and avoid, remedy or mitigate other adverse effects on the characteristics and qualities that contribute to the values of:*

(c) areas with high recreational use or amenity value

***(11)** – Consider aquaculture to be generally more appropriate when located in areas where it consolidates existing aquaculture activities provided that potential opportunities to maintain biosecurity are not compromised.*

THE NON-STATUTORY CONTEXT

~~32.~~36. The Marine Spatial Plan, Sea Change – Tai Timu Tai Pari ("**MSP**") provides the non-statutory context for the application.

Sea Change – Tai Timu Tai Pari

~~33.~~37. The MSP, also referred to as "Sea Change – Tai Timu Tai Pari", is non-statutory document which sits under the HGMPA and gives effect to section 7 and 8 of the HGMPA. The MSP focuses on securing a healthy, productive and sustainable resource for all users of the Hauraki Gulf. It identifies aquaculture as a key industry sector in the gulf.

~~34.~~38. The stated intention of the MSP in respect to aquaculture is:

"By 2018, have a 'three tiered' regulatory regime in place for aquaculture that:

- *Specifically enables aquaculture in identified areas where the overall social, economic and environmental benefits of aquaculture to the Hauraki Gulf Marine Park are maximised.*
- *Allows case-by-case consideration of aquaculture in areas which may be suitable but which have not been identified as an area where benefits will be maximised.*
- *Restricts aquaculture in areas which are not suitable for aquaculture."*

~~35.~~39. To guide areas of development, the Sea Change Aquaculture Roundtable Technical Report 2 (which contributed to the development of the MSP), set out some principles for identifying suitable sites, which included:

- benefits are maximised (ecological and socio-economic benefits; enabling hapū and iwi);

- biophysical environments are suitable (good flushing/ phytoplankton available);
- does not impact on ecologically significant areas (e.g. reefs, sea grass beds, significant benthic habitat, feeding grounds);
- avoids disruption on the swell corridor (effects on popular surf breaks);
- located away from areas where they will adversely impact on the outstanding natural character of the area or degrade the values of outstanding natural landscapes; and
- located in areas that are not subject to high levels of other uses, not on popular cruising routes or will restrict passage ways for recreational and commercial boating traffic and not popular or safe anchorages.

ASSESSMENT APPROACH AND METHODOLOGY

~~36.~~40. The methodology used for this assessment has been undertaken with reference to the NZILA Best Practice Note: Landscape Assessment and Sustainable Management 10.1[4] and Landscape Assessment from the Quality Planning website.[5]

~~37.~~41. It is current practice to undertake evaluations using biophysical/natural science attributes, perceptual/sensory attributes, and associative attributes (which comprise matters such as cultural, historical and recreational values). The existing environment (the site and its wider context) is described and characterised in this assessment according to these attributes or values.

~~38.~~42. The assessment of effects is based on expert judgement and considers physical modifications and subsequent effects on the biophysical environment, as well as effects on the existing character of the site and its locality, the site's resilience and capacity, and its sensitivity and vulnerability to the proposed change. Effects may arise from changes such as a new use (new or different activities), and/or changes to the existing elements, patterns and processes in the landscape. Such changes can affect existing character and alter overall amenity and/or people's appreciation of an area. Visual changes are also considered from identified viewpoints to determine effects on visual amenity.

~~39.~~43. The nature and scale of the proposed changes (often referred to as the magnitude of change) are assessed against the characteristics and values identified in the existing environment to determine the actual and potential effects the proposed changes will have on the existing qualities of the landscape.

[4] https://nzila.co.nz/media/uploads/2017_01/nzila_ldas_v3.pdf
[5] http://www.qualityplanning.org.nz/index.php/planning-process-plan-topics-land-landscape/landscape-1

It is important to note that a large magnitude of change does not necessarily constitute a high level of adverse effect, depending on the qualities and character of the existing environment.

~~40.~~44. An assessment of cumulative effects was also undertaken for landscape and natural character, and visual amenity effects, as well as an assessment of the proposal against the relevant statutory provisions.

45. Site visits to gain an understanding of the site and document its existing environment were undertaken on 25 January and 5 and 8-9 October 2018, as well as 18 and 19 September 2019.

~~41.~~46. The assessment uses a seven-point scale to rate effects:

Very Low	Low	Low-Moderate	Moderate	Moderate-High	High	Very High

~~42.~~47. This assessment is primarily concerned with identifying the adverse effects associated with the application, however it is acknowledged that effects may also be positive or neutral. The NZILA Best Practice Note: Landscape Assessment and Sustainable Management 10.1 does not make comment on how to relate effects rating scales to RMA terminology. This assessment takes the following view as being logical:

Table 1.0 Rating of effects and RMA and case law terminology

Effects rating scale	**RMA terminology**
Very High	More than minor and significant adverse effects
High	More than minor and significant adverse effects
Moderate-High	More than minor (moderate) adverse effects
Moderate	More than minor (moderate) adverse effects
Low-Moderate	Minor adverse effects~~.~~
Low	Less than minor adverse effects~~.~~
Very Low	Less than minor adverse effects

Landscape character effects assessment

~~43.~~48. In the NZILA Best Practice Note[6] landscape is defined as "*the cumulative expression of natural and cultural features, patterns and processes in a geographical area, including human perceptions and associations.*"

~~44.~~49. For the assessment of landscape effects consideration is given to effects on all attributes (natural science, perceptual, and associative) in coming to an

[6] https://nzila.co.nz/media/uploads/2017_01/nzila_ldas_v3.pdf

overall conclusion. Weighting between these three will not necessarily be equal as one factor may be of particular importance and be weighted more strongly than one or both of the other attributes.

45.50. Before assessing the level of effects on landscape, the existing level of landscape character was determined using the seven-point scale. On this scale, an area with very high landscape character will have natural and cultural features, patterns and processes that are exceedingly recognised for their natural science, aesthetic or associational attributes. Whereas an area with very low landscape character will not be recognised for the above attributes.

46.51. To assess landscape character effects both the magnitude of the change and the sensitivity of the landscape to change are considered and scaled according to the descriptions given in Table 2.0. The assessment of landscape character effects includes mitigation measures mentioned in this report.

Table 2.0 Landscape character effects

SCALE	DESCRIPTION
Very High	Loss/alteration of key characteristics will be fundamental, such that the post-development landscape character will be completely changed.
High	Loss/alteration of key characteristics will be dominant, such that the post-development landscape character will be substantially changed.
Moderate-High	Loss/alteration of key characteristics will be prominent, such that the post-development landscape character will be distinctly changed.
Moderate	Loss/alteration of key characteristics will be apparent, such that the post development landscape character will be obviously changed.
Low-Moderate	Loss/alteration of key characteristics will be noticeable, such that the post-development landscape character will be slightly changed.
Low	Loss/alteration of key characteristics will be unobtrusive, such that the post-development landscape character will be inconsequentially changed.
Very Low	Loss/alteration of key characteristics will be indiscernible, such that the post-development landscape character will be unchanged.

47.52. Landscape character is the distinctive combination of landscape/seascape attributes, including form, use, sensory qualities, and cultural and social associations, which make one area different from another and gives an area its identity. Land and sea use change can potentially affect existing landscape/seascape patterns and processes. The approach to assessing landscape character has been undertaken at two scales; a broad-scale assessment and at a more detailed level focusing on the site and its localised vicinity.

Natural character effects assessment

48.53. Natural character is the extent to which natural elements, patterns and processes occur, and the nature and extent of modification to the ecosystems and

landscape/seascape. Natural character ranges from modified to pristine, with the degree of natural character being highest where there is the least modification. The effect of different types of modification upon natural character varies with context and may be perceived differently by different parts of the community.

~~49.~~54. For the natural character assessment both biophysical modifications and the perceptual component of naturalness are considered. Associative attributes are not taken into consideration as these do not determine levels of natural character. Weighting between these two will not necessarily be equal as one factor may be of particular importance and weighted more strongly than the other attribute.

~~50.~~55. Before assessing the level of effects on natural character, the existing level of natural character was determined using the seven-point scale. On this scale, an area very high natural character will display an inconsequential change to the pre-modified natural character due to modifications to natural elements, processes and patterns. Whereas an area with very low natural character will demonstrate a fundamental change to the pre-modified natural character due to modifications to natural elements, processes and patterns.

~~51.~~56. To assess natural character effects both the magnitude of the change and the sensitivity of the landscape to change are considered and scaled according to the descriptions given in Table 3.0. The assessment of natural character effects includes mitigation measures mentioned in this report.

Table 3.0 Natural character effects

SCALE	DESCRIPTION
Very High	Loss/alteration of key characteristics will be fundamental, such that the post-development natural character will be completely changed.
High	Loss/alteration of key characteristics will be dominant, such that the post-development natural character will be substantially changed.
Moderate-High	Loss/alteration of key characteristics will be prominent, such that the post-development natural character will be distinctly changed.
Moderate	Loss/alteration of key characteristics will be apparent, such that the post development natural character will be obviously changed.
Low-Moderate	Loss/alteration of key characteristics will be noticeable, such that the post-development natural character will be slightly changed.
Low	Loss/alteration of key characteristics will be unobtrusive, such that the post-development natural character will be inconsequentially changed.
Very Low	Loss/alteration of key characteristics will be indiscernible, such that the post-development natural character will be unchanged.

~~52.~~57. The process to assess natural character involves an understanding of several systems and their associated attributes, including biotic, abiotic and experiential factors. The approach to assessing natural character has been undertaken at two scales; a broad-scale assessment and at a more detailed level focusing on the site and its localised vicinity.

Visual amenity effects assessment

58. Under the RMA 'amenity values' are defined as "*those natural or physical qualities and characteristics of an area that contribute to people's appreciation of pleasantness, aesthetic coherence, and cultural and recreational attributes*." Amenity includes a combination of factors, including ambient noise, air quality, and recreational and cultural attributes. This assessment considers the visual change that the proposal would bring to the outlook of the viewing audience.

59. The method used to assess visual effects involves looking at the physical arrangement of the proposal within the existing environment and how a change in this composition is perceived, the scale, type and intensity of change, and the nature of the audience who would experience the change (Table 4.0).

Table 4.0 Visual amenity effects

SCALE	DESCRIPTION
Extreme	Loss/alteration of key characteristics will be fundamental, such that the post-development visual amenity will be completely changed.
Very High	Loss/alteration of key characteristics will be dominant, such that the post-development visual amenity will be substantially changed.
High	Loss/alteration of key characteristics will be prominent, such that the post-development visual amenity will be distinctly changed.
Moderate	Loss/alteration of key characteristics will be apparent, such that the post development visual amenity will be obviously changed.
Low	Loss/alteration of key characteristics will be noticeable, such that the post-development visual amenity will be slightly changed.
Very Low	Loss/alteration of key characteristics will be unobtrusive, such that the post-development visual amenity will be inconsequentially changed.
Negligible	Loss/alteration of key characteristics will be indiscernible, such that the post-development visual amenity will be unchanged.

60. Different viewing audiences tend to have differing levels of sensitivity to visual change, with resident populations generally tending to be more sensitive to change than visitors to an area, for whom views are transient. The biases of individual viewers towards the proposed activity can also be influential on viewer sensitivity.

61. Furthermore, some views may be considered more "sensitive" than others. For example, where there are prominent lookouts or tourist spots which are frequented by many people and are considered a particularly stunning, unique or rare view. Such views would typically be considered to have a higher level of sensitivity to change than views which are generally not experienced by many people and/or are not considered to exhibit stunning, rare or unique qualities due to the increased associational value of these prominent locations.

62. Visual amenity effects (as with those on landscape and character) occur on a continuum. In relation to visual amenity factors which alter visibility such as distance, elevation, angle of view, context, resilience and capacity of the environment to absorb the change, the site's sensitivity and vulnerability to the proposed change, intervening screening (from structures, landform or vegetation), and weather conditions (including light) can all influence the degree of effect. Representative viewpoints were selected to aid understanding of the potential locations that may result in an adverse visual amenity effect.

63. The visual amenity effects assessments are based on Hudson Associates professional knowledge in conjunction with visibility tables developed by other practitioners that have been commented on in the Environment Court. Hudson Associates has provided assessments for over 20 marine farm applications in the past decade throughout New Zealand, with a working document relating to visual amenity consideration for marine farms included in *Attachment 1*.

EXISTING ENVIRONMENT: DESCRIPTION AND CHARACTERISATION

64. The proposal is situated on the western side of the extended Firth of Thames, which is at the southern end of the Hauraki Gulf. The broader context of the site is provided by the Firth of Thames, the wider waters of the Hauraki Gulf, the western and north-western offshore islands, the Hunua Ranges, and the Coromandel Ranges, (as identified in *Figure 9* and described in the text below). The broader context includes the terrestrial context for the site, which is a mid-water location. The site and localised vicinity are comprised of the application site and the immediately surrounding waters, and does not include any land areas (*Figure 10*). While the precise extent of the site scale varies for each project, in this context the separation from land (of 4km) is considered to be too large to warrant recognition of the nearest landform as being part of 'the site'.

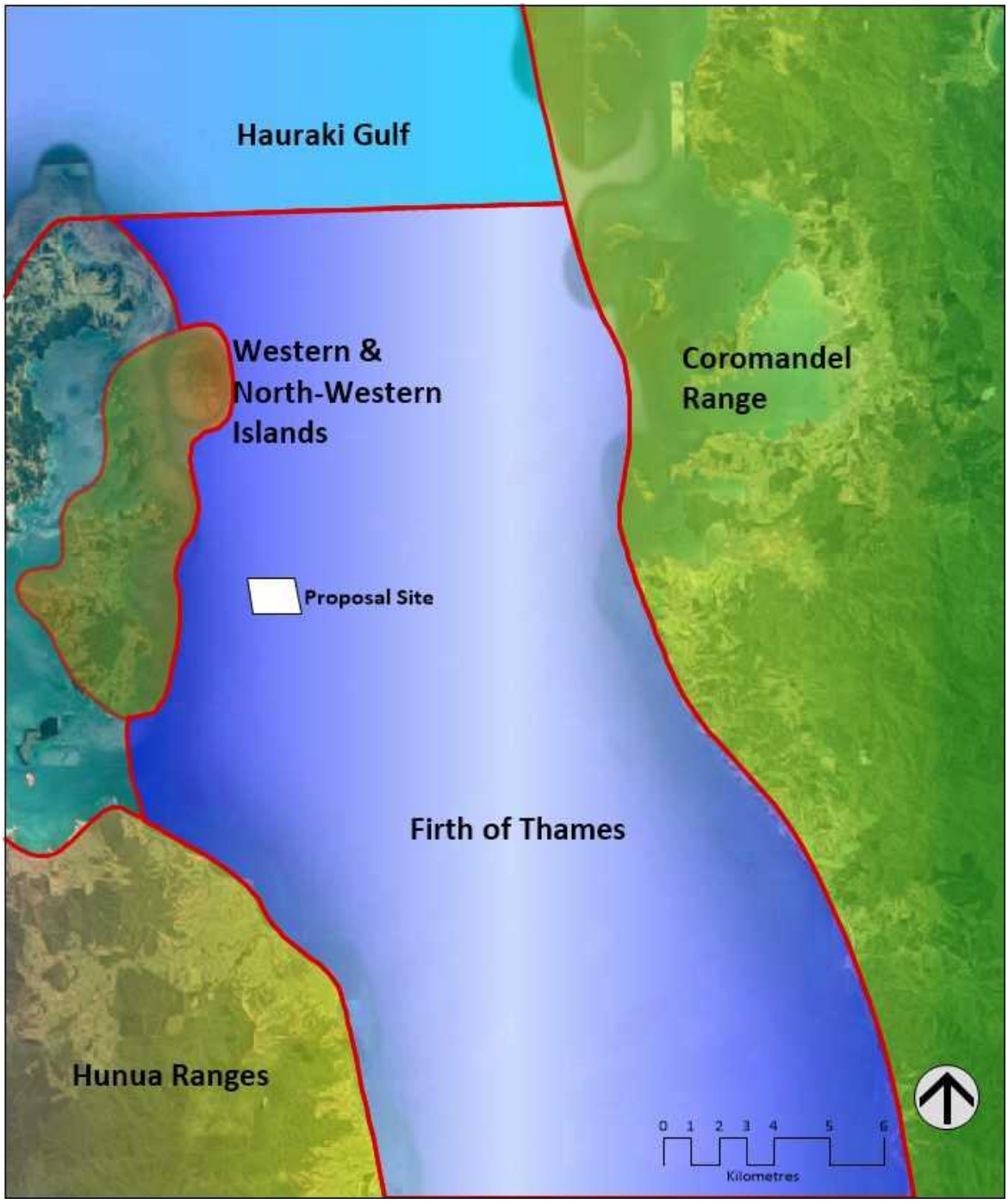

Figure 9: Broader context

Figure 10: Site and localised vicinity

Existing landscape character

Broader context

~~53.~~65. For the purposes of this report, the extended Firth of Thames and the true Firth of Thames are both referred to as the Firth of Thames. The Hauraki Gulf, merges with the northern extent of the Firth, and stretches approximately 24km wide from the eastern edge of Waiheke Island before opening into a wide expanse of water, which is distinctively different to the ocean channel of the Firth of Thames. The Firth of Thames is a large, linear bay with an open expanse of flat water that contrasts with rising mountain ranges flanking either side, as well as with the undulating topography of the islands to the west.

Figure 11: Views to the north illustrate the wide expanse of water in the broader context

~~54.~~66. The expansive, uniform water plain of the Firth of Thames gives the area a strong sense of coherence. However, the presence of aquaculture activities interrupts this coherence to an extent. There is a continuous presence of human activity in the Firth of Thames from vessels servicing the numerous aquaculture activities, commercial operators, charter fishing, and private water craft use for recreational purposes.[7] There is also a quarry barge which travels north from Kopu to Waiheke Island, however, this is only on demand and not a regular service. In recent years the barge has not run as the subsidy for the barge had not been extended. This presence of human activity creates a character where elements of human presence are common and expected within the setting but it also reduces the naturalness of the area.

Figure 12: Recreational fishing boat in the broader context

[7] Thames Coromandel District Council, 2017

Figure 13: Commercial boats in the broader context

55.67. Transient values are recognisable in the water's tidal patterns, movement of birds, and changes in the appearance of the ocean's surface due to changing weather conditions and light. From the waters of the Firth the natural darkness of the night sky can be appreciated, although lights from settlements on the coastal edges and existing marine farms diminish this quality slightly. Coastal cliffs and escarpments at the water's edge contribute to the wildness of the broader context, while the combination of coastal waters, foreshore and adjacent vegetation create scenic qualities. Although the Firth is important for shorebirds, its seabed has been extensively modified and it is under stress from excessive sediment loads.[8]

[8] Stakeholder Working Group, 2017 and Hauraki Gulf Forum, 2017

Figure 14: Lights of existing marine farms as viewed from Wyuna Bay

Figure 15: Lights of Coromandel township as viewed from Wyuna Bay

~~56.~~68. The Coromandel Range to the east of the Firth of Thames was formed by volcanic activity and runs north-south the length of the Peninsula. The distinctive range has been eroded by water, creating a steep dissected topography, with well-defined valleys. Native bush covers a large area of the Coromandel Range. The western side of the Coromandel Range is characterised by its many steep and abrupt drops down to the coastline. The coastal margin of the Coromandel Range has a mix of native vegetation, pastoral farmland and plantation forestry, with pockets of residential development.

Figure 16: The Coromandel Range with its native bush areas, forestry, farmland and settlements

~~57.~~69. The Hunua Ranges border the western shoreline of the Firth. In this report the Hunua Ranges are loosely described as the landform extending from the top of the range, down to the coastal margin of the Firth. This is different to the specific Hunua Range ONL 62 identified in Schedule 7 of the AUP. The coastal margin of the Hunua Ranges is characterised by mixed land use, with pastoral farming, native bush and plantation forestry forming the main land covers, with some small clusters of residential areas. The land rises up from the Firth as undulating hills, with the gradient becoming more pronounced further inland. The raised topography of the ascending ridgelines from the coast are defined by their pastoral cover which contrasts with the vegetated valleys below. Further away from the coastal margin land cover changes to primarily native forest.

~~58.~~70. While the surrounding land of the Coromandel Range and Hunua Ranges is comprised of large areas of native vegetation, significant tracts of pasture and exotic vegetation are present and reduce impressions of coherence.

Figure 17: The Coromandel Range with some of its pastoral farmland in the foothills (looking west)

~~59.~~71. Working elements are present in the broader context, including marine farms, boats, pastoral land, plantation forestry, roads and settlements but due to the scale of areas which are absent of manmade structures the broader context still has a predominately natural appearance. The area is generally quiet, with the sounds of birds and lapping waves providing the background noises for the area, heightening the sense of naturalness.

Figure 18: Existing aquaculture in the broader context

72. The broader context has a rich history and holds significance for tangata whenua. This is a joint application between Ngai Tai ki Tamaki and Mr Peter Bull. Ngai Tai ki Tamaki, who have mana whenua/mana moana over the area of the application site, support the proposed Marine Farm. Cultural letters of support have been attached to the AEE.[9] In modern times the area is appreciated as a holiday destination and contains several identified ONLs and areas with ONC and HNC.

73. The Hunua Ranges are recognised as an ONL and is approximately 8km from the application site. It is identified for its low levels of modification, dominance of native forest, strong sense of naturalness and connection with the Firth of Thames. However, existing marine farms within the Firth are visible from the ONL. The interaction between the Hunua Ranges and the Firth of Thames has the potential to be sensitive to marine farm development in the area.

74. Orere Point to Waimangu is identified as an ONL and is approximately 9.4km from the Marine Farm. Te Kaiahorawaru Point, at Orere Point, is recognised as having HNC and is around 8.4km from the application site. Like the Hunua Ranges, Orere Point is recognised for its strong interaction with the Firth of Thames and, therefore, the interaction between land and water in this area could potentially be sensitive to marine farm development.

[9] Appendix 4 of the AEE

75. Of the western and north-western islands, Ponui Island is situated closest to the application site. Parts of Ponui Island are recognised as an ONL, and the eastern side of Ponui Island is also identified as having HNC. The island is around 4km from the Marine Farm and its ONC and HNC boundary is approximately 3km from the application site (*Attachment 2 – DWG# J7-2-12: Panorama looking towards Ponui Island and Panorama from Ponui Island*).

76. The main land cover on Ponui Island is pastoral farmland, with some native bush, which is mainly in the middle of the island. The land slopes moderately upwards from the coastal margin, forming rolling hills over the surface of the island, with vegetated valleys.

77. Ponui Island is characterised by its irregular coastline with its numerous bays. The eastern side of Ponui Island is free from development and is characterised by native vegetation, sweeping ocean bays and steeps cliffs which have been sculpted by its exposure to the ocean waters, affording the area a status of HNC. Ongoing coastal processes are legible on the coastal margin of Ponui Island in the cliffs, bays, and beaches. The unmodified eastern side of the island makes Ponui Island particularly sensitive to development. The dramatic interaction of the island with the waters in the Hauraki Gulf also has the potential to be sensitive to the implementation of marine farms.

~~60.~~78. The Ruthe Passage Islands are recognised as having ONC, while Rotoroa Island (south) is identified as having HNC. The islands are located approximately 3.5km and 5km (respectively) from the application site. These islands interact dramatically with the Hauraki Gulf waters, making them potentially sensitive to aquatic and coastal development, such as aquaculture.

~~61.~~79. Pakatoa Island and Tarahiki (Shag) Island are identified as an ONL and are approximately 7km from the application site. Pakatoa Island is also recognised as having HNC. The island has mixed land use comprised of native vegetation, pines, and pasture, which are dotted with buildings used for visitor accommodation. The island is relatively low-lying but rises upwards at its eastern end, creating steep drops to the coast. Tarahiki Island is a small island (approximately 400m north-south and 150m east-west) and is also identified as having ONC. Its rugged, rocky coastline rises steeply giving Tarahiki Island a humped form. The island is covered in native vegetation. The dramatic interface of these islands with the sea has the potential to make them sensitive to coastal modifications, including the implementation of marine farms.

80. Overall, considering experiential, associative and natural science attributes it is deemed that the broader context has a high existing landscape character.

Site and localised vicinity

81. The site is located on the western side of the extended Firth of Thames, halfway between the northern edge of the Firth of Thames and the southern boundary of the Hauraki Gulf. The application area is approximately 10km north of Orere Point and 13km west from Matariki Bay, Coromandel Peninsula. The nearest corner of the site is around 4km east of Ponui Island.

~~62.~~82. The site and localised vicinity have high levels of coherence due to an absence of structures and the uninterrupted expansiveness, openness and simplicity of the area. The location appears predominately natural and wild. The surrounding land of the eastern and western sides of the Firth, while distant, are visible from the site and contribute to the perceptual characteristics and values of the site and how it is experienced. For instance, the land provides a loose sense of enclosure and shelter from open sea conditions (due to the Coromandel Peninsula), as well as contributing to the site's existing levels of perceived naturalness. It is possible to see pastoral landcover on Ponui Island, Waiheke Island, Orere Point and the most western part of the Coromandel opposite the site. The quietness of the setting heightens the sense of naturalness, as does exposure to wind and smells of the sea.

Figure 19: Open and expansive nature of the site and localised vicinity

Figure 19: Pastoral landcover is visible on Ponui Island and on the mainland

83. Changes in atmospheric conditions provide transient values which are discernible on the surface of the water. There are no lights at the site or in the localised vicinity, allowing the natural darkness of the night sky to be appreciated.

84. Ngai Tai ki Tamaki have given written approval for the site's location.[10]

85. In terms of natural science attributes, landform biophysical values have less importance at this site as the Marine Farm's only biophysical terrestrial effect will be on the seabed.

~~63.~~86. The water depth at the application site varies between 23m to 29m, with shallower water in the southwest corner and deeper water in the northeast corner of the Marine Farm.

~~64.~~87. The seabed habitat at the site is the same as what is present throughout much of the Firth. At the site the seafloor is relatively flat and is comprised of featureless mud, containing shell hash and gravel. No rock or reef has been recorded.[11]

~~65.~~88. Biota present at the site is considered well adapted to muddy conditions, as well as typical and widespread in the Firth of Thames, and includes species such as heart urchins (*Echinocardium cordatum*) and a small deposit-feeding bivalve (*Arthritica bifurca*). In addition, nutrient concentrations are not significantly elevated and indicate well-mixed coastal water.[12]

~~66.~~89. Relatively strong currents could be expected at the site at peak flow and it is likely that the site will be well flushed by tidal flows. The location also has high exposure to near surface wind driven currents from all quarters and is relatively exposed to locally generated wave conditions. As a result, residual (non-tidal) currents are likely to be highly variable.[13]

~~67.~~90. Overall, considering experiential, associative and natural science attributes it is deemed that the site and localised vicinity has a high existing landscape character.

[10] Appendix 4 of the AEE
[11] 4Sight Consulting, 2018
[12] Ibid
[13] Ibid

Existing natural character

Broader context

91. The broader context has high levels of perceived naturalness, despite elements of a working landscape/seascape, including existing marine farms, the presence of on-water vessels, as well as settlement and development on the surrounding terrestrial slopes and at the shoreline.

92. Transient values, such as weather patterns on the water's surface, contribute to the natural character of the broader context, as does the relative low level of lighting experienced on the water, enabling the natural darkness of the night sky to be appreciated. The coastal waters, native vegetation on the coastal edge, and foreshore all combine to create an area which is scenic, with elements of wildness.

93. The broader context has a modified benthic environment. The Firth of Thames has undergone extensive dredging in the past, is under pressure from excessive sediment loads, as well as ongoing issues with water quality. However, it is still an important habitat for a number of marine animals and shorebirds.

94. Te Kaiahorawaru Point (at Orere Point), Rotoroa Island, Pakotoa Island, and the eastern side of Ponui Island are identified as having HNC, while the Ruthe Passage Islands and Tarahiki Island are identified as having ONC. These areas are recognised for their strong interaction between the land and water and, as such, could potentially be sensitive to marine farm development. Eastern Ponui Island is also unmodified, making it sensitive to development.

95. Overall, considering experiential and natural science attributes it is deemed that the broader context has a moderate existing natural character.

Site and localised vicinity

96. The site and localised vicinity have high levels of perceived naturalness and values of wildness, which are due to the undeveloped nature of the above-water aspects of the site. However, from the site it is still possible to see elements of a working landscape in the wider context in the form of pastoral landcover, which reduces wildness values. Perceived naturalness is enhanced by exposure to the wind, smells of the sea, and the quietness of the location.

97. Transient values, such as reflections of weather conditions on the water's surface, contribute to the natural character of the site and the localised vicinity. There are no lights in this area, thus, enabling the natural darkness of the night sky to be experienced.

98. The seabed in this area is characterised by featureless mud and is similar to other areas of the Firth which have been severely degraded by historical dredging. No rock or reef has been recorded in the area.[14]

99. Overall, considering experiential and natural science attributes it is deemed that the site and localised vicinity has a moderate-high existing natural character.

Existing visual amenity

100. Based on site visits several viewpoints have been selected and described below (*Figure 20* and *Attachment 2*). The locations described are intended to be representative of the land and water-based views that may be affected by the proposal.

101. During the site visits weather conditions were ideal with minimal clouds, calm water and was sunny. These clear conditions allowed good photographs to be taken and the site and its surrounding context to be clearly observed.

102. The area is a popular destination for visitors from Auckland and surrounding areas. Visitors are likely to appreciate the views out over the Firth, from land and water, for their scenic/visual amenity value, thus possibly increasing the sensitivity of this viewing audience.

103. Views of the Marine Farm will be possible from vessels travelling through the Firth. This on-water audience will gain the closest possible views of the proposal. A proportion of this audience will be on the water for either recreational or commercial fishing. Viewer numbers on the water are presumed to be smaller than viewer numbers on land on the basis that most people do not have easy or regular access to a boat.

[14] 4Sight Consulting, 2018

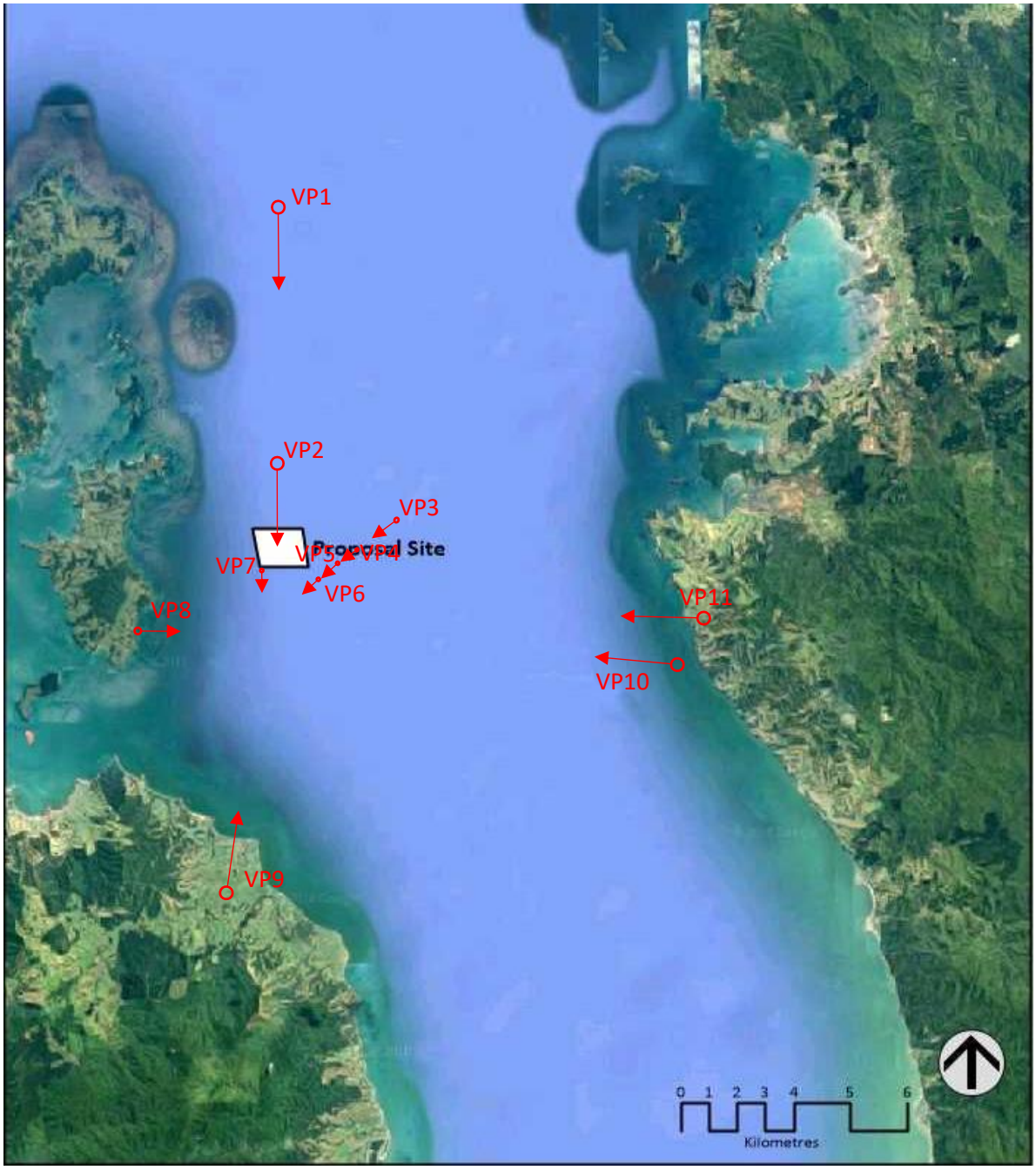

Figure 20: Location of viewpoints

104. The following viewpoint photographs are all included in Attachment 2 (J7-2-1 through J7-2-11).

105. Viewpoint one is around 14.3km north of the site and is from a shipping route identified on the Seasketch website (*Figure 21*). Views are seen from the context of a vessel and as such views are not elevated. There is an overall quietness at the location. Expansive views south down the Firth of Thames can be attained from this viewpoint, with the mainland around Orere Point and the Hunua Ranges visible in far distance. The existing visual amenity for this viewpoint is assessed as high.

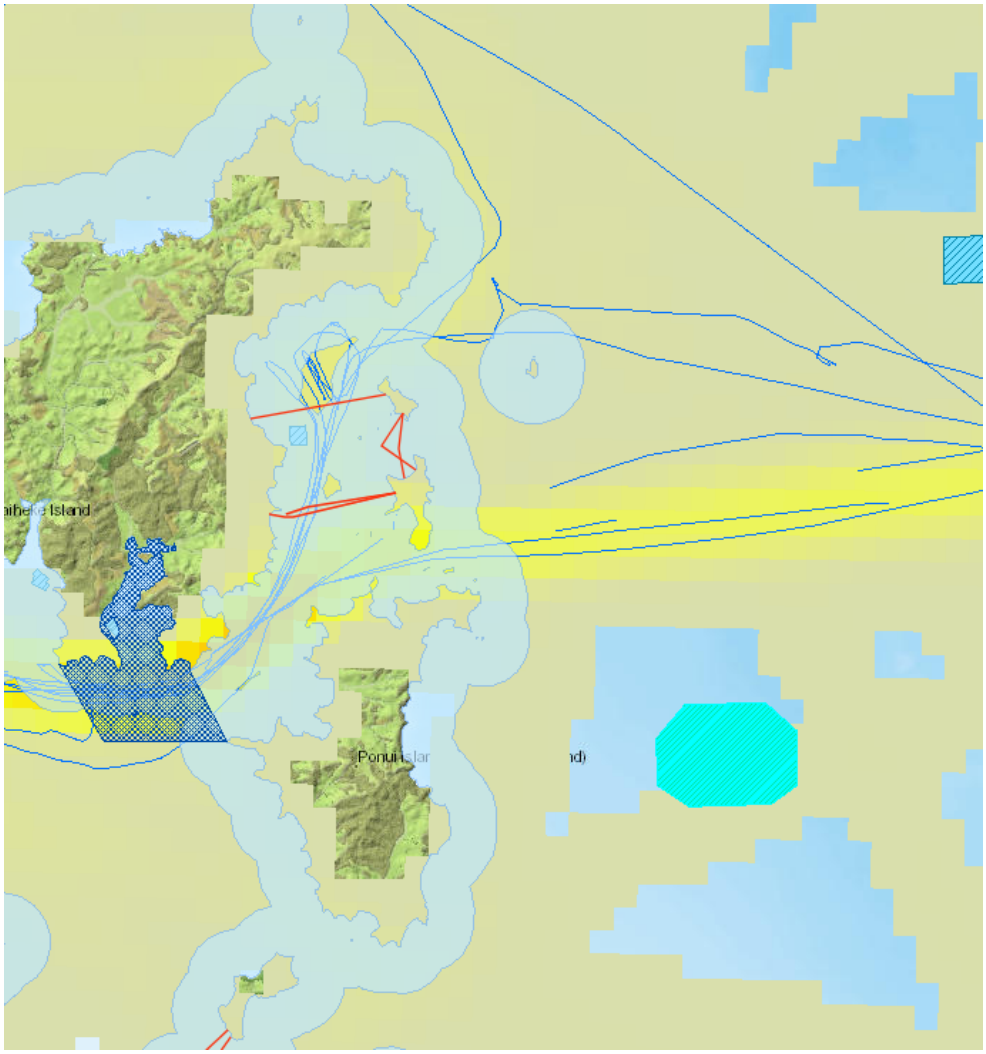

Figure 21: Identified shipping routes (blue and red lines) on the Seasketch website in relation to Ponui Island

106. Viewpoint two is approximately 3.7km north of the site and is located on an identified shipping route on the Seasketch website. Views are seen from the context of a vessel and therefore are not elevated. Ponui Island is approximately 4km from this viewpoint and frames the eastern portion of the vista. The mainland (including Orere Point and the Hunua Ranges) is visible in the background. There is an apparent contrast between forested and pastoral areas on the mainland. The orange eroding cliffs around the shoreline are also noticeable, while the height of the Hunua Ranges draws the eye upwards. The existing visual amenity for this viewpoint is assessed as high.

107. Viewpoint three is located 3.5km north-east of the site and encapsulates views across the site towards Ponui Island. The island is 4km from the Marine Farm and, therefore, is not considered as being near the site. The plane of the ocean forms

the foreground view, which contrasts strongly with the elevated form of Ponui Island. The sheer orange cliffs of the island, as well as its forested and pastoral areas are visible from this viewpoint. Views are seen from the context of a vessel and, as such, views are not elevated. The existing visual amenity for this viewpoint is assessed as high.

108. Viewpoint four is around 1.5km north-east of the site and looks across the site towards Ponui Island. Views are seen from the context of a vessel and, therefore, are not elevated. Ponui Island is approximately 7.7km from this viewpoint. The orange cliffs at island's coastal edge, as well as its landcover of pasture and forest are visible from this viewpoint. The ocean surface dominates the foreground view. The existing visual amenity for this viewpoint is assessed as high.

109. Viewpoint five is approximately 800m north-east of the site and contains views across the site towards Ponui Island. Views are seen from the context of a vessel. Ponui Island is approximately 7km from this viewpoint and has similar visual amenity values as viewpoint four. Landcover details and the island's geology are more distinguishable from this closer distance. The existing visual amenity for this viewpoint is assessed as high.

110. Viewpoint six encapsulates views towards Ponui Island from approximately 400m north-east of the site. From this viewpoint the Marine Farm will be viewed from the context of a vessel (i.e. not elevated views). Ponui Island is recognised as having HNC and is an ONL, the island is approximately 6.6km from this viewpoint. The island is privately-owned and primarily farmland, and it appears to have a very small number of residents. There are no apparent residences overlooking the Marine Farm. The form of Ponui Island provides a dominate element in this vista, with its elevated form drawing the eye upwards. The existing visual amenity for this viewpoint is assessed as high.

111. Viewpoint seven is around 400m north of the site and looks south-west across the site. Views are seen from the context of a vessel and therefore are not elevated. Ponui Island is approximately 6.6km from this viewpoint. The foreground of the view is dominated by the water's surface. Bush and pasture are evident on Ponui Island to the right of the vista, while the elevated form of the mainland characterises the more distant views of the viewpoint. The existing visual amenity for this viewpoint is assessed as high.

112. In general, land-based views of this proposal are considered extremely limited due to the distance between the coastal edge and the site. All land-based views of the

site (for both resident and transient populations) are distances at or greater than 10km, excluding from Ponui Island which, at closest, is 4km from the Marine Farm.

113. Viewpoint eight is from the eastern coast of Ponui Island, at shore level. Ponui Island is located to the west of the site, with parts of Ponui Island recognised as an ONL and as having HNC. The east coast of the island is approximately 4km from the Marine Farm. The ocean plane dominates the foreground views, while the Coromandel Peninsula provides a sense of enclosure in the background. The area can be appreciated for sounds of water lapping against the coastline. The existing visual amenity for this viewpoint is assessed as high.

114. Viewpoint nine is located on land at Orere Point. Orere Point township is orientated north, looking towards the site. The level of significance is increased due to the number of people at Orere Point. Orere Point is approximately 10km from the Marine Farm. Views are dominated by the expansive ocean, while both land and seabirds, as well as water lapping on the stony beach provide the sounds characteristic of the area. The existing visual amenity for this viewpoint is assessed as high.

115. Viewpoint ten is on State Highway 25 at Wilson Bay. There is high traffic volume along this stretch of highway, with motorists obtaining low angle views westwards across the Firth of Thames. SH25 is approximately 16km from the Marine Farm. The area can be appreciated for its rocky coastal shoreline, ocean vistas, and coastal vegetation. However, mussel farms are also clearly visible both from the road and on the shore. The existing visual amenity for this viewpoint is assessed as moderate-high.

116. Viewpoint eleven is at the Wilson Bay lookout on State Highway 25. There is high traffic volume at this elevated area. The lookout point on the side of the highway obtains panoramic views westward across the Firth. Views in the foreground are dominated by farmland, with ocean views forming the midground of the view. Mussel farms are also visible from this location. Wilson Bay Lookout is approximately 18km from the Marine Farm. The existing visual amenity for this viewpoint is assessed as high.

117. To observe the effects of mussel farming at night, a site visit was done at night on 8 October 2018 at Wyuna Bay, in Coromandel. This gave an elevated view of the existing mussel farms to the north of Wyuna Bay and of the mussel farms on the eastern side of Motukopake Island (around 3.5km away). The lights observed on these farms have a shine distance of 1nm. The lights from the farms were visible and flashed yellow intermittently in a pattern and were not all on at the same

time. The lights on the mussel farms by Motukopake Island appeared more as a blinking light than flashing due to the distance. Other lighting visible on the northern side of Wyuna Bay was confined to minimal lighting from streets and housing along the coastline. Overall, the farm lights weren't obtrusive when considered in the scale of the night landscape. In contrast, when looking south towards Coromandel township and south-east towards Te Kouma, the towns' lights were much more prominent.

118. In summary, the visual amenity of the viewpoints can be appreciated for their general quietness, sounds of water and birds, and expansive ocean vistas. However, modifications also form part of the area's visual amenity, including mussel farms and pastoral land. The various viewpoints are assessed as having moderate-high to high existing visual amenity.

ASSESSMENT OF EFFECTS

~~68.~~119. This section considers the nature and scale of the proposed change (often referred to as the magnitude of change) against the characteristics and values identified in the landscape baseline section (the existing environment) to determine if the proposed changes would have adverse effects on the existing qualities of the landscape/seascape.

~~69.~~120. The assessment considers physical modifications and subsequent effects on the biophysical environment (effects on natural science values), as well as effects on the existing character of the site and its locality, which may arise from changes such as a new use (new or different activities), and/or changes to the existing patterns and elements in the landscape/seascape. Such changes can affect existing character and alter overall amenity and/or people's appreciation of an area. Visual changes are also considered from identified viewpoints to determine effects on visual amenity.

~~70.~~121. The assessment of effects is based on expert judgement and considers the site's resilience and capacity, and its sensitivity and vulnerability to the proposed change, as well as likely viewer sensitivity, in coming to overall ratings of effects on landscape and natural character, and visual effects. Importantly, a large magnitude of change does not necessarily constitute a high level of adverse effects and is influenced by the qualities and character of the existing environment.

Landscape character effects

Broader context

122. The proposal will introduce new structures into a site where there are currently none and ~~this~~ will constitute a new use at the site, as well as contribute to a reduced coherence of the water's surface. However, the potential adverse effects on the character of the broader context will be reduced by the existing character of the setting. The broader context contains working landscape elements, such as plantation forestry, pasture and existing aquaculture. The Marine Farm will be consistent with this character. The proposal is also in-keeping with the existing levels of terrestrial development in the broader context, such as housing and roading.

123. The Marine Farm is located at least 4km from any land area. Therefore, due to its midwater location, the proposal is considered specifically within the context of the Firth of Thames. While the Marine Farm appears relatively large when compared to some of the islands in the broader context, such as Rotoroa Island, the distance of the proposal from these land areas and the expansive nature of the Firth of Thames water result in the existing landscape context having the capability to absorb the proposal at this scale.

~~71.~~124. While servicing vessels for the Marine Farm will mean an increase in commercial vessels in the area, reducing perceived naturalness and scenic qualities, this increase is only very minor in the scale of current vessel use in the Firth. This assessment does not consider effects related to wharf and load/unloading facilities as these will continue in areas where such activities are already provided for.

~~72.~~125. From land-based views, the proposed structures will only be distantly visible, therefore reducing effects on perceived naturalness, coherence, and wild and scenic qualities. Land-based views of the Marine Farm will be 4km from Ponui Island, and 10km or greater from the mainland. It is highly unlikely that the Marine Farm will be visible from the mainland. This further reduces apparent change to the setting, and subsequent possible adverse landscape effects. Effects on visual amenity from various viewpoints are discussed in more detail below under "Visual effects".

126. Navigational safety requirements will necessitate cardinal lights on each corner of the Marine Farm, as well as special lights in the middle of each side of the farm. It is unlikely that the proposal lights will be visually apparent at night from either the southern or western coastline, if visible at all. During the site visit the lights at

night of the mussel farms were observed off the elevated northern coast of Wyuna Bay, in Coromandel. When observing the lights of the mussel farms at Wyuna Bay there was the clear impression that the dominant lighting effects were from the existing settlements along the shoreline of the Firth. The farm lights at Wyuna Bay have a shine distance of 1nm. This is equivalent to the side lights on the Marine Farm but less bright than the four cardinal lights of 4nm. However, the increased brightness of the cardinal lights required on the Marine Farm will be counter-posed by the distance of the Marine Farm from the mainland coast. It is considered that the Marine Farm navigational lighting will not effect on the natural darkness of the night sky in the broader context when viewed from the coast of the mainland due the distance from the site, the infrequency of the navigational lights and because of the extensive scattering of lights from settlements on the coast of the Firth.

127. At Wyuna Bay the most distant farms on the eastern side of Motukopake Island are around 3.5km away, a similar distance as the Marine Farm from Ponui Island. While the lights from Wyuna Bay to Motukopake Island were visible they were not visually dominant. Although the four cardinal lights on the Marine Farm will have a shine distance of 4nm (brighter than the Wyuna Bay farm lights which have a shine distance of 1nm), due to the low number of these brighter lights and the distance of the farm from Ponui Island, it is assessed that the navigational lighting from Ponui Island will not be obtrusive and is likely to be only distantly visible. Therefore, the lighting is assessed as having a very low effect when viewed from Ponui Island.

128. Ngai Tai ki Tamaki, who have mana whenua/mana moana over the area of the application site, support the proposed Marine Farm. Cultural letters of support have been attached to the AEE.[15]

~~73.~~129. Ponui Island, Pakatoa Island, Tarahiki Island, Orere Point to Waimangu, and the Hunua Ranges are recognised ONLs in the broader context. The Ruthe Passage Islands and Tarahiki Island are identified as having ONC, while the eastern side of Ponui Island, Pakatoa Island, Rotoroa Island (south), and Te Kaiahorawaru Point (at Orere Point) are recognised as having HNC. The closest ONL or area with ONC or HNC is 3km from the Marine Farm. The nearest ONF is approximately 6km away.

~~74.~~

Ponui Island, which is recognised as an ONL and the eastern side of the island as having HNC, is the closest terrestrial landform to the Marine Farm. However, the

[15] Appendix 4 of the AEE

site is still a distance away at 3km beyond the boundary of the ONL and HNC area, which extends approximately 1km into the water. While the coastline of the island has margins of native vegetation in places, pastoral farmland is highly visible and spreads from areas of the coastline an extensive way into the inner island. Overall, due to the distance between the proposal and these identified areas, it is considered that the attributes which could be potentially sensitive to marine farm development (such as the areas' strong interaction between the land and ocean, and lack of development) will not be affected by the proposal. Thus, the Marine Farm is assessed as having very low effects on these areas and features when considered at the broader context scale.

130. There will be no biophysical effects on the terrestrial environment as the site is a mid-water location.

131. Research shows that suspended mussels in marine farms remove organic material, such as phytoplankton, from the water column and that these effects can extend beyond the farm area. Over the past 17 years research has been undertaken to assess the beyond-farm effects in the Firth of Thames. Studies undertaken by NIWA concluded that mussel farming in the Firth has not resulted in any significant depletion of phytoplankton.[16]

132. The Firth of Thames plankton system has a naturally enormous range in variability and the impacts of mussel farming on phytoplankton are small beyond their farmed area. The Firth is likely to be resistant to phytoplankton depletion caused by variations in nutrient availability caused by filtering by mussels. Instead it is probable that nutrient availability for ecosystem processes in the Firth is governed by catchment-source nutrients, as well as periodic ocean upwelling events.[17]

133. Depositional effects from mussel farming in the Firth of Thames is likely to cause some alterations to the benthos beneath the Marine Farm, these can be associated as both positive and negative effects. Research shows that the Firth of Thames once had many biogenic reefs composed of greenshell mussels and their presence was likely to have improved water quality and the ecology of the region. As such, the presence of live mussels and their associated deposition onto the seabed beneath the Marine Farm could be considered a positive effect. New Zealand mussel farming is considered to have low depositional effects, this combined with the dispersive nature of the site, as well as the relatively strong

[16] 4Sight Consulting, 2018
[17] Ibid

currents and deep water beneath the site further reduce the risk of deposition from the Marine Farm causing any significant detrimental effects on the seabed.[18]

134. Mussel farms have the potential to affect marine mammals (dolphins, seals and whales) through habitat modification and exclusion, as well as entanglement in structures. Large marine farms can cause issues for seasonal whale migration. However, this is not likely to be an issue in this part of the Firth as whale migration pathways are not recorded to overlap or be close to the Firth of Thames. Bryde's whale are encountered throughout the year in the general area of the Hauraki Gulf but there are no reported sightings in the Firth of Thames proper. Bryde's whales occurs mostly in waters of 40m depth or more (water beneath the application site varies between 23m to 29m).[19] Entanglement of dolphins, seals or seabirds in mussel farm lines has not been recorded in New Zealand, and these are unlikely to become tangled in mussel farm lines or structures.[20]

~~75.~~135. Overall, considering the potential natural science effects from the Marine Farm, experiential factors and associative attributes adverse effects on landscape character at this scale are assessed as very low.

Site and localised vicinity

136. The site is located in the extended Firth of Thames, halfway between the northern edge of the Firth of Thames and the southern boundary of the Hauraki Gulf. The Marine Farm is located on the western side of the extended Firth of Thames. The application area is approximately 10km north of Orere Point and 13km west from Matariki Bay, Coromandel Peninsula. The nearest corner of the site is approximately 4km east of Ponui Island.

~~76.~~137. The level of perceived naturalness, coherence and wildness values will be reduced in the immediate area of the Marine Farm by the introduced aquaculture structures and associated servicing vessels. At the site and its more localised area the magnitude of change resulting from the proposal will be greater than at the broader context due to proximity to the site and because the waters located at the Marine Farm are currently open and undeveloped.

~~77.~~138. There will be a slight increase in commercial vessels visiting the site and in its general vicinity, further reducing perceived naturalness and wildness values due to the sound and visibility of the boats. At most there will be two servicing vessels at the Marine Farm at one time, a harvesting barge and a maintenance

[18] Ibid
[19] Ibid
[20] Lloyd, 2003

barge. The potential effects from the presence of this number of vessels is reduced by the expansive scale of the water at the site and the current presence of boating in the general area.

~~78.~~139. At the site and in its general vicinity, navigational lights will be apparent (as they are designed to be obvious for safety reasons). Therefore, there are likely to be localised effects on the natural darkness of the night sky. However they will be seen in the context of existing lights along the coastal edge.

~~79.~~140. Distant modifications from the site are visible in the form of pastoral farming on surrounding lands. The proposal is consistent with existing modifications, thus lowering the significance of adverse effects from the Marine Farm on perceived naturalness at the site and its more immediate vicinity.

~~80.~~141. In addition, at close range the full scale of the proposal is unlikely to be apparent due to low-elevated views from on-water vessels, meaning that side views of buoys closest to the viewpoint are more likely than expansive views of the whole Marine Farm. This will reduce the farm's effect on the site's coherence. Visual effects are further discussed in the "Visual effects" section below.

~~81.~~142. On-water viewers are likely to have mixed sensitivities to the Marine Farm. Recreational fishers can benefit from increased fishing opportunities resulting from the presence of marine farms. However, recreational fishers may enjoy amenity values as part of their fishing experience. Visual effects are further discussed under "Visual effects".

143. The only physical contact that this application will have with a landform will occur on the seabed where the longlines are anchored. However, the seabed has been degraded by historical commercial dredging, as well as historical and present-day sediment inflows and, thus, is presently regarded as being highly modified. Effects from the anchoring on the landforms are therefore considered negligible.

144. The Firth of Thames plankton system has a naturally enormous range in variability and this type of variability ~~was~~has also been recorded at the site. In addition, the impacts of mussel farming are small beyond their farmed area.[21]

145. The relatively deep water at the site (approximately 23-29m) means that there will be a significant water column beneath the farm structures and seabed. This water will be unaffected by the filtering effects of mussels on the farm ropes. Water passing through this deeper part of the water column may also do so at a

[21] 4Sight Consulting, 2018

faster rate than through the farm itself due to the drag effect of farm structures above on water velocity. This will further encourage mixing and should reduce the extent of any phytoplankton depletion beyond the farm footprint.

146. Furthermore, residual (non-tidal) currents at the site are likely to be highly variable, meaning that the location of any plume of plankton change will be strongly influenced by residual currents. Any phytoplankton depletion halo is likely to be highly variable and will change with both tidal state and prevailing conditions. The tidal and residual currents at the Marine Farm will enable good delivery of phytoplankton to mussels within the farm, and adequate mixing with the surrounding water. This will facilitate a rapid return to background phytoplankton concentration downstream of the Marine Farm.

147. Mixing of water within and downstream of the Marine Farm will also promote nutrient cycling and should limit the potential for sustained or significant impacts on phytoplankton production. There are no existing farms close enough to the site to pose a risk of effects of phytoplankton consumption within the Marine Farm affecting any other farms.

148. Benthic reporting[22] concludes that the seabed is a widespread mud habitat and has a common associated faunal community, the site has a dispersive nature, it is expected that the Marine Farm will only cause relatively benign changes to the seabed ecology beneath the site, and there is the potential for the Marine Farm to result in some positive ecological effects.

149. Mussel farms are known to attract fish, starfish, crabs, other marine life and seabirds. In addition to growing the culture species, farms function as mid-water artificial reefs and create habitat. Artificial reef structures provide new foraging habitat, food sources, breeding habitat, and refuge from predators for some species. These are for the most part positive effects and they are likely to occur in the Marine Farm area.[23]

150. The risk of Bryde's whale or other whale species and dolphins becoming entangled in the Marine Farm structures is small and probably negligible.[24]

151. Given the localised footprint of marine farming effects as studied elsewhere in the Firth, effects on the Ramsar site to the south of the proposal are unlikely and that effects from the proposed Marine Farm on the Ramsar site are negligible.

[22] Ibid
[23] 4Sight Consulting, 2018
[24] Ibid

152. In summary, ecological reporting completed for this application concluded that the potential for off-site water column effects (including phytoplankton depletion) is highly unlikely and are expected to be minor, it is not an ecologically sensitive site, the Marine Farm will not adversely affect shoreline habitats, and the Marine Farm benthic effects are expected to be only minor. Any ecological effect is likely to be positive, neutral or minor.[25]

153. For all the reasons outlined above and considering the assessment of potential adverse effects on natural science attributes by ecology experts, experiential factors and associative attributes, adverse effects on existing seascape character at and in the vicinity of the site are assessed as low-moderate.

Natural character effects

Broader context

~~82.~~154. Typically, adverse effects on natural character resulting from modifications will be higher in a pristine setting and lower for settings with existing modifications. This will generally be true in terms of both natural science factors and experiential attributes.

155. The proposal will contribute to existing modifications already present in the broader context and will have adverse effects on perceived naturalness, as well as wild and scenic attributes.

156. Servicing vessels for the Marine Farm will mean an increase in commercial vessels in the area, will reduce perceived naturalness and wildness values, and adversely impact the overall quietness of the area. However, this increase is only very small in the scale of current vessel use in the Firth.

157. As discussed under the Landscape Character Section above, Navigational safety requirements will necessitate cardinal lights on each corner of the Marine Farm, as well as special lights in the middle of each side of the farm. In relation to the impact on the experiential component of natural character, the conclusions made around navigational lighting are also relevant. Based on examples of other marine farm lighting (as also described above), it is unlikely that the proposal lights will be visually apparent at night from either the eastern or western coastline, if visible at all. It is considered that the Marine Farm navigational lighting will not effect on the natural darkness of the night sky in the Firth when viewed from the coast of

[25] Ibid

the mainland due the distance from the site, the infrequency of the navigational lights and because of the extensive scattering of lights from settlements on the coast of the Firth. It is assessed that the navigational lighting from Ponui Island will not be obtrusive and is likely to be only distantly visible. Therefore, the lighting is assessed as having a very low effect when viewed from Ponui Island.

158. Te Kaiahorawaru Point (at Orere Point), Rotoroa Island (south), Pakatoa Island and the eastern side of Ponui Island are classed as having HNC, while the Ruthe Passage Islands and Tarahiki Island are~~is~~ identified as having ONC. The closest of these sites is the Ruthe Passage Islands and Ponui Island. The Ruthe Passage Islands are approximately 3.5km from the Marine Farm. At this distance the Marine Farm, with its low-lying form, is highly unlikely to detract from island landforms and sea-sculptured vegetation which contribute to these islands' outstanding natural character qualities. The HNC boundary for eastern Ponui Island is around 3~~4~~km from the Marine Farm. Again, it is considered that there is an appropriate distance buffer between this HNC and the site. An important attribute that contributes to the areas' ONC and HNC, and makes these areas potentially sensitive to aquaculture development, is their strong interaction between the land and sea. Due to the distance of the proposal from these identified areas this attribute will not be affected.

159. It is considered that adverse effects on perceived naturalness within the broader context will be very low. This is due to the existing level of modification in this setting, the scale of the Firth of Thames waters surrounding the site and the site's midwater location, as well as the low-lying nature of the proposal. It is assessed that current levels of perceived naturalness will remain dominant at this scale.

160. Biophysically, the Marine Farm will result in positive, neutral or minor effects on an area where the seabed has already been extensively modified and degraded.[26]

~~83.~~161. Overall, taking into account both natural science factors and experiential attributes, adverse effects on natural character are assessed as being very low for the broader context.

162. Te Kaiahorawaru Point (at Orere Point), Rotoroa Island (south), Pakatoa Island and the eastern side of Ponui Island are classed as having HNC, while the Ruthe Passage Islands and Tarahiki Island are~~is~~ identified as having ONC. The closest of

[26] Ibid

these sites is the Ruthe Passage Islands and Ponui Island. The Ruthe Passage Islands are approximately 3.5km from the Marine Farm. At this distance the Marine Farm, with its low-lying form, is highly unlikely to detract from island landforms and sea-sculptured vegetation which contribute to these islands' outstanding natural character qualities. The HNC boundary for eastern Ponui Island is around 34km from the Marine Farm. Again, it is considered that there is an appropriate distance buffer between this HNC and the site. An important attribute that contributes to the areas' ONC and HNC, and makes these areas potentially sensitive to aquaculture development, is their strong interaction between the land and sea. Due to the distance of the proposal from these identified areas this attribute will not be affected.

163. It is considered that adverse effects on perceived naturalness within the broader context will be very low. This is due to the existing level of modification in this setting, the scale of the Firth of Thames waters surrounding the site and the site's midwater location, as well as the low-lying nature of the proposal. It is assessed that current levels of perceived naturalness will remain dominant at this scale.

164. Biophysically, the Marine Farm will result in positive, neutral or minor effects on an area where the seabed has already been extensively modified and degraded.[27]

165. Overall, taking into account both natural science factors and experiential attributes, adverse effects on natural character are assessed as being very low for the broader context.

Site and localised vicinity

166. The proposal will result in the introduction of structures into an area of water currently free of structures, resulting in a lowered level of wildness and scenic values, and perceived naturalness of the site and its vicinity. However, adverse effects will be reduced by the scale of the Firth of Thames waters which surround the site and the visibility of existing modifications (such as pasture) on terrestrial landforms in the wider vicinity. While the site and its locale have a high level of perceived naturalness due to a lack of manmade structures, the Marine Farm is consistent with existing modifications within the broader context which are visible from the site.

~~84.~~167. There will be a slight increase in commercial vessels visiting the site and in its general vicinity, which will reduce perceived naturalness, and wild and scenic values, as well as adversely affect the quietness of the location. At most there will

[27] Ibid

be two servicing vessels at the Marine Farm at one time, a harvesting barge and a maintenance barge. The potential effects from the presence of this number of vessels is reduced by the expansive scale of the water at the site and the current presence of boating in the general area. It is possible that servicing vessels could be heard from close range on a still day. From the site visits it was evident that it is sometimes (but not always) possible to hear servicing boats from 1.5km away, but this influenced by many factors including weather conditions. As there are no landforms within this distance of the Marine Farm and due to the presence of other motorised vessels in the general vicinity, the effect of servicing vessels at the site are assessed as being low.

85.168. Visibility of the Marine Farm structures will differ at times according to weather conditions (including their effects on lighting and calmness of the water's surface). It is considered that the current levels of perceived naturalness in the area will continue to be dominant and adverse effects on the ability to appreciate the natural surrounding environment will be low even in optimal viewing conditions.

169. The application will only have a physical impact on landform at the seabed where the longlines are anchored. However, the seabed has been degraded by historical commercial dredging, as well as by historical and present-day sediment inflows and, thus, is presently regarded as being highly modified. Ecological reporting completed for this application concluded that ecological effects were likely to be positive, neutral or minor.[28]

170. Overall, taking into account the adverse effects on both natural science factors and experiential attributes, it is assessed that effects on natural character of the site and its vicinity will be low.

Visual amenity effects

86.171. The following table assesses the nature and scale of the proposed change in the identified viewpoints and determines resultant effects on visual amenity using expert judgement. Observations are based on professional experience and interpretation from site visits, which also included looking at existing mussel farms, both from land and from a boat.

Table 5.0 Visual effects for selected viewpoints (Viewpoints are also included in Attachment 2)

[28] Ibid

LOCATION	Effect rating	Description of nature and scale of the change and resultant effect
Hauraki Gulf (on-water)		
VP1: 14.3km north of the site (from identified shipping route)	**VL/no change**	The significant distance will result in a negligible visual change. In optimal viewing conditions the Marine Farm is will not be seen from this significant distance. Overall, effects from this viewpoint are assessed as very low/no change (*Figure 22*).
Firth of Thames (on-water)		
VP2: 3.7km north of the site (from identified shipping route)	**VL**	The substantial distance between the viewpoint and the proposal will result in the Marine Farm causing negligible visual change. In optimal viewing conditions the proposal will not be visible during the day due to the distance between the viewpoint and the Marine Farm. The Marine Farm will also be easily absorbed into the night landscape due primarily to distance and the scale of the surrounding waters. Overall, effects from this viewpoint are assessed as very low (*Figure 23*).
VP3: 3.5km north-east of the site	**VL**	The significant distance between the viewpoint and the proposal will result in the Marine Farm causing negligible visual change. In optimal viewing conditions the proposal will not be visible during the day due to the distance and backdrop of land provided by Ponui Island. The Marine Farm will also be easily absorbed into the night landscape due primarily to distance and the scale of the surrounding water. Overall, effects from this viewpoint are assessed as very low (*Figure 24*).
VP4: 1.5km north-east of the site	**VL**	Due to the distance between the viewpoint and the proposal, as well as the backdrop of land (Ponui Island), it is likely that the buoys will only be visible as faint dots, if visible at all, even in optimal viewing conditions. The Marine Farm will be consistent with the working character visible on Ponui Island. The higher elevation of Ponui Island compared to the proposal will also assist in drawing the viewer's eye upward towards the island. Overall, effects from this viewpoint are assessed as very low (*Figure 25*).
VP5: 800m north-east of the site	**L**	Due to the distance between the viewpoint and the Marine Farm, as well as the backdrop of Ponui Island, it is likely that the individual buoys will be visible but not prominent in optimal viewing conditions. The Marine Farm will be consistent with the working character visible on Ponui

		Island. The higher elevation of Ponui Island compared to the proposal will also assist in drawing the viewer's eye upward towards the island. Overall, effects from this viewpoint are assessed as low (*Figure 26*).
VP6: Views towards Ponui Island (400m north-east of the site)	**LM**	At the closest point Ponui Island is approximately 5.7km away from this viewpoint. From this close distance to the proposal it is anticipated that in optimal viewing conditions the buoys will be highly visible and that it will be possible to distinguish the individual buoys within the Marine Farm. However, due to the low angle of view from within a boat it is unlikely that it will be possible to see the entire expanse of the Marine Farm. While the eastern side of Ponui Island is an ONL and identified as having HNC, making it sensitive to development, the Marine Farm will be in-keeping with the working character of the pastoral areas that are visible on Ponui from this viewpoint. The low elevation of the proposal and the higher elevation of the Ponui Island, as well as the distance between the island and the proposal, also combine to reduce potential effects on visual amenity. At night navigational lights on the Marine Farm will be visible, however, the scale of the night landscape will help to absorb their presence. Commercial vessels, such as the intermittent quarry barge, travelling between Kopu and Waiheke Island will track approximately 2.5km east of the site, placing some distance between the Marine Farm and these boats. Additionally, commercial boat operators are deemed as having reduced viewer sensitivity. In contrast, viewers from recreational fishing vessels are likely to have mixed sensitives. Recreational fishers may enjoy visual amenities as part of their fishing experience. However, marine farms can also result in increased fishing opportunities, helping to reduce potential visual effects. In addition, there will be visual effects from the vessels tending the Marine Farm. It is expected that one or two vessels will service the farm at a

		time. A barge servicing the Marine Farm would not be an unexpected feature as vessels are a common inclusion in the visual composition of the Firth. Overall, effects from this viewpoint are assessed as low-moderate (*Figure 27*).
VP7: 400m north of the site	**LM**	From this close distance to the proposal it is anticipated that in optimal viewing conditions the buoys will be highly visible and that it will be possible to distinguish the individual buoys within the Marine Farm. However, due to the low angle of view from within a boat it is unlikely that it will be possible to see the entire expanse of the Marine Farm. At night navigational lights on the Marine Farm will be visible, however, the scale of the night landscape will help to absorb their presence, as will the existing lights on the mainland (such as at Orere Point). Effects on visual amenity will be reduced by the existing character of the wider context, with modifications visible from the site including pastoral farming on the surrounding terrestrial areas. Visual effects will be further reduced by the low-lying nature of the site, and the low angle of viewing which reduces the ability for the entire Marine Farm to be seen. Overall, effects from this viewpoint are assessed as low-moderate (*Figure 28*).
Ponui Island		
VP8: Eastern coast of Ponui Island	**VL**	At the closest point Ponui Island is approximately 4km from the western edge of the Marine Farm. It is likely that the Marine Farm will be visible from the eastern side of Ponui Island, although not highly distinguishable. At Wyuna Bay the most distant mussel farms on the eastern side of Motukopake Island are 3.5km away, a similar distance as the Marine Farm from Ponui Island. At night the lights from Wyuna Bay to Motukopake Island were visible, however, they were not visually prominent. Although the four cardinal lights on the Ponui Marine Farm will have a brighter shine distance of 4nm (brighter than the Wyuna Bay farm lights which have a shine distance of 1nm), due to the low number of these brighter lights and the distance of the farm from Ponui Island it is anticipated that navigational

		lighting on the proposed Marine Farm will be visible but is likely only to be seen as unobtrusive intermittent blink in the distance. This distance, combined with the fact that there are no public views from Ponui Island (as the island is privately-owned), and dwellings are on the western and southern side of the island, significantly reduce the potential visual effects from Ponui Island of the Marine Farm. Overall, effects from this viewpoint are assessed as very low (*Figure 29*).
Hunua Ranges		
VP9: Orere Point	**VL/no change**	Significant distance will result in a negligible visual change. In optimal viewing conditions the Marine Farm is highly unlikely to be seen from this far distance of approximately 10km. Overall, effects from this viewpoint are assessed as very low/no change (*Figure 30*).
Coromandel Range		
VP10: Wilson Bay from State Highway 25	**VL/no change**	Significant distance will result in a negligible visual change. In optimal viewing conditions the Marine Farm is highly unlikely to be seen from this distance of approximately 15km. Overall, effects from this viewpoint are assessed as very low/no change (*Figure 31*).
VP11: Wilson Bay lookout from State Highway 25	**VL/no change**	Significant distance will result in a negligible visual change. In optimal viewing conditions the Marine Farm is highly unlikely to be seen from this far distance of over 15km. Overall, effects from this viewpoint are assessed as very low/no change (*Figure 32*).

Figure 22: Photo taken from boat approximately 14.3km north of the site from an identified shipping route, looking south towards the site

Figure 23: Photo taken from boat approximately 3.7km north of the site from an identified shipping route, looking south towards the site

Figure 24: Photo taken from boat approximately 3.5km north-east of the site, looking west across the site towards Ponui Island

Figure 25: Photo taken from boat approximately 1.5km north-east of the site, looking west across the site towards Ponui Island

Figure 26: Photo taken from boat approximately 800m north-east of the site, looking west across the site towards Ponui Island

Figure 27: Photo taken from boat approximately 400m north-east of the site, looking west across the site towards Ponui Island

Figure 28: Photo taken from boat approximately 400m north of the site, looking south across the site

Figure 29: Photo taken from the east coast of Ponui Island, looking east towards the site

Figure 30: Photo taken from Orere Point, looking north towards the site

Figure 31: Photo taken from State Highway 25 at Wilson Bay, looking west towards the site

Figure 32: Photo taken from State Highway 25 at Wilson Bay lookout, looking west towards the site

172. As discussed above, there are a range of factors which can influence the level of apparent visual change, but in this case the greatest influences are proximity of the viewer and the dominance of the features within the existing context.

Visualisation

173. A visualisation of the farm extent has been prepared to help illustrate the described visual effects. The visual simulation is from an aerial perspective looking west across the Marine Farm towards Ponui Island. It was relevant to depict the site location in relation to the island as this is the closest landform to the Marine Farm. The visualisation can be found in, *Attachment 2 – Dwg J7-2-13*.

174. The visualisation was prepared using a contour site model of Ponui Island and locating the Marine Farm within the site model using the GPS coordinates of the four corners of the application site. The extent of the Marine Farm is indicated by a black outline. The site model and farm were then simulated to match the perspective of the photograph that was selected for the visual simulation depicting the existing area.

~~87.~~175. No visualisations were prepared to illustrate the farm location from on-water views as it is clear that the proposal will form a prominent part of the view for those in close range to the spat farm.

~~88.~~176. It is likely that the visual effects of the actual proposal will be lower than indicated by the perimeter line in the visualisation as the longlines and buoys will be partially submerged beneath the water's surface. The simulation clearly illustrates the isolation of the Marine Farm from landforms and, therefore, land-based views are distant, with the change in visual effects likely to be low. In addition, the scale of the receiving environment is large and can absorb the proposal visually.

~~89.~~177. Navigational safety requirements will necessitate cardinal lights on each corner of the Marine Farm, as well as special lights in the middle of each side of the farm. I have observed the lights at night of the mussel farms off the elevated northern coast of Wyuna Bay, in Coromandel. The most distant farms on the eastern side of Motukopake Island are around 3.5km away. While the lights from Wyuna Bay to Motukopake Island were visible they were not visually dominant. The farm lights at Wyuna Bay have a shine distance of 1nm. This is equivalent to the side lights on the Marine Farm but less bright than the four cardinal lights of 4nm. However, the increased brightness of the cardinal lights required on the Marine Farm will be counter-posed by the distance of the Marine Farm from terrestrial viewpoint. As such, it is considered that the view of the navigational lighting from the land will not be obtrusive. It is assessed that the navigational lighting will have a very low effect on the darkness of the night sky in the Firth from land-based viewpoints due to the distance from the site, and the infrequency of the navigational lights.

~~90.~~178. There will also be an effect from vessels servicing the Marine Farm, however, this increase is only very small in the scale of current vessel use in the Firth. At most there will be two servicing vessels at the Marine Farm at one time. It is considered that a barge servicing the Marine Farm would not be an unexpected feature as vessels are a common inclusion in the visual composition of the Firth.

~~91.~~179. Effects on visual amenity at this scale are assessed as being very low even in optimal viewing conditions. Visual effects will be further reduced at times depending on the weather, sea and light conditions, sun, angle, density of buoys and presence of vessels.

Cumulative effects

~~92.~~180. Cumulative effects are considered to evaluate the potential effect of the current application in conjunction with existing and consented aquaculture activities, along with other existing modifications. Cumulative effects can impact landscape character, natural character, and visual amenity.

181. The low-lying nature of the marine farm structures and the limited viewpoints from which views of the entire expanse of the marine farms are attainable diminish the potential cumulative effects of the proposal on landscape and natural character, as well as visual amenity values.

182. The closest marine farms to the application site include Rangipakihi marine farm (7km away at its closest point) and the consented Wilson Bay 'Area B' site (around 10km away). Both these farms are located south-east of the Marine Farm. To the east of the application site the nearest marine farm is located approximately 13km away and is near Manaia Harbour. There are several marine farms in this general area dotted along the coastal edge of the Waikato Regional Council's waters (including around Coromandel and the small offshore islands in this area, *Figure 33*).

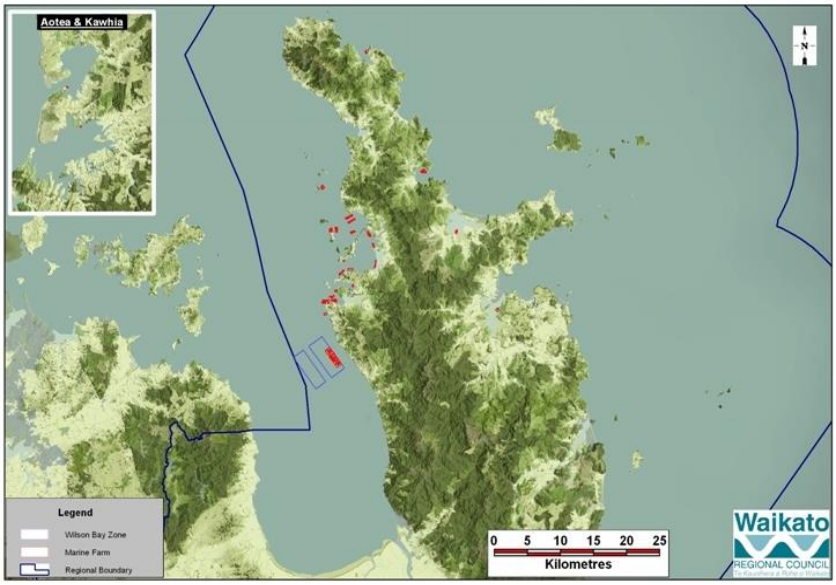

Figure 33: Consented marine farm map (sourced from the Waikato Regional Council)

Landscape character cumulative effects

183. The scale of the Marine Farm is large when compared to most farms in the broader context (the exception being the Wilson Bay consented area). However, the proposal is surrounded by water and situated away from land, and in relation to the overall scale of the Firth of Thames waters the site is small. In addition, the Marine Farm is relatively isolated from other marine farms.

184. The assessment has considered the Marine Farm in relation to existing modifications on surrounding terrestrial areas, as well as with existing marine farms. Ponui Island is recognised as an ONL and the eastern side of the island is identified as having HNC. Existing modifications in the form of pasture are present on the eastern side of the island. Together the Marine Farm and pastoral area have the potential to reduce wildness qualities in the area. Even so, the Marine Farm is consistent with the "working landscape" of the surrounding landforms and is such a small fraction of this modified landscape, as well as small in the scale of the broader context overall, that the application site can be accommodated in addition to existing levels of modification. Furthermore, the distance between the Marine Farm and surrounding landforms contribute to reducing potential cumulative effects.

185. The proposal will constitute only a small change to the elements and patterns which make up the landscape and seascape setting when assessed within the broader context. However, when considering the sensitivity of Ponui Island and the presence of existing modification on the island it is assessed that the proposal will result in low cumulative effects on the landscape character of the broader context.

186. There are no other consented marine farms or terrestrial modifications within the site and localised area, therefore, there will be very low/no cumulative effects.

187. In summary, it is considered that the Marine Farm will result in low cumulative effects on the broader context's landscape character and very low/no cumulative effects on the landscape character of the site and localised vicinity.

Natural character cumulative effects

188. As noted under "Landscape character cumulative effects", the proposal is relatively isolated from other marine farms and is some distance from land modifications.

189. Marine ecologists assessed that the Marine Farm would not have adverse cumulative effects on natural science attributes.[29]

190. The eastern side of Ponui Island is recognised as having HNC, however, the island still has modifications in the form of pastoral land. Despite its relatively small scale in its wider expansive setting, the Marine Farm together with the island's pastoral land cover will cumulatively lessen perceived naturalness in the area. Even so, there is a relatively substantial distance between the site and the island (4km), reducing the potential of cumulative effects on natural character.

[29] 4Sight Consulting, 2018

191. It is considered that the existing predominance of the perceived natural environment over "development" will remain even with the addition of the Marine Farm in conjunction with existing modifications in the broader context. Taking into consideration the sensitivity of Ponui Island to development, cumulative effects on natural character at the broader scale are assessed as low.

192. There are no other consented marine farms or terrestrial modifications within the site and localised area. Marine ecologists assessed that the Marine Farm would not have adverse cumulative effects on natural science attributes.[30] It is considered that cumulative effects on natural character are assessed as very low/no cumulative effects due to there being no natural science cumulative effects and because there is an absence of other manmade structures in the area.

193. In summary, it is considered that the Marine Farm will result in very low cumulative effects on natural character at the broader scale, and very low/no cumulative effects at the site and localised vicinity.

Visual amenity cumulative effects

194. Visual amenity cumulative effects can occur when farms are seen:

- simultaneously (where two or more marine farms are seen at the same time from a viewpoint);
- successively (where two or more marine farms are present in views from the same viewpoint but cannot be seen at the same time as the viewer needs to turn their head); or
- sequentially (where two or more marine farms are seen one after the other as a viewer moves through the seascape/landscape but are not present in views from the same viewpoint and cannot be seen at the same time even if the observer turned their head and moved around their arc of view).

195. The closest point of the application site to the Rangipahiki marine farm (the nearest marine farm to the proposal) is approximately 7km. At this distance it would not be possible to see the farms simultaneously.

[30] 4Sight Consulting, 2018

Figure 34: Looking south-east across the proposal site towards the Rangipahiki marine farm and Wilson Bay

196. The distance between the application site and the other marine farms, and particularly the limited visibility of the Marine Farm from land-based locations (the nearest land-based views of the Marine Farm are from Ponui Island, which is a private island with no public viewpoints), results in the proposed farm avoiding cumulative effects when viewed from a single location. This evaluation is also true for potential visual cumulative effects at night as a result of navigational lights. The lights of the Marine Farm will constitute only a very small increase to existing lighting effects on the water. The navigational lights of the Marine Farm will generally produce a sequence of flashes (only the northern cardinal light will flash continuously) which will typically be viewed from distant locations within an expansive context, and not near other lights. Overall, simultaneous cumulative effects on visual amenity are assessed as very low/no cumulative effects.

197. Taking the halfway point between the proposal and the Rangipahiki marine farm, theoretically the closest viewing distance of both farms simultaneously would be 3.5km and would be at water level. The viewer would need to turn their head to see both farms from this position (with the proposed Marine Farm located to the north and the Rangipahiki farm situated to the south). Even in optimal viewing conditions it is unlikely that the buoys would be any more than faintly discernible

at this distance, if visible at all. If a boat were to travel closer to one of the farms, the farm further away would become even less visible, likely to a point of not being visible at all. Therefore, successive cumulative effects on visual amenity are considered as very low.

198. The Marine Farm is 7km from the closest marine farm and 4km from the nearest land area with modifications (Ponui Island). People travelling by boat through the Firth of Thames will experience some sequential cumulative effects as other marine farms and land modifications will be visible when journeying towards the proposal site. However, due to at least a 7km distance between the proposal and other marine farms, and the mid-water location of the Marine Farm, sequential cumulative effects on visual amenity are assessed as being low.

199. In summary, it is considered that the Marine Farm will result in very low/no cumulative effects on visual amenity when simultaneous views are considered, very low cumulative effects when viewed successively, and low cumulative effects when viewed sequentially.

SUMMARY OF EFFECTS

200. The following tables summarise the existing landscape and natural character, and visual amenity of selected viewpoints, as well as the effects of the proposal on landscape and natural character, and visual amenity for the broader context and the site and localised vicinity.

Table 6.0 Existing landscape and natural character

Scale	Existing landscape character	Existing natural character	Existing visual amenity
Broader context	H	H	MH-H
Site and localised vicinity	M	MH	

Table 6.1 Landscape, natural character and visual effects

Scale	Landscape character effects	Natural character effects	Visual amenity effects
Broader context	VL	VL	VL/no change - LM
Site and localised vicinity	LM	L	

Table 6.2 Cumulative effects for landscape and natural character

Scale	Cumulative landscape character effects	Cumulative natural character effects

Broader context	**L**	**L**
Site and localised vicinity	**VL/no effects**	**VL/no effects**

Table 6.3 Cumulative effects for visual amenity

Type of effect	**Simultaneous**	**Successive**	**Sequential**
Visual amenity	**VL/no effects**	**VL**	**L**

ASSESSMENT OF EFFECTS AGAINST THE PLANNING FRAMEWORK

201. The following section assesses the effects of the proposal against relevant statutory and non-statutory documents.

RMA

93.202. The preservation of natural character (Section 6a) of the coastal environment is directed as a matter of National Importance under the RMA. The application site is within the Coastal Environment and the effects on natural character are best considered under the policy framework of the NZCPS. As discussed in the analysis earlier in this assessment, effects on natural character have been assessed as being very low for the wider Firth of Thames and low for the site and its localised vicinity (refer to "Natural character effects" above and "NZCPS" below).

94.203. It is also noted that the application site has not been identified as an outstanding natural feature or landscape and is relatively distant to the nearest ONF or ONL (in the AUP). This application for resource consent therefore does not trigger Section 6b.

95.204. The maintenance and enhancement of amenity values of natural and physical resources outlined in Section 7c is addressed through the landscape character and visual effects assessment provided in this report.

NZCPS

96.205. The application site is within the Coastal Environment and is required under Policy 13(1)(a) and 15(a) to 'avoid adverse effects' on areas of ONCs, ONFs and ONLs. The adverse effects associated with the application are considered avoided within the 'Outstanding Natural Character' and 'Outstanding Natural Features and Landscapes' areas of the coastal environment due to the distance (a minimum of 3km) which exists between the application site and the areas addressed by the fore-mentioned policies.

~~97.~~206. It is also required by the NZCPS under Policy 13(1)(b) and Policy 15(b) to 'avoid significant adverse effects' on natural character, and natural features and landscapes (other than those classed as outstanding). This assessment has concluded that potential adverse effects of the Marine Farm will be no more than low adverse. As such, the adverse effect is not considered to be significant and the above policies are considered to have been achieved.

HGMPA (Hauraki Gulf Marine Park Act)

~~98.~~207. Section 7 of the HGMPA recognises the national significance of the Hauraki Gulf and emphasises the life-supporting capacity of the Gulf. The Marine Farm has the potential to enable the social and economic wellbeing of people and communities of the Hauraki Gulf, including meeting the aquaculture aspirations of Ngai Tai ki Tamaki. The Marine Farm structures have the potential to act as a floating reef, providing habitat for other fish species, and increasing fishing opportunities. For these reasons, the proposed Marine Farm is deemed be in-keeping with the objectives of Section 7.

~~99.~~208. Section 8 of the HGMPA identifies management objectives relating to environmental. Māori and community matters. The protection of kaimoana is one objective. There will be no adverse effects on this resource as a result of the Marine Farm due to the distance of the proposal from the shore and the negligible impact on nutrients in the water column. It is also considered that the application meets the policy directive of sub-section 8(e), which recognises the importance of the social and economic well-being of the people and communities of the Hauraki Gulf. It is considered that the Marine Farm is consistent with the HGMPA and meets the Act's objectives.

AUP

~~100.~~209. Based on the assessment in the above section ('NZCPS'), I consider that potential landscape conflicts addressed by D10.2, D10.3, D11.2 and D11.3 have been avoided or minimised due to the significant separation distance between the Marine Farm and the ONF, ONL, ONC and HNC boundaries, the low-lying nature of the buoys, and the small scale of the Marine Farm in relation to the expansive surrounding seascape. The proposal further satisfies the policy framework due to the following:

- Adverse effects on the values of ONCs, HNCs, ONFs and ONLs are avoided.
- Effects on visual amenity and natural character are not considered to be significant.

- Mr Stephen Brown, Principal Marine Ecologist at 4Sight Consulting, has concluded that ecological effects on the benthos and water column beyond the farm are expected to be minor.
- The effect on perceptual qualities of coastal natural character are assessed as no more than low (less than minor).
- Visual effects are considered as no more than low.
- The proposal will not result in physical effects on key landscape elements, features and patterns.
- The proposal will not result in cumulative effects.

~~101.~~210. There are specific aquaculture provisions (F2.15.) which are targeted at enabling the development of activities, such as the proposal in this assessment, with the direction to avoid or minimise conflicts with other uses or values. It is considered that the Marine Farm will not cause any significant adverse effects to landscape and natural character, or visual amenity. In addition, as mentioned above, adverse effects the values of ONCs, HNCs, ONFs and ONLs are avoided.

MSP (Marine Spatial Plan)

~~102.~~211. The MSP was written as part of the "Sea Change – Tai Timu Tai Pari" project established in 2013. The MSP was authored by a Stakeholder Working Group whose members have a diverse range of interests including mana whenua, environmental, and aquaculture.

~~103.~~212. Part of the MSP objectives include ensuring marine farms in the Gulf are appropriately located and identifies seven areas where mussel farming is considered appropriate for future development as part of a preliminary guide. Identified locations of proposed mussel farm areas are depicted in Table 5.1, Map 5.1 and in Appendix 2 (Map A2.2, *Figure 35*) of the MSP. In these tables and map it appears that the application site is within (or within very close to) site 12 'Ponui'.

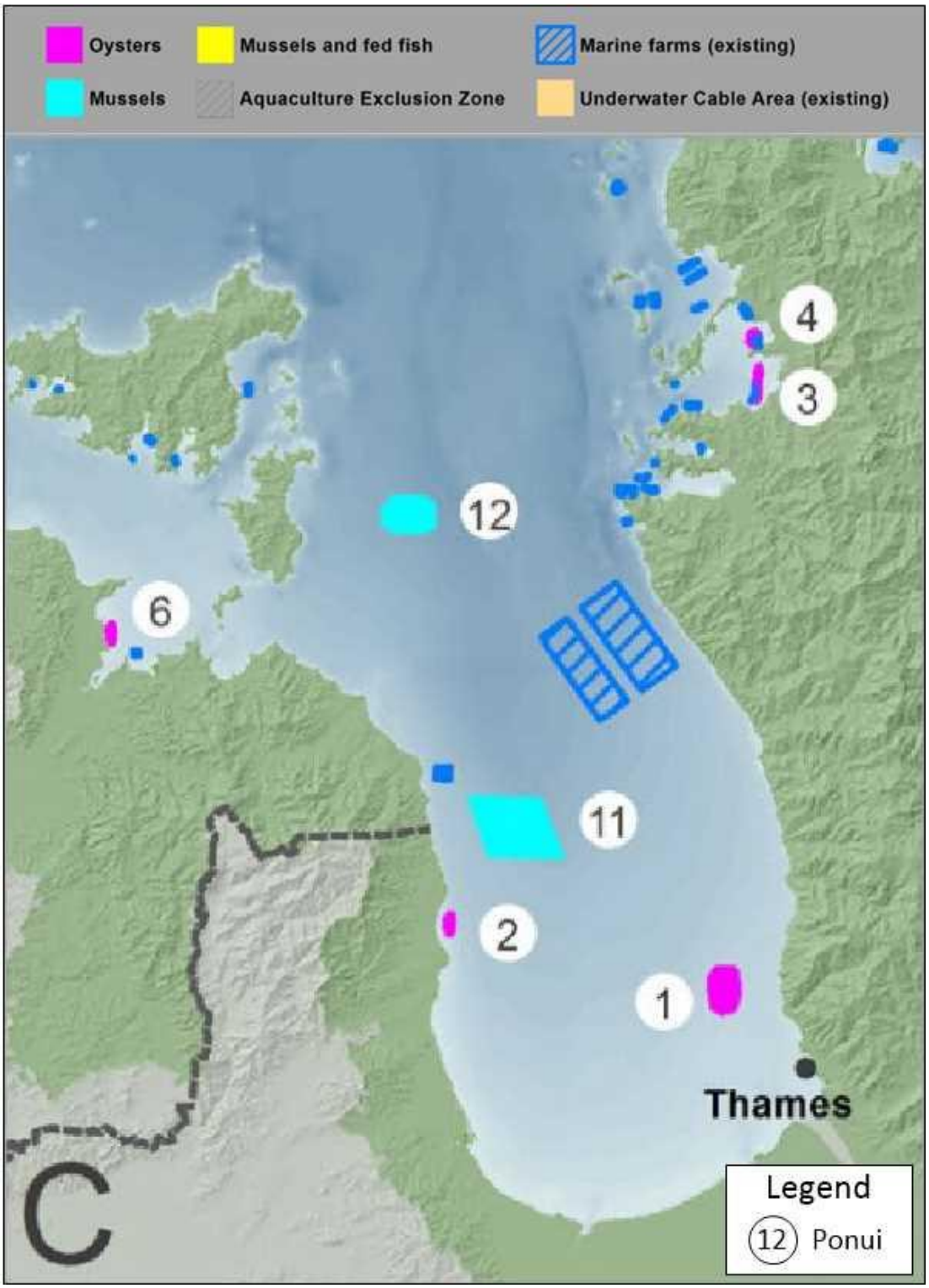

Figure 35: Hauraki Gulf Marine Spatial Plan Map – Locations of proposed aquaculture exclusion areas (extract)

~~104.~~213. The MSP states that protection of areas with high landscape and natural character values can be achieved through locating marine farms in appropriate areas that avoid adverse effects on these values.

~~105.~~214. The MSP is a non-statutory document but must still be considered as it gives effect to section 7 and 8 of the HGMPA, which have the effect of the NZCPS.

~~106.~~215. Based on the assessment contained in this report, I consider that the Marine Farm being considered in this application will meet the objectives identified in the MSP and will be appropriately located within the Gulf in terms of landscape and natural character, and visual matters.

SUMMARY AND CONCLUSION ON EFFECTS

~~107.~~216. Adverse effects on landscape and natural character of the broader context overall will be very low. At the site and in its localised vicinity adverse effects on landscape character will be low-moderate and effects on natural character will be low. Adverse effects on visual amenity will vary across the different viewpoint that have been assessed from very low (no change) to low-moderate. Cumulative effects will be very low/no change to low.

~~108.~~217. Adverse effects from the proposal were assessed as being reduced due to the reasons listed below (these were considered in the assessment of effects):

- The existing benthic environment is degraded, and it is not an ecologically sensitive site. Additionally, the Marine Farm could have potential benthic benefits within its vicinity.
- The ecological assessment found that effects on natural science values are expected to be minor or less than minor.
- The presence of existing modifications both on the surrounding coastline and in the Firth waters.
- The proposal is in-keeping with the "working landscape" already present in the area, both in the water and on surrounding coastal terrestrial areas.
- The scale of the setting and the surrounding waters are capable of absorbing the Marine Farm in its mid-water location.
- Views of the Marine Farm will be very distant for most viewers, and overall there will be relatively low numbers of viewers.
- Most viewers gaining up-close views of the proposal (on-water) are likely to have reduced sensitivity to the proposal and views will be from a non-elevated position, reducing effects.
- The application site is sufficient distance from other marine farms and from the coastal edge, thus reducing cumulative effects.
- Written consent for the site's location has been given by Ngai Tai ki Tamaki.

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ATTACHMENT 1

Methodology – visual amenity effects for marine farms

1. The degree of visual change experienced from different viewpoints can be influenced by several factors such as; viewing elevation/direction, screening, scale of the proposal, proximity, buoys size/colour/buoyancy, colour/texture of the backdrop, lighting conditions, choppiness/calmness of the water. It is considered that these factors listed above, combined with the dominance of the features within the existing context, are the key factors influencing the potential for adverse effects that the application may have on views.

2. An assessment by landscape architect Mr Graham Densem looked at the distance/effect ratio for mussel farms.[31] Mr Densem concluded that significant adverse visual effects can occur for views from sea-level up to 500m from a marine farm. When the viewer is elevated, such as looking down from a point on land, this distance can be up to 1km. Over these distances, the effects decrease to the point where no effect occurs at distances over 1.3km for sea-level views and 2.5km from elevated views (Table A).

3. A distance scale[32] (Table B and C) prepared by Boffa Miskell in relation to salmon farms identifies that farms 5km and beyond were 'partially visible or minor part of the view' for elevated/land-based views, and that 3km and beyond 'components became difficult to see' for water-based views. A distance scale to consider the current application can be useful, however, the observations in the salmon assessments related to a raised structure whereas floating buoys of the marine farms will be far less prominent.

Table A: Mr Densem's visual effects for mussel farms

Effect	**From the water**	**From elevated position**
Significant effect	<500m	<1km
Some effect	500 – 1km	1 – 2km
No effect	>1.3km	>2.5km

Table B: Boffa Miskell Limited's visual effects of salmon farms from the water

Potential effects	**Distance**
Extremely Visible/dominant	<500m
Very visible/prominent	500m – 1km
Visible	1km – 2km
Partially visible or minor part of the view	2km – 3km

[31] Environment Court, 1998

[32] Boffa Miskell Limited, 2017 and Boffa Miskell Limited, 2011

Components become difficult to see	>3km

Table C: Boffa Miskell Limited's visual effects of salmon farms from elevated/land-based views

Potential effects	**Distance**
Extremely visible/dominant	<1km
Very visible/prominent	1km – 2.5km
Visible	2.5km – 5km
Partially visible or minor part of the view	>5km

4. Overall, both Mr Densem and Boffa Miskell Limited come to similar conclusions. The above tables provide a helpful point of reference for this assessment to reinforce first-hand experience gained from the site visits. The terms used in Mr Densem's ratios (such as 'significant') should not be compared to those used in the methodology of this report, and they merely provide an added reference for this assessment.

5. In an application for a mussel farm in Admiralty Bay, Marlborough Sounds, that was presented to the Environment Court, the Court finding was that:

   "We think he is almost certainly right in saying that it is virtually impossible to see a mussel farm at 5km from water level and is probably correct in saying that a mussel farm viewed from water level at a distance of 1.5km would be unlikely to produce a significant effect".[33]

6. With all of the above in mind, Hudson Associates have developed a visibility table (Table D) for both land and water based viewpoints, in order to provide a guideline for 'visibility' of mussel farms in good conditions. This is based on professional experience gained on numerous marine farm site visits conducted over the years.

7. It is important to recognise that visibility does not necessarily result in adverse visual effects. Adverse effects can arise when the proposal results in a magnitude of change which is inappropriate for the setting. Additionally, it should be noted that the sensitivity of the viewing audience must also be considered alongside the magnitude of visible change when determining the overall significance of visual effects.

8. It is generally considered that (with optimal viewing conditions) the entire expanse of a mussel farm is clearly visible (including buoys, servicing vessels and potentially

[33] Environment Court, 2005

lines) at 2.5km from an elevated position such as a cliff top. However, once farms are around 3.5km away they are still distinguishable but not prominent.

9. From closer to water level (e.g. the shoreline or a boat) a mussel farm around 1.5km away is visible, with the buoys and servicing vessels being apparent but generally the full expanse of the farm is not visible. From this lower elevation it is much harder to distinguish the farms if there is a backdrop of land behind the farm as they tend to blend in with the colours and textures of the landform, while weather and light conditions have an important influence on visibility.

Table D: Hudson Associates Visibility Table

Visibility	**Water**	**Land**
Very High	<500m	<1km
High	<500m	<1km
High-Moderate	<500m	<1km
Moderate	>500m-1km	>1km-2km
Moderate-Low	>1-2km	>2km-3km
Low	>2-3km	>3km-5km
Very Low	>3km	>5km