

Point Lillias Aquaculture Fisheries Reserve Management Plan 2026



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Child Safe Statement

The VFA is committed to the Victorian Child Safe Standards and is focused on creating a safe environment that fosters the protection of all children to keep them safe from harm.

Acknowledgement of Country

This document acknowledges the Wadawurrung Traditional Owners of the Country in which the Point Lillias Aquaculture Fisheries Reserve is situated and recognises their deep connection to their ancestral lands and waters.

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Executive summary

The purpose of the Point Lillias Aquaculture Fisheries Reserve Management Plan (the Plan) is to specify the objectives, strategies and actions for managing activity within the Point Lillias Aquaculture Fisheries Reserve (Point Lillias AFR). The Plan has been prepared in accordance with the requirements of the *Fisheries Act 1995* (Fisheries Act) and prescribes management arrangements for the Point Lillias AFR within an ecologically sustainable framework.

The Point Lillias site was declared an aquaculture fisheries reserve under the provisions of the Fisheries Act on 23 August 2007 and reserved under *the Crown Land (Reserves) Act 1978* for the purposes of aquaculture on 15 May 2025. The Point Lillias AFR is a 38.76 hectare land-based site located at the southern end of the Point Lillias peninsula on the northern shore of the Geelong Arm in Port Phillip Bay, Victoria. It is a 'greenfield' site in that there has been no development on the site to date. The Point Lillias AFR does not include the abutting Avalon Aquaculture Fisheries Reserve (Avalon AFR) to the north, the vacant Crown land to the south nor the coastal shoreline.

The scope of the Plan is limited to the Point Lillias AFR and its immediate environs.

The vision of the Plan is:

“to develop an environmentally sustainable and economically viable aquaculture industry at the Point Lillias Aquaculture Fisheries Reserve that recognises and respects the cultural heritage of the site while contributing a commercial supply of high quality seafood.”

The Plan has four management objectives to assist in achieving this vision:

1. Protect Aboriginal cultural heritage and values;
2. Maintain ecological health;
3. Facilitate economic viability; and
4. Maintain social licence.

The Plan prescribes a suite of strategies to achieve these objectives including:

- Ensure that the cultural values of the Point Lillias AFR are not compromised as a result of aquaculture activity within the Point Lillias AFR;
- Ensure that the legislative obligations to the Wadawurrung Traditional Owners are met whilst managing the Point Lillias AFR;
- Ensure the ecological health of waters and land adjacent to the Point Lillias AFR are not jeopardised as a result of aquaculture activity within the Point Lillias AFR;
- Manage aquaculture activity within the Point Lillias AFR so that ecological impacts are minimised and localised;
- Facilitate economically viable and sustainable commercial aquaculture production within the Point Lillias AFR;
- Encourage aquaculture investment within the Point Lillias AFR by providing secure tenure over the site;
- Recognise the rights and safety of other users of the environment of the Point Lillias AFR; and
- Provide information on the use of a community resource by the aquaculture industry (excluding commercial-in-confidence data).

The Plan will provide the basis for the management of the Point Lillias AFR until a new Plan is declared.

1. Introduction

Overview

This management plan (the Plan) applies to the Point Lillias Aquaculture Fisheries Reserve (Point Lillias AFR), a 38.76 hectare land-based site located at the southern end of the Point Lillias peninsula on the northern shore of the Geelong Arm in Port Phillip Bay, Victoria.

The Victorian Fisheries Authority (VFA) has prepared the Plan in accordance with Part 3 of the *Fisheries Act 1995* (Fisheries Act). It comes into effect following its declaration in the Victoria Government Gazette and remains in place until a new Plan is declared or is cancelled in accordance with the requirements of the Fisheries Act.

Under the Fisheries Act, the Minister may amend a management plan by notice published in the Victoria Government Gazette.

This Plan sets out a series of strategies and actions to achieve the management objectives for the Point Lillias AFR.

The Environment Conservation Council's Marine, Coastal and Estuarine Investigation

Marine aquaculture is the cultivation and harvesting (or farming) of fish, shellfish and other aquatic species, utilising seawater as the growing medium. There are three categories of marine aquaculture, each with specialised requirements and different impacts on the environment: land-based aquaculture, extensive marine aquaculture (generally shellfish) and intensive marine aquaculture (generally finfish).

Historically, a major factor identified as limiting the development of marine aquaculture in Victoria was a lack of access to suitable sites in marine waters.

In September 1997, the Victorian government formally requested that the Environment Conservation Council (ECC) undertake an investigation of marine, coastal and estuarine areas in Victoria. The Terms of Reference required the ECC to recommend options for the establishment of at least one marine park and at least one marine aquaculture area.

Following extensive research, consultation and consideration of the environmental, social and economic implications, the ECC prepared recommendations for a system of marine protected areas as well as areas suitable for marine aquaculture in a final report (ECC 2000).

The ECC recommended 12 marine aquaculture zones, including two land-based zones (Avalon and Point Lillias). The ECC also recommended that management plans be prepared for each zone.

The Victorian government endorsed all of the recommendations of the ECC for marine aquaculture.

2. Point Lillias Aquaculture Fisheries Reserve

The Point Lillias Aquaculture Zone was declared a fisheries reserve by Order in Council under s88(1) of the Fisheries Act for the purpose of aquaculture. The Order took effect on the date that the declaration was published in the Victoria Government Gazette (23 August 2007).

The Point Lillias Aquaculture Reserve was reserved for public purposes (aquaculture) by Order in Council under s4(1) of *Crown Land (Reserves) Act 1978*. The Order took effect on the date that the declaration was published in the Victoria Government Gazette (15 May 2025).

Attributes of the Point Lillias Aquaculture Fisheries Reserve

The Point Lillias AFR is an irregular shaped area of land located at the southern end of the Point Lillias peninsula on the northern shore of the Geelong Arm of Port Phillip Bay, Victoria. It is approximately 13km southeast of Lara and 7km south of Avalon Airport (Figure 1).

The Point Lillias AFR is 38.76 hectares and is comprised of undeveloped and unoccupied coastal Crown land. The site is relatively flat with a maximum elevation of 3m. It is trisected by two open channels, the northerly one is a stormwater outlet while the southerly one is a seawater inlet into the adjacent Avalon Coastal Reserve. The stormwater outlet forms the lower reaches of an unnamed ephemeral creek.

The Point Lillias AFR consists of open paddocks, previously used as farmland and as a source of shell, topsoil and stone (Marshall and Walker 2011). The site is marked by extensive former topsoil borrow pits and more localised quarry pits where basalt rock has been removed. A former dam and a large quarry pit are located at the southern end of the AFR.

The Point Lillias AFR with the co-ordinates that define its boundaries are shown in Figures 2 and 3. The boundaries are based on channels, tracks and the coastline.

An assessment of the attributes of the Point Lillias peninsula, which includes the Avalon AFR and the Point Lillias AFR, was conducted as part of the Environmental Effects Statement for the proposed relocation of the Coode Island Chemical Storage Facility to Point Lillias in 1995 (Maunsell Pty Ltd 1995). A summary of information from Maunsell Pty Ltd (1995), as well as from other historical sources, is provided in Appendix 1.

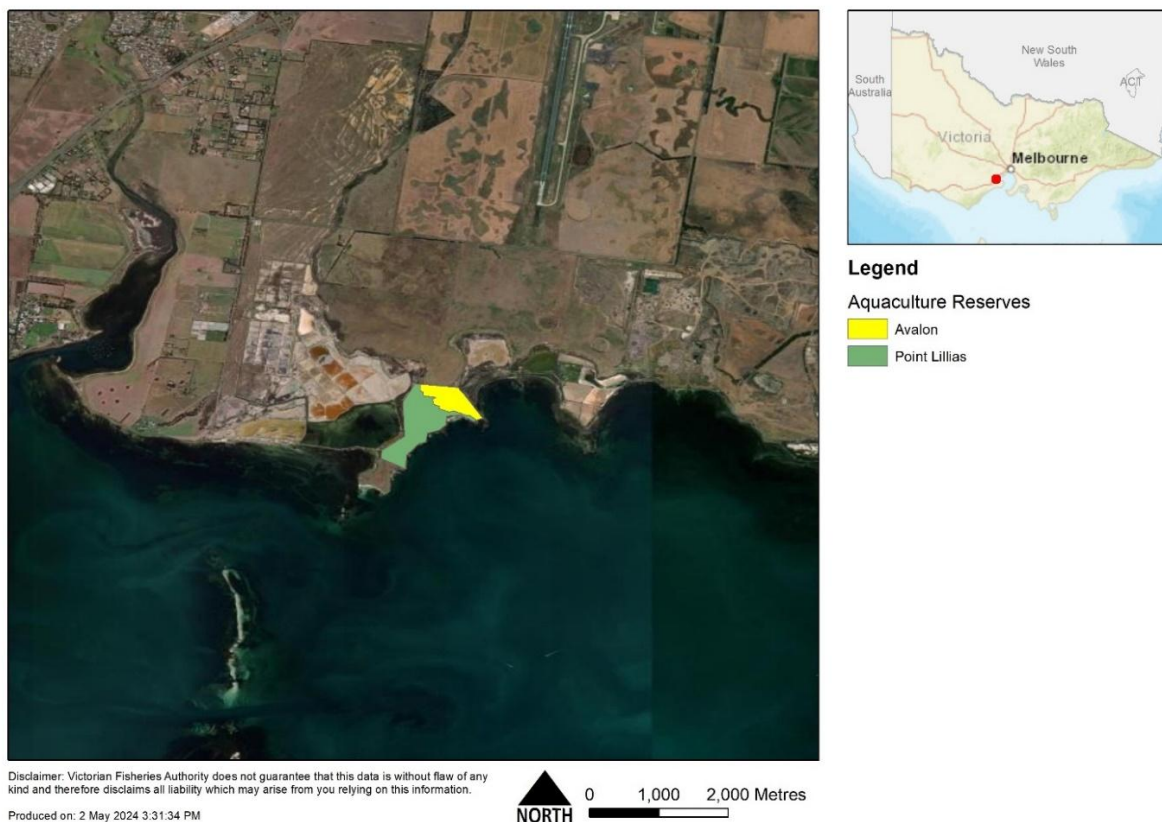
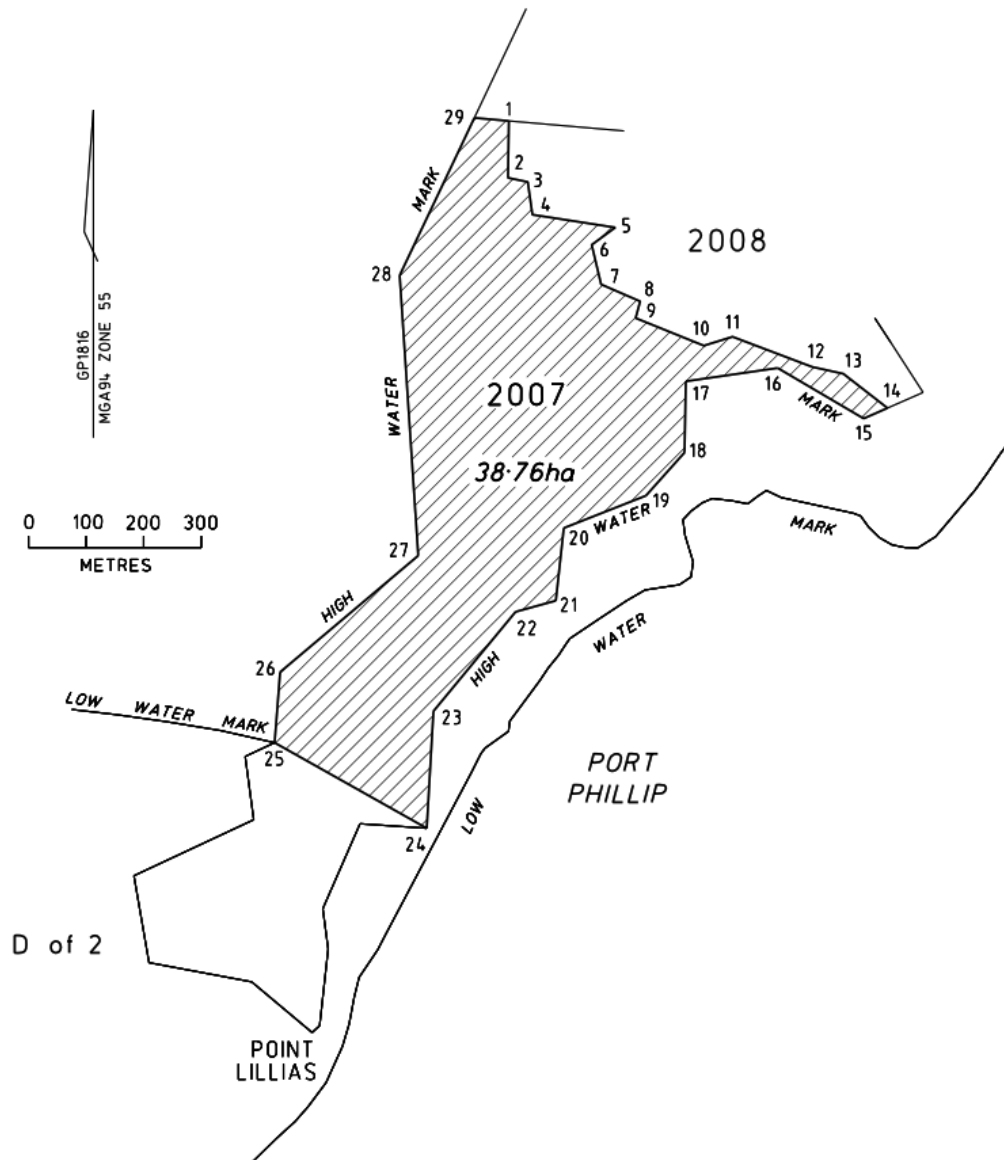


Figure 1. The Point Lillias peninsula, which includes the Avalon (yellow) and Point Lillias (green) Aquaculture Fisheries Reserves.

LAND REGISTRY



FISHERIES RESERVE AT POINT LILLIAS (C.A.2007) PARISH OF WOORNYALOOK COUNTY OF GRANT		
<i>Prepared from</i> V.D.P., PARISH 3891 AND GPS SURVEY BY TOM FREEMAN		P.MILLMAN 16/01/2008 for JOHN TULLOCH SURVEYOR GENERAL VICTORIA
Corr. No. PO-14389	Drawn POB 22-11-2004	GP 1816

Figure 2. Point Lillias Aquaculture Fisheries Reserve (Crown Allotment 2007).

PT	GDA 94 SOUTH	GDA 94 EAST	MGA 94 ZONE 55 EASTING	MGA 94 ZONE 55 NORTHING
1	38° 04.657'	144° 28.971'	276233	5782501
2	38° 04.711'	144° 28.966'	276231	5782402
3	38° 04.715'	144° 28.991'	276325	5782395
4	38° 04.746'	144° 28.996'	276334	5782338
5	38° 04.760'	144° 27.034'	276477	5782316
6	38° 04.775'	144° 27.065'	276436	5782286
7	38° 04.813'	144° 27.075'	276453	5782217
8	38° 04.830'	144° 27.121'	276520	5782188
9	38° 04.845'	144° 27.115'	276513	5782159
10	38° 04.873'	144° 27.195'	276631	5782111
11	38° 04.885'	144° 27.229'	276681	5782127
12	38° 04.895'	144° 27.323'	276819	5782074
13	38° 04.903'	144° 27.359'	276873	5782082
14	38° 04.936'	144° 27.410'	276949	5782004
15	38° 04.944'	144° 27.382'	276908	5781986
16	38° 04.896'	144° 27.282'	276759	5782074
17	38° 04.905'	144° 27.173'	276600	5782051
18	38° 04.972'	144° 27.165'	276598	5781927
19	38° 05.011'	144° 27.121'	276531	5781852
20	38° 05.039'	144° 27.023'	276388	5781798
21	38° 05.107'	144° 27.011'	276375	5781670
22	38° 05.116'	144° 26.963'	276305	5781651
23	38° 05.207'	144° 26.863'	276163	5781479
24	38° 05.314'	144° 26.851'	276151	5781281
25	38° 05.233'	144° 26.663'	275872	5781424
26	38° 05.173'	144° 26.671'	275880	5781534
27	38° 05.061'	144° 26.849'	276135	5781749
28	38° 04.796'	144° 26.836'	276103	5782235
29	38° 04.653'	144° 28.929'	276232	5782506

Figure 3. GDA (Geocentric Datum of Australia) and MGA (Map Grid of Australia) co-ordinates that define the boundaries of Point Lillias Aquaculture Fisheries Reserve

Land and waters within and adjacent to the Point Lillias Aquaculture Fisheries Reserve

The Point Lillias AFR was reserved for the purpose of aquaculture under the Fisheries Act in 2007 and under *the Crown Land (Reserves) Act 1978* in 2025. There has been no development to date so the land remains undeveloped and unoccupied.

In the future, once the site has been leased for the purposes of aquaculture, other users will not be permitted within the site without authorisation under the Fisheries Act and the permission of the Crown land lease holder. The shoreline, which is outside the boundaries of the Point Lillias AFR can be utilised by the public.

To the north of Point Lillias AFR is the Avalon AFR, which is occupied by an aquaculture operation that commenced in 1998. The Avalon facility consists of buildings associated with site's operation located on the eastern boundary of the site, growing ponds and tanks in the centre of the site, as well as seawater pumps, pipelines and drainage channels for water transport to and from Port Phillip Bay. The facility uses decommissioned salt pans to the west and north-west as settlement ponds for the treatment of waste water. When in operation, seawater is pumped from Port Phillip Bay, through the facility, and back out to the bay via the Avalon Coastal Reserve, after treatment in the settlement ponds. The facility is not currently in operation but is expected to be utilised again in the future.

The Avalon Coastal Reserve surrounds the Point Lillias peninsula, extending along the coastline from Limeburners Lagoon to the edge of the Commonwealth Department of Defence facility at Point Wilson (Figure 4). *The Conservation Action Plan: Avalon Coastal Reserve*, which guides restoration of the area for the benefit of shorebirds and seagrass and saltmarsh habitats, was finalised by Parks Victoria and partners in June 2025 (Parks Victoria 2025)

Some parts of the Point Lillias AFR are within or are immediately adjacent to the Port Phillip (Western Shoreline) Bellarine Peninsula Ramsar Site (Figure 5), which extends from Point Cook to Lake Connewarre near Barwon Heads (Figure 6). The Point Lillias peninsula is located in the Point Wilson/Limeburners Bay section of the site. The Ramsar Convention is an international treaty that provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. Victoria has twelve Ramsar-listed wetlands. The Ramsar Convention obliges contracting parties to manage Ramsar sites in such a way as to maintain their ecological character equivalent to that at the time of listing. The definition of 'ecological character' is the 'combination of the ecosystem components, processes and benefits/services that characterise the wetlands' (Department of Environment, Land, Water and Planning 2018). The Port Phillip (Western Shoreline) Bellarine Peninsula Ramsar Site was listed in 1982.

The Department of Energy, Environment and Climate Action (DEECA) completed a detailed assessment of eleven wetland areas proposed for addition to Port Phillip Bay (Western Shoreline) and Bellarine Peninsula (PPB) Ramsar Site in 2022 with four areas being nominated for inclusion. Although the Avalon Coastal Reserve was not one of these four areas, it is expected to be formally nominated at a later date following an assessment of whether the 'ecological character' can be maintained into the future, given the impacts of climate change.

To the north of the Point Lillias peninsula is a large area that is an area earmarked for development as the Greater Avalon Employment Precinct (<https://vpa.vic.gov.au/project/greater-avalon-ep>).

Beneath the Point Lillias peninsula, there are geothermal resources that could be utilised by future aquaculture operations. Shallow ground (between 10 to 50m) temperatures remain a constant 18.5°C to 20°C, which is highly suitable for shallow Ground Source Heat Pump (GSHP) systems (Driscoll 2006). Water-to-water heat pumps can cool water during summer and warm it during winter, which is ideal for temperate species.

At greater depths (between 1,000 to 1,500m), groundwater temperatures range from 40°C to 60°C, which can be accessed via Hot Sedimentary Aquifers (HSAs) (Driscoll 2006). Passing this thermal energy through heat exchangers enables the cultivation of high-value warm-water species like barramundi.



Figure 4. The Avalon Coastal Reserve.

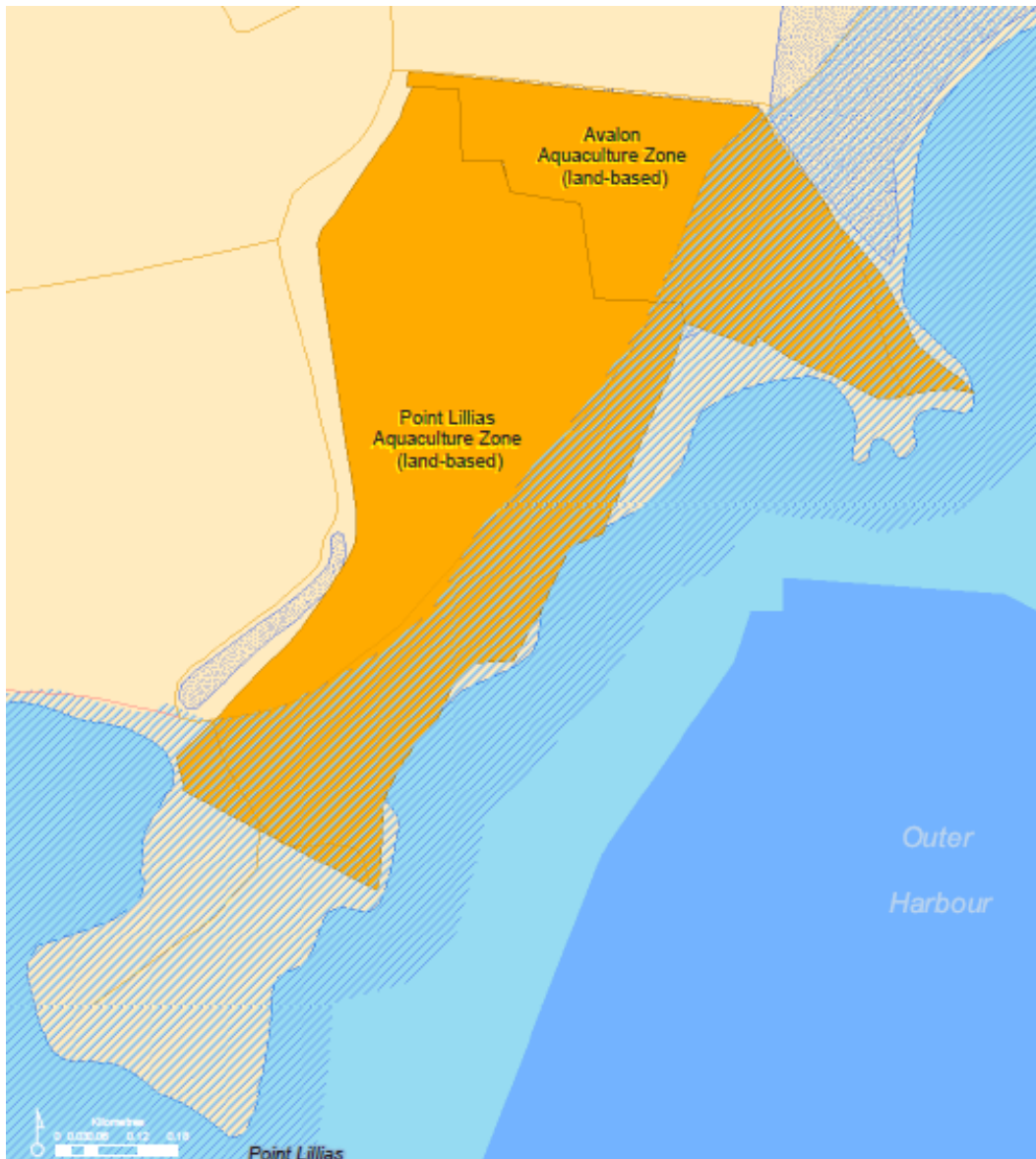


Figure 5. The Port Phillip (Western Shoreline) Bellarine Peninsula Ramsar Site (hatched) - as it intersects with the Point Lillias and Avalon Aquaculture Fisheries Reserves (labelled as 'zones') (orange).



Figure 6. The Port Phillip (Western Shoreline) Bellarine Peninsula Ramsar Site (blue). The Point Lillias peninsula is located in the Point Wilson / Limeburners Bay section of the site.

Aboriginal cultural heritage in the Point Lillias Aquaculture Fisheries Reserve

The Wadawurrung Traditional Owners Aboriginal Corporation was appointed as a Registered Aboriginal Party (RAP) under the Victorian *Aboriginal Heritage Act 2006* in May 2009. Wadawurrung Country extends from the Great Dividing Range of Ballarat to the coast from the Werribee River to Aireys Inlet, thereby including the Point Lillias peninsula and surrounding waters.

The Avalon AFR and Point Lillias AFR are nominated as being 'areas of cultural heritage sensitivity', as defined in the Aboriginal Heritage Regulations 2018. The function of the designation of 'areas of cultural sensitivity' is to identify when a Cultural Heritage Permit is required (e.g. for minor works) or when a Cultural Heritage Management Plan (CHMP) must be prepared under the *Aboriginal Heritage Act 2006* (e.g. for 'high impact' activities).

A comprehensive CHMP was completed and approved in 2011 for the 'Activity Area' (the Avalon and Point Lillias AFRs) (Marshall and Walker 2011). 'Activity' refers to any potential development (i.e. buildings, roads, tanks, pipelines, pumps etc).

Marshall and Walker (2011) noted that due primarily to its use as a source of rock, topsoil and shell, much of the ground within Point Lillias AFR has suffered significant ground disturbance. During a Standard Assessment (a foot or ground survey) and a Complex Assessment (an assessment based on the excavation of the 'Activity Area'), the authors found that surface artefacts were located in low numbers across wide areas, indicating disturbance to the soils. The authors note that previous archaeological

investigations in the area documented stone artefact scatters in association with natural deposits as well as a fish trap in the Point Lillias AFR. As the eastern and western boundaries of the Point Lillias AFR are offset from the shoreline, areas that were considered sensitive in previous assessments, as well as the fish trap, are located outside of the area of the AFR.

The CHMP provides procedures to minimise harm to archaeological sites in the form of management actions that need to be completed prior, during and after any development in both the Avalon and Point Lillias AFRs. The CHMP remains valid until it is superseded by an approved amendment.

Any person undertaking activity in the Point Lillias AFR must be fully compliant with the requirements of the CHMP. Failing to comply with an approved CHMP is an offence under the *Aboriginal Heritage Act 2006*. All legislative requirements must also be met for any other activities that are not specifically covered by the existing CHMP.

Further information on the cultural heritage of the Point Lillias peninsula is provided in the Cultural Values Assessment (CVA) for the Avalon Corridor Strategy (Unearthed Heritage & Wadawurrung Traditional Owners Aboriginal Corporation 2021). The Avalon Corridor Strategy is a long-term strategic land use plan designed to guide planning decisions for 30,000 hectares of land between Geelong and Werribee. The primary purpose of the CVA was to document the known past, contemporary and ongoing cultural values of the area, in order to inform future decisions on development.

Climate change and the Point Lillias Aquaculture Fisheries Reserve

Climate change has significant implications for land-based aquaculture, affecting various aspects of production, infrastructure, and sustainability.

Modelling by Victoria's Future Climate Tool shows a projected sea level rise of 20cm by 2040 and 47cm by 2070 (Future Climate Tool - <https://vicfutureclimatetool.indraweb.io/project>). While much of the Point Lillias AFR will not be affected by sea level with a 20cm rise, most of the surrounding area will be inundated, thereby potentially affecting access to the site and water sources. For example, the height of the underground water table will increase, which may affect the salinity of groundwater and soils (Figure 7).

In addition to sea level rise, other elements of climate change such as water temperature, extreme weather events and increased risk of disease, could affect operations at the Point Lillias AFR in the future. Increased water temperature can affect the growth, reproduction, and survival rates of cultured animals and, although it is possible to control water temperature in land-based systems, the required infrastructure is costly to install, maintain and operate. An increase in extreme weather events can result in storm surge and rainfall that potentially damages infrastructure and disrupts operations. It will be important for the lease holder to factor these increased risks into future decisions around development at the site as well as other aspects of aquaculture production, such as which species are produced.

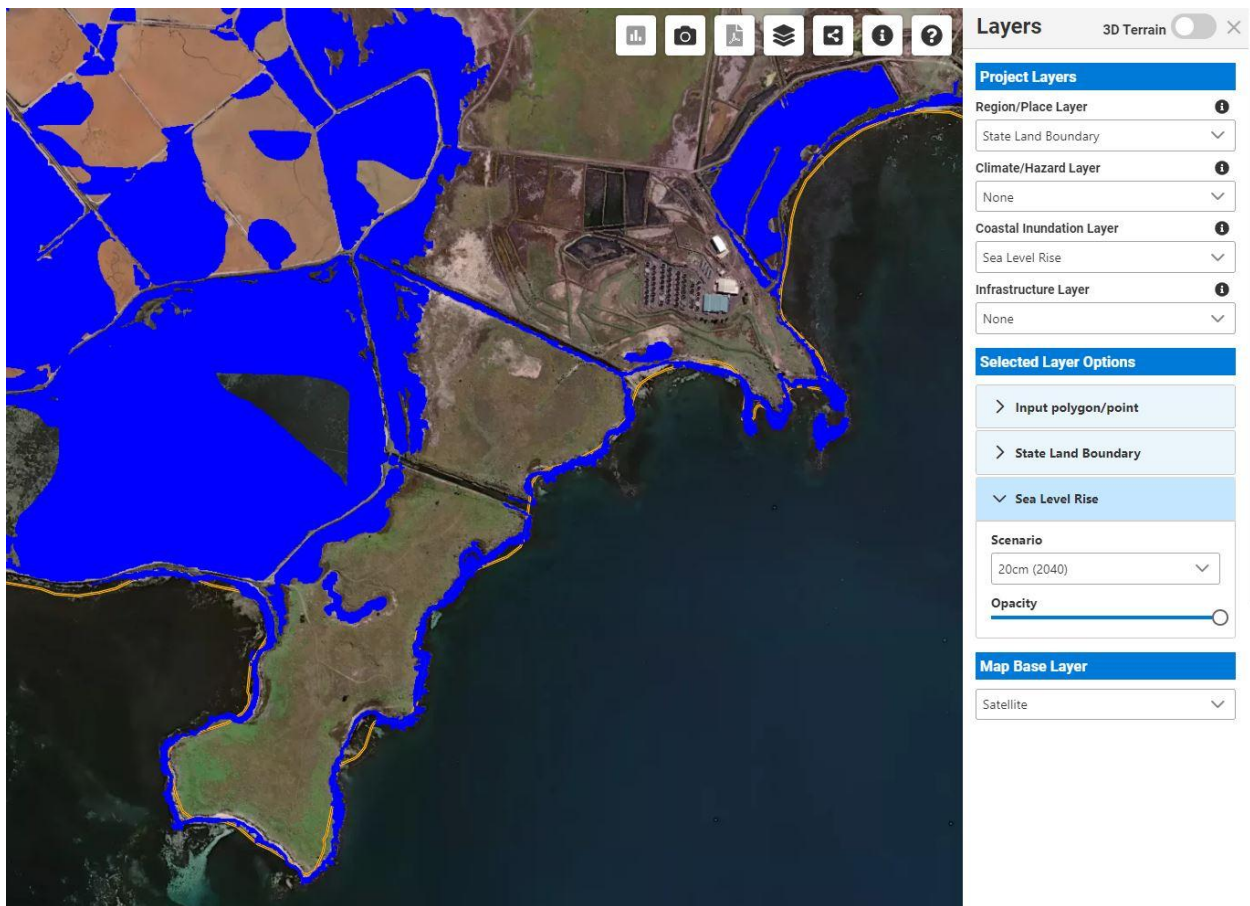


Figure 7. Projected impact of a sea level rise of 20cm by 2040 on the Point Lillias AFR and surrounds.
Source: <https://vicfutureclimatetool.indraweb.io/project>.

3. Framework for managing the Point Lillias Aquaculture Fisheries Reserve

Legislative and policy framework

The Victorian Fisheries Authority (VFA) is the lead agency for aquaculture development in Victoria. Marine aquaculture in Victoria is managed in accordance with the Fisheries Act, the Fisheries Regulations 2019 and the Fisheries (Fees, Royalties and Levies) Regulations 2017.

The Fisheries Act provides the legislative framework for managing Victoria's fisheries resources and sets out the general provisions applicable to aquaculture, commercial and recreational fishing. The objectives of the Fisheries Act that are relevant to aquaculture are:

- *to provide for the management, development and use of Victoria's fisheries, aquaculture industries and associated aquatic biological resources in an efficient, effective and ecologically sustainable manner; and*
- *to promote sustainable commercial fishing and viable aquaculture industries and quality recreational fishing opportunities for the benefit of present and future generations.*

To deliver on these objectives, the VFA provides the core functions of licensing, administration, policy development and management. In addition, the VFA provides resources to facilitate research and development, fish health management and shellfish quality assurance.

Other key Victorian legislation and policy, relevant to aquaculture, include the:

- *Land Act 1958;*
- *Crown Land (Reserves) Act 1978;*
- *Marine and Coastal Act 2018; and*
- *Environment Protection Act 2017.*

The *Land Act 1958* provides for the granting of leases and licences for the use of Crown land. Section 134 of the *Land Act 1958* provides for the issue of leases for non-agricultural purposes (e.g. aquaculture). Section 134 leases provide exclusive occupancy rights.

The *Crown Land (Reserves) Act 1978* provides for the reservation of Crown land for various public purposes, including preserving areas of ecological significance and the development of public utilities. The *Crown Land (Reserves) Act 1978* also provides for the management of such reserved lands.

The *Marine and Coastal Act 2018* provides for an integrated and coordinated whole-of-government approach to approvals for the use and development of marine and coastal Crown land.

The *Environment Protection Act 2017* makes provisions for 'the protection of the environment'. Accordingly, the *Environment Protection Act 2017* provides for the regulation of waste in the environment, for the prevention and control of pollution and noise, and for the protection and improvement of the quality of the environment.

Management of the Point Lillias AFR will be consistent with other legislation including, but not limited to:

- *Outdoor Recreation Victoria Act 2026;*
- *Victorian Fisheries Authority Act 2016;*
- *Safe Food Victoria Act 2026;*
- *Food Act 1984;*
- *Seafood Safety Act 2003;*
- *Aboriginal Heritage Act 2006;*

- *Occupational Health and Safety Act 2004*;
- *Interpretation of Legislation Act 1984*;
- *Livestock Disease Control Act 1994*;
- *Marine Safety Act 2010*; and
- *Climate Action Act 2017*.

From a policy perspective, all Australian jurisdictions, including the State of Victoria, have made a commitment to manage fisheries resources according to the principles of ecologically sustainable development. These principles include:

- ensuring that fishing is carried out in a biologically and ecologically sustainable manner;
- ensuring that there is equity within and between generations regarding the use of fish resources;
- maximising economic and social benefits to the community from fisheries within the constraints of sustainable utilisation;
- adopting a precautionary approach to management, particularly for fisheries with limited data; and
- ensuring that the processes and procedures involved in management of a fishery are appropriate, transparent and inclusive.

Policies relevant to aquaculture activity in Victoria include:

- *Leasing policy for Victorian Crown land*
- *Victorian Shellfish Quality Assurance Program (VSQAP) Manual*;
- *National Policy for the Translocation of Live Aquatic Organisms - Issues, Principles and Guidelines for Implementation*;
- *Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria*;
- *Victorian Abalone Aquaculture Translocation Protocol*; and
- *Abalone Health Accreditation Program*.

Authorisations to conduct aquaculture activity

In order to conduct aquaculture activity in an aquaculture fisheries reserve in Victoria, the following authorisations are required:

- an aquaculture licence - an annual licence issued under the Fisheries Act to authorise aquaculture activity in a specified area;
- and/or a general permit, also issued under the Fisheries Act to authorise aquaculture activity for research and development purposes;
- a Crown land lease - a lease issued under the *Crown Land (Reserves) Act 1978* to provide exclusive occupancy rights over a site for aquaculture purposes. Previously, leases were issued under the *Land Act 1958*;
- coastal consent - consent provided under the *Marine and Coastal Act 2018* to authorise the use and development of coastal Crown land; and
- an Environment Protection Authority (EPA) Operating/Development Licence – an operating/development licence issued under the *Environment Protection Act 2017* to authorise the cultivation of fish or other edible aquatic organisms in land-based or on-shore facilities.

Aquaculture licence

In Victoria, a person or company that wishes to conduct aquaculture activity is required to hold an aquaculture licence issued under s43 of the Fisheries Act, subject to certain conditions (Part 13 of the Fisheries Regulations 2019).

Aquaculture licences specify the area, the species of fish (as defined under the Fisheries Act) that may be farmed, the licence period, production return requirements, operational management controls and environmental management requirements.

For the purposes of the Fisheries Act, an aquaculture licence is a prescribed class of renewable and transferable fishery licence.

The Fisheries Act currently prescribes five classes of aquaculture licences that specify Crown land including: Aquaculture (Crown Land - Other), Aquaculture (Crown Land—Offshore), Aquaculture (Crown Land - Bivalve Shellfish), Aquaculture (Crown Land – Eels) and Aquaculture (Crown Land - Abalone) Licence. The Aquaculture (Crown Land - Abalone) Licence applies to abalone grown in marine systems, not on land.

For land-based aquaculture of abalone on private or Crown land, the Fisheries Act prescribes the Aquaculture (On-shore Abalone) Licence.

An Aquaculture (On-shore - Abalone) Licence authorises the licence holder, on private land or on Crown land as specified in the licence, in or on protected waters, other than marine waters:

- to use, form or create a habitat for hatching, rearing, breeding, displaying or growing abalone specified in the licence for sale or other commercial purposes;
- to hatch, rear, breed, display or grow abalone (including a commercial quantity) specified in the licence for sale or other commercial purposes;
- to use commercial aquaculture equipment specified in the licence;
- to possess abalone which has been hatched, reared, bred or grown under the licence at the area specified in the licence;
- to process (other than to shuck) abalone which has been hatched, reared, bred, displayed or grown under the licence at the area specified in the licence;
- to sell abalone which has been hatched, reared, bred, displayed or grown under the licence at the area specified in the licence; and
- to engage one or more persons to carry out any activity authorised by the licence.

In accordance with the Fisheries Act, aquaculture licences are subject to any conditions imposed by the Fisheries Act, any conditions that are set out in the Fisheries Regulations 2019 and any other conditions that are expressed or referred to on the licence. Failure to comply with a condition of a fishery licence is an offence under the Fisheries Act.

Under Section 61 of the Fisheries Act, the Minister may make directions specifying eligibility criteria that must be met before the issue, renewal or transfer of an aquaculture licence can be approved.

As per the relevant Ministerial Direction (Victoria Government Gazette, 28 May 2026), if an applicant applies for the issue, renewal or transfer of an aquaculture licence for an area within an aquaculture fisheries reserve, the applicant must either have:

- a lease of Crown land under Section 17D of the *Crown Land (Reserves) Act 1978*; or
- a sub-lease to a lease of Crown land under Section 17D of the *Crown Land (Reserves) Act 1978*; or
- the written consent of the holder of a lease of Crown land under Section 17D of the *Crown Land (Reserves) Act 1978* and sign a deed poll that provides indemnity to the State Government of Victoria in a form required by the State consistent with the warranty and indemnity provisions specified in the Crown lease, for the specified area for which the licence is to be issued, transferred or renewed.

Cost recovery for management of the Point Lillias AFR will occur through the implementation of levies on aquaculture licences. Costs are recovered in accordance with cost recovery principles, including:

- those who benefit from government services pay for the associated costs; and
- the design, nature and extent of services should take account of the risks posed and the value of production.

General permit

A person or company that wishes to conduct aquaculture activity for research and development purposes may be issued with a General Permit under s49 of the Fisheries Act. A General Permit can be held in addition to an aquaculture licence.

Crown land lease

Crown land leases for marine aquaculture within aquaculture fisheries reserves are allocated consistent with the *Leasing policy for Victorian Crown land* (DEECA 2023).

For sites located within each aquaculture fisheries reserve, the VFA, as the Committee of Management appointed under s14 of *Crown Land (Reserves) Act 1978*, can allocate exclusive occupancy rights to licensed operators for the purpose of conducting aquaculture activity in the form of a lease. Under previous arrangements, leases were granted under s134 of the *Land Act 1958* by the Department of Energy, Environment and Climate Action (DEECA) but all future leases will be granted by the VFA under s17D of the *Crown Land (Reserves) Act 1978*. Crown land leases are also managed by the VFA.

Coastal consent

Aquaculture fisheries reserves are located within 'marine and coastal Crown land' within the meaning of the *Marine and Coastal Act 2018*. It is an offence for a person to use or develop, or undertake works on, marine and coastal Crown land without consent (s66 of the *Marine and Coastal Act 2018*).

Consent to use aquaculture fisheries reserves for aquaculture activity is obtained from the Minister for Environment as the responsible Minister for administering the *Land Act 1958*, the *Crown Land (Reserves) Act 1978* and the *Marine and Coastal Act 2018*.

EPA Operating/Development licence

Environment protection laws in Victoria require proactive steps to be taken to manage risks of harm from pollution and waste. The Environment Protection Regulations 2021 support the *Environment Protection Act 2017* by providing clarity and further detail on how to fulfil environmental obligations under the Act including through permissions for prescribed activities.

Environment Protection Authority (EPA) permissions have three tiers based on the level of risk to human health and the environment. Operating and development licences are issued for prescribed activities with the highest risk.

Under Schedule 1 – Prescribed Permission Activities and Fees of the Environment Protection Regulations 2021, a B03 (Fish farms) Operating and/or Development Licence is required for cultivating fish or other edible aquatic organisms in a land-based or on-shore facility with a design water flow rate of 0.2 or more megalitres per day.

Species

Within the Point Lillias AFR, there is the opportunity for the commercial and experimental culture of any species. As operations in the Point Lillias AFR will be land-based, the species that can be cultivated on-site include finfish, molluscs, crustaceans and seaweed. Consideration of the species permitted for culture in the Point Lillias AFR will be determined on a case-by-case basis.

Food safety requirements

Any person trading food in Victoria is required by the *Food Act 1984* to handle food safely and take all reasonable steps to ensure any food intended for sale is safe and suitable for human consumption. The regulation of the meat, poultry, dairy and seafood sectors is further supported by requirements under the *Meat Industry Act 1993*, *Dairy Act 2000* and *Seafood Safety Act 2003*.

The *Seafood Safety Act 2003* requires that all seafood businesses in Victoria obtain a licence issued by Safe Food Victoria, the responsible Statutory Authority. For businesses that grow and harvest seafood for human consumption, an aquaculture licence is required. There are three aquaculture licences – 'abalone', 'blue mussels and other shellfish' and 'finfish'. Licence requirements include a food safety plan, which describes how the business controls food safety hazards to ensure that the food produced is

safe for human consumption. Licence holders must also comply with strict seafood traceability arrangements that demonstrate that products originate from a legitimate source.

Victorian Shellfish Quality Assurance Program

The Victorian Shellfish Quality Assurance Program (VSQAP) is a quality assurance program protecting human health through the active monitoring of bivalve shellfish harvest areas. It is the Victorian implementation of the Australian Shellfish Quality Assurance Program and sets out the procedures and administrative practices to ensure that food safety plans meet the food safety requirements for the production, harvest and storage of bivalve shellfish.

Aquaculture operations that harvest bivalve shellfish for human consumption must hold a relevant Aquaculture (Crown Land – Bivalve shellfish) licence and be compliant with the requirements of VSQAP. The holder of an Aquaculture (Crown Land – Bivalve Shellfish) licence must provide an annual review of the classification of the shellfish growing area in accordance with the VSQAP Manual and contribute to costs of the water quality monitoring program for their area.

Compliance

The VFA maintains a state-wide risk-based enforcement and compliance strategy, which identifies risks to fisheries resources and targets enforcement resources appropriately. Aquaculture operations are part of this strategy and are monitored accordingly.

Officers authorised under the Fisheries Act have the power to enter aquaculture premises at any reasonable time for the purpose of examining compliance with the conditions of the licence or permit issued under the Fisheries Act. Fisheries officers are also authorised for the purposes of the *Crown Land (Reserves) Act 1978*, the *Land Act 1958* and the *Marine Safety Act 2010*.

4. Framework for developing the Point Lillias Aquaculture Fisheries Reserve

Legislative and policy framework

The Point Lillias AFR is undeveloped and unoccupied coastal Crown land, with no existing buildings or structures (a 'greenfield' site). In order to develop the Point Lillias AFR for the purposes of aquaculture, it will be necessary to identify the current legislative and policy framework that applies to the site and the full data requirements for planning, permitting and development purposes*¹.

Key legislation and policy, relevant to the development of Point Lillias AFR, include the:

Commonwealth

- *Environment Protection and Biodiversity Conservation Act 1999.*

Victorian

- *Environment Effects Act 1978;*
- *Aboriginal Heritage Act 2006;*
- *Flora and Fauna Guarantee Act 1988;*
- *Planning and Environment Act 1987;*
- *Catchment and Land Protection Act 1994;*
- *Heritage Act 2017;* and
- Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017)
- *Marine and Coastal Act 2018* (as discussed in previous Section).

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act provides for the listing of nationally threatened species, threatened ecological communities and key threatening processes; and provides the legal framework to protect and manage nine Matters of National Environmental Significance (MNES).

The MNES that may be affected by development of the Point Lillias AFR include:

- wetlands of international importance: some parts of the Point Lillias AFR are within, or are immediately adjacent, to the Port Phillip (Western Shoreline) Bellarine Peninsula Ramsar site;
- nationally listed threatened species; and
- nationally listed migratory species.

Any development where the potential impact of the activity is unknown, or where the activity is likely to have some effect on one or more MNES, requires referral to the Commonwealth Minister for the Environment for review. The Minister will then make a decision about whether or not the action is likely to have a potential significant impact on a MNES and is therefore a 'controlled action' requiring formal assessment and approval under the EPBC Act, 'not a controlled action', 'not a controlled action if undertaken in a particular manner', or 'clearly unacceptable'.

¹ The Point Lillias Aquaculture Fisheries Reserve Management Plan does not outline the full requirements of the current regulatory framework nor a complete list of the documentation required to use and develop the site. A planning consultant will be required to provide a comprehensive list of relevant legislation, policy and plans and the necessary documentation required for each. The Crown land lease holder will be responsible for obtaining all necessary approvals.

Following the passage of the *Environment Protection Reform Act 2025* on 28 November 2025, national environmental legislation now includes a framework to allow the Minister to make and apply a National Environmental Standard for MNES (the Standard). The Standard, which is under development at the time of writing, is intended to set clear expectations for development activities and to ensure consistency in decision making. Once finalised, the Standard can be used to guide the design of developments with an early emphasis on avoiding and minimising impacts to MNES.

In 2004, CEE Consultants Pty Ltd provided advice to (then) Fisheries Victoria that development of Point Lillias AFR would require referral to the responsible Commonwealth Minister under the provisions of the EPBC Act due to the proximity of a Ramsar wetland and the presence of nationally listed threatened species and migratory species (CEE Consultants Pty Ltd 2004).

Information on the flora and fauna species present at the Point Lillias AFR is based on historical studies (Appendix 1). This information will need to be updated to determine existing species at the site.

Environment Effects Act 1978 (EE Act)

The EE Act provides for the assessment of actions that can have a significant effect on the environment. If a proposed development triggers referral criteria specified in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (DTP 2023), the project is referred to the Victorian Minister for Planning to determine whether an Environment Effects Statement (EES) is required.

Where a project also requires assessment under the EPBC Act, the Bilateral Assessment Agreement allows the State of Victoria to assess projects on behalf of the Commonwealth, reducing duplication in process and documentation.

As noted earlier, an EES was prepared for the proposed relocation of the Coode Island Chemical Storage Facility to Point Lillias in 1995 (Maunsell Pty Ltd 1995). Point Lillias was approved as a suitable site for the facility but the relocation did not proceed for economic reasons. The 1995 EES, although assessing the impacts of a different type of development, incorporated multiple studies of the Point Lillias AFR that would be relevant to assessing the impact of future aquaculture operation/s (Maunsell Pty Ltd 1995).

Aboriginal Heritage Act 2006 (AH Act)

The AH Act provides for the protection of Aboriginal cultural heritage and Aboriginal intangible heritage in Victoria. As noted previously, Cultural Heritage Permits and Cultural Heritage Management Plans (CHMP) are the two main approval processes that protect and manage cultural heritage during land use or development.

The development of aquaculture facilities will likely fall into the 'high impact' activity category, thereby requiring a CHMP (as per the Aboriginal Heritage Regulations 2018). 'High impact' includes larger-scale building and works that will cause or result in 'significant ground disturbance', which is disturbance of the topsoil or surface rock layer of the ground or a waterway by machinery in the course of grading, excavating, digging, dredging or deep ripping.

As noted previously, a comprehensive CHMP was completed and approved in 2011 for the Avalon and Point Lillias Aquaculture Fisheries Reserves (Marshall and Walker 2011). A new CHMP will be required if the proposed activity does not comply with the existing CHMP but, otherwise, the current CHMP remains valid until it is superseded by an approved amendment.

Flora and Fauna Guarantee Act 1988 (FFG Act)

The FFG Act provides a framework for biodiversity conservation in Victoria, including providing for the listing of threatened species and communities of flora and fauna, as well as threatening processes. Any proposed development on Crown land that may affect FFG listed protected/threatened native plants and animals will require a permit.

GHD Pty Ltd (2005) surveyed the flora of Point Lillias AFR and found that the majority of Point Lillias was heavily degraded and dominated by introduced species. There were, however, small patches of Coastal Saltmarsh (endangered), Wetland Formation (endangered) and Coastal Tussock Grassland (vulnerable) Ecological Vegetation Classes (EVCs) present on the boundaries of Point Lillias.

GHD Pty Ltd (2005) recorded two species of State significance, Coast Saltwort *Salsola tragus ssp. pontica* and Tasman Grass-wrack *Heterozostera tasmanica*. Coast Saltwort is listed as rare in Victoria and is confined to a small area in the northeast of the Point Lillias AFR. Tasman Grass-wrack occurs in seagrass beds around Point Lillias, and although listed as rare in Victoria, is considered to be more common than records suggest (GHD Pty Ltd 2005). A number of flora species listed as protected under the FFG Act were also present at the time of the survey (i.e. *Asplenium flabellifolium*, *Frankenia pauciflora*, *Senecio quadridentatus*).

In terms of avian fauna, the Orange-bellied Parrot (*Neophema chrysogaster*) (OBP) is listed as critically endangered under the EPBC Act and threatened under the FFG Act. OBPs breed in south-west Tasmania in the summer and migrate to the coast of south-east mainland Australia for the winter.

As per Appendix 1, 12-13 OBPs were observed in the Point Lillias AFR in the 1980s (Pescott 1983) and one bird in 1995 (Ecology Australia 1995). As noted above, patches of Coastal Saltmarsh (the preferred habitat of the OBP) were found on the boundaries of Point Lillias in 2005 so it would be possible to avoid these pockets of critical habitat during development of the site.

Ecology Australia (1995) also recorded other threatened species in the Point Lillias AFR, including three species of bat (i.e. White-striped Mastiff Bat, Lesser Long-eared Bat and Gould's Wattled Bat). As noted earlier, information on the flora and fauna present in the Point Lillias AFR will require updating.

Planning and Environment Act 1987 (P&E Act)

The P&E Act regulates the use and development of land in Victoria, and provides the framework and procedures for preparing and amending planning schemes, obtaining planning permits and enforcing compliance with planning schemes. It promotes sustainable development while protecting natural resources and ecological processes.

Clause 12 of the P&E Act is particularly relevant to marine and coastal development. It emphasises the protection of biodiversity, ecological systems, and environmentally significant landscapes, as well as planning for climate change impacts such as coastal inundation and erosion.

Under the P&E Act, all land in Victoria is subject to a planning scheme, and many schemes also extend offshore to regulate coastal waters, typically up to 200 or 600 meters from the shore. The Point Lillias AFR is located in the City of Greater Geelong and is zoned *Public Conservation and Resource Zone* and *Special Use Zone 1* under the City of Greater Geelong Planning Scheme. The site is subject to *Environmental Significance Overlay (Schedule 2)* and *Land Subject to Inundation Overlay (Schedule 2)*. The City of Greater Geelong provides advice on planning permit triggers and application requirements.

Catchment and Land Protection Act 1994 (CALP Act)

The CALP Act defines requirements to avoid land degradation, conserve soil, protect water resources, and eradicate and prevent the spread and establishment of noxious weed and pest animal species. In order to comply with the CALP Act, a Construction Environmental Management Plan (CEMP) that includes mitigation measures to minimise erosion, avoid water pollution and to control pest plants and animals is prepared to guide actions during the construction phase of the development.

Past studies have identified weed and pest animal species that will require management during construction in the Point Lillias AFR (Ecology Australia 1995, GHD Pty Ltd 2005).

Heritage Act 2017 (HA Act)

The HA Act is the primary legislation governing the identification, protection, and management of non-Aboriginal cultural heritage of state-level significance in Victoria. It outlines processes for preserving heritage buildings, archaeological sites, and shipwrecks, and regulates any changes or developments to these properties. The HA Act exclusively covers non-Aboriginal heritage, which is protected under separate legislation, the *Aboriginal Heritage Act 2006*.

A Point Lillias Aquaculture Zone Heritage Assessment, completed in 2005, noted that three non-aboriginal sites were identified in previous surveys: a stone breakwater associated with oyster farming in the 1870s, a low windbreak, and two navigation markers. In the 2005 survey, no new sites were identified and only the breakwater and windbreak could be re-found. All three sites are located on the boundary of Point Lillias AFR, however, and can therefore be avoided (Matthews 2005).

In instances where sites cannot be avoided, a 'consent to disturb' permit needs to be obtained from Heritage Victoria.

Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines)

The primary objective of the Guidelines (DELWP 2017) is to achieve no net loss of native vegetation, through a three-step approach:

- avoid adverse impacts, particularly through vegetation clearance;
- minimise impacts through appropriate site design and planning; and
- if impacts cannot be avoided, identify and secure appropriate offset options. Offsets are calculated in accordance with the Guidelines and obtained prior to construction commencing. Offsets are only considered, however, after mitigation measures to avoid and minimise impacts are fully investigated and documented.

As noted earlier, the flora of Point Lillias AFR was surveyed in 2005 (GHD Pty Ltd 2005). Patches of endangered and vulnerable Ecological Vegetation Classes (EVCs) were identified and mapped but it is likely that there have been changes in the location, density and condition of EVCs in the intervening period and a new survey will be required.

Site planning

Appropriate site planning of the Point Lillias AFR at the earliest stage of the project can:

- avoid or minimise potential impacts to cultural, environmental, floral, faunal and heritage values of the Point Lillias AFR, thereby increasing the likelihood of success with planning approvals;
- identify ways to optimise available land for the development of aquaculture facilities while minimising costs; and
- identify ways to enhance the environment of the AFR and adjoining land and water.

A site plan of the Point Lillias AFR would include options for the number, size, siting and design of aquaculture facilities (i.e. buildings, grow out tanks, water treatment systems, pumping infrastructure) to avoid important site values and to facilitate best-practice land-based aquaculture operations.

The site plan would also include the layout of:

- road access to, and within, the site;
- carparking, fencing, walk-ways, lighting;
- utilities including power, gas, water, telecommunications; and
- sewerage and drainage.

A comprehensive planning document was prepared by Maunsell Pty Ltd in 2007, which addresses aquaculture requirements for land-based abalone farms (i.e. footprint, area, seawater inlets and outlets, wastewater treatment) and required services (i.e. road access, power, gas, sewer, potable water, site drainage, waste management). The document also included a proposed site layout that avoided, or minimised the impacts on, important site values identified at the time. This document, although focussing on the farming of abalone, provides invaluable guidance for the future development of Point Lillias AFR (Maunsell Pty Ltd 2007).

Impact of development on adjacent land and waters

The Point Lillias AFR is surrounded by the Avalon Coastal Reserve and parts of the AFR are also located within, or immediately adjacent to, the Port Phillip (Western Shoreline) and Bellarine Peninsula Ramsar site.

These areas are of very high conservation value, characterised by extensive wetlands, areas of saltmarsh, salt pans, intertidal mudflats, seagrass beds and other marine habitats that support nationally and internationally significant resident and migratory bird populations as well as a diverse range of terrestrial and marine flora and fauna.

For example, the Avalon Coastal Reserve includes habitat for critically endangered and vulnerable birds including Curlew Sandpiper (*Calidris ferruginea*) and Australian Fairy Tern (*Sternula nereis nereis*). The reserve also hosts 18 species of migratory birds with two Australasian and three migratory shorebirds occurring in numbers of international significance (>1% of the global population). While there are only patches of Coastal Saltmarsh in the Point Lillias AFR, there are extensive areas of Coastal Saltmarsh in the Avalon Coastal Reserve (providing critical food resources for Orange-bellied parrots) as well as roosting and nesting sites in saltpans and shallow waters.

Aquaculture and associated infrastructure within the Point Lillias AFR can be designed in a way that avoids or minimises impacts on the site values of the AFR as well as those of surrounding areas. This can be achieved through the planning approvals process and careful site planning, as noted earlier.

There are also opportunities for the development in Point Lillias to enhance environmental values at the site and in the adjacent environment through:

- the control and management of pest plants and animals, alongside the re-establishment of indigenous coastal vegetation. For example, the potential exists to improve Orange-bellied Parrot habitat in the long term, through the protection and expansion of existing patches of Coastal Saltmarsh;
- the management of wastewater and stormwater in ways that support and augment adjacent wetlands. For example, the Environment Protection Authority (EPA) licence for the abalone farm in the Avalon AFR specifies that wastewater is released into nearby wetlands over the summer months to 'maintain flooded ponds to protect Ramsar values';
- designing infrastructure such as settlement ponds, bio-filtration systems, and constructed wetlands that enhance water quality by removing sediments and nutrients before discharge. Constructed wetlands not only improve the quality of discharged waters but provide additional habitat for wetland birds and animals;
- ensuring compatibility with predicted coastal change to ensure that both aquaculture operations and surrounding environmental values remain viable over the long term. This approach will help to support the persistence of important habitat under changing climatic conditions; and
- the incorporation of integrated multi-trophic aquaculture (IMTA) systems, where waste outputs from one species are utilised as inputs for another. For example, nutrient-rich effluent from finfish or abalone production can support the cultivation of seaweed, thereby reducing waste outputs, improving water quality and providing for economic diversification.

Through these measures, aquaculture development within the Point Lillias AFR has the potential to move beyond impact minimisation to contributing to the environmental values of the site and adjacent land and waters.

5. Objectives, strategies and actions

Purpose

The purpose of the Plan is to specify the objectives, strategies and actions for managing activity within the Point Lillias AFR.

Scope

The scope of the Plan is limited to the Point Lillias AFR and its immediate environs.

Vision

The vision of the Plan is:

“to develop an environmentally sustainable and economically viable aquaculture industry at the Point Lillias Aquaculture Fisheries Reserve that recognises and respects the cultural heritage of the site while contributing a commercial supply of high quality seafood.”

Management objectives, strategies and actions

The objectives of the Fisheries Act that are relevant to aquaculture are:

- *to provide for the management, development and use of Victoria’s fisheries, aquaculture industries and associated aquatic biological resources in an efficient, effective and ecologically sustainable manner; and*
- *to promote sustainable commercial fishing and viable aquaculture industries and quality recreational fishing opportunities for the benefit of present and future generations.*

The following ‘guiding’ management objectives and subsequent strategies and actions are consistent with these legislated objectives.

Objective 1. Protect Aboriginal cultural heritage and values

Strategy 1.1 Ensure that the cultural values of the Point Lillias AFR are not compromised as a result of aquaculture activity within the Point Lillias AFR.

Strategy 1.2 Ensure that the legislative obligations to the Wadawurrung Traditional Owners are met whilst managing the Point Lillias AFR.

Action Ensure those undertaking activity in the Point Lillias AFR undergo training in the Aboriginal cultural heritage of the Point Lillias AFR and surrounds.

Action Ensure those undertaking activity in the Point Lillias AFR are fully compliant with their obligations under the Cultural Heritage Management Plan and their legislative obligations to the Wadawurrung Traditional Owners.

Objective 2. Maintain ecological health

Strategy 2.1 Ensure the ecological health of waters and land adjacent to the Point Lillias AFR are not jeopardised as a result of aquaculture activity within the Point Lillias AFR.

Strategy 2.2 Manage aquaculture activity within the Point Lillias AFR so that ecological impacts are minimised and localised.

Action Ensure that the ecological health of waters and land adjacent to the Point Lillias AFR are safeguarded through compliance with the conditions of the aquaculture licence, the Crown land lease and the operating licence issued by the Environment Protection Authority (EPA).

Action Ensure that development of the site is done in a manner that minimises environmental harm and that approvals are obtained from all relevant authorities before any building activity or disturbance of land commences.

Objective 3. Facilitate economic viability

Strategy 3.1 Facilitate economically viable and sustainable commercial aquaculture production within the Point Lillias AFR.

Strategy 3.2 Encourage aquaculture investment within the Point Lillias AFR by providing secure tenure over the site.

Action Provide authorisation for occupation and security of tenure to encourage investment in aquaculture at the Point Lillias AFR.

Objective 4. Maintain social licence

Strategy 4.1 Recognise the rights and safety of other users of the environment of the Point Lillias AFR.

Strategy 4.2 Provide information on the use of a community resource by the aquaculture industry.

Action Provide access for other users of the coastline adjacent to the Point Lillias AFR and hold public liability insurance to protect the public in the event of injury/loss.

Action Comply with environmental monitoring requirements and make available environmental and production data for broader public scrutiny (excluding commercial-in-confidence information).

6. Managing the Point Lillias Aquaculture Fisheries Reserve

This Section describes how aquaculture operations in the Point Lillias AFR will be managed in the future to meet the objectives, strategies and actions outlined in previous Sections.

Objective 1: Protect Aboriginal cultural heritage and values

As noted previously, a comprehensive Cultural Heritage Management Plan (CHMP) was completed and approved in 2011 for the 'Activity Area' – the Avalon and Point Lillias AFRs (Marshall and Walker 2011).

'Activity' was defined as 'likely be in the form of buildings, roads, tanks and pipelines as well as seawater pumps and intake lines that will move water from the sea to the location of aquaculture infrastructure'.

The CHMP noted that any 'Person' (defined in the *Interpretation of Legislation Act 1984*) undertaking an 'Activity' within the 'Activity Area' must ensure that the activity undertaken by them, or by others acting on their behalf, complies with the CHMP.

The CHMP provides procedures to minimise harm to archaeological sites in the form of management actions that need to be completed for any development in both the Avalon and Point Lillias AFRs. These actions include appropriate inductions or training for personnel with regard to Aboriginal Cultural Heritage Places within the 'Activity Area', carried out by the Cultural Heritage Advisor with assistance from the Wadawurrung Traditional Owners. All personnel should be made aware of the form and location of the Aboriginal archaeological sites documented during the CHMP as well as those registered during previous assessments.

As well as these general actions, the CHMP specifies actions to be taken prior, during and after an 'Activity'.

As noted earlier, failing to comply with an approved CHMP is an offence under the *Aboriginal Heritage Act 2006*. All legislative requirements must also be met for any other activities that are not specifically covered by the existing CHMP.

The Cultural Values Assessment (CVA) for the Avalon Corridor Strategy provides further information on the cultural heritage of the Point Lillias peninsula as well as recommendations relating to future development (Unearthed Heritage & Wadawurrung Traditional Owners Aboriginal Corporation 2021).

Objective 2: Maintain ecological health

Land-based marine aquaculture is a form of aquaculture which is contained to a site. The environmental concerns of a land-based operation therefore relate to water quality and contamination of water and soils. The actual impacts of an operation are site-specific and dependent on the species, location (characteristics and sensitivity), culture system and husbandry methods employed.

In land-based operations, seawater is pumped into the facility, diverted into holding structures and subsequently discharged to sea, recirculated or utilised elsewhere. One concern therefore relates to the seawater that returns to the sea, which, in the case of the Point Lillias AFR, is Port Phillip Bay.

As well as the quality of returning seawater, there are other aspects of a land-based operation that require management in order to safeguard the wider environment. Farm activities such as supplementary feeding, post-harvest processing, equipment cleaning, equipment maintenance, and the storage and use of hazardous substances can all affect the ecological health of the site through the production of waste and potential contamination of water and soils. Stock mortality is an additional source of waste. Managing waste is an important aspect of land-based aquaculture systems.

There is also the risk that water circulated through an aquaculture operation is discharged into the receiving environment containing disease and exotic organisms, if these are present in the operation. Disease and marine pests can also be transferred from a land-based aquaculture operation into the environment or other operations via stock (including deliberate movement of stock, mortalities, discarded product, escaped fish), via staff and visitors, via equipment and vehicles, and via other animals (for example, vermin and wild birds).

The development of an aquaculture operation includes built infrastructure such as buildings, tanks, drainage channels, pipelines and settlement ponds. As one objective of the Plan is to manage aquaculture activity

within the Point Lillias AFR so that ecological impacts are minimised and localised, the VFA requires aquaculture operators to meet environmental management requirements (described under Objective 4).

2a. Water quality

Land-based aquaculture operations that utilise adjacent coastal waters use flow through culture systems where water is pumped from the marine environment and then discharged back out to sea after it circulates through the operation.

In the case of land-based farms, discharged water can contain uneaten food, faeces, mortalities, chemicals, medications such as antibiotics, disease organisms and pathogens, escapees (including larvae), cleaning waste and processing waste. Aquaculture wastewater may also have increased levels of organic matter and dissolved nutrients. The release of nutrients into the marine environment can result in algal blooms or the growth of epiphytes on aquatic vegetation such as seagrass. Additionally, sedimentation can affect the composition and function of benthic fauna and flora and lead to the formation of anoxic sediments, thereby negatively impacting the receiving environment.

Water quality can be improved through the use of filtration, sterilisation and settlement ponds, which help to reduce nutrient and sediment loads prior to discharge. Settlement ponds need to be of a sufficient size to hold the volumes of wastewater discharged and a sufficient period of settlement time needs to be provided in order for nutrients and sediment to be retained.

Key criteria for returning seawater includes levels of nitrogen, ammonia, phosphorus, dissolved oxygen and suspended solids. Other aspects of water quality that may also be monitored include pH, temperature, salinity and the presence of chemical residues. All discharges of water from future aquaculture operations in the Point Lillias AFR will be conducted in accordance with the requirements of the operating licence issued by the Environment Protection Authority (EPA) under the *Environment Protection Act 2017*.

2b. Waste management

The management of waste is an important environmental issue for land-based aquaculture. Waste can be generated as a result of supplementary feeding, during harvesting and processing, when cleaning and maintaining equipment and premises and via stock mortality.

Many species require supplementary feeding in the form of pellets or algae. The production of algae for land-based systems may be achieved by the addition of fertilisers to stimulate algal growth. Fertilisers can be added directly into culture tanks or through the use of purpose-built algae culture containers. The addition of feed into the culture system may contribute to an increase in nutrient levels in the water and/or sedimentation at the end of discharge pipes.

As discussed in previous Sections, sediments and nutrients in wastewater can be managed via the use of settlement ponds. The amount of feed and fertiliser can also be adjusted to minimise discharged waste.

Harvesting and processing fish can produce solid waste in the form of offal and carcasses/shells as well as contaminated wastewater.

Cleaning of equipment will produce waste predominantly in the form of contaminated water and sludge. Maintaining equipment (e.g. pumps, generators, nets, ropes, compressors, vessels, vehicles) can produce waste in the form of disused, broken or replaced equipment and waste oils and fuels.

Solid waste in the form of stock mortalities is also present in land-based operations as it is inevitable that some level of stock mortalities will occur throughout the culture cycle. Stock mortalities in land-based systems can result from disease, poor animal health, sub-optimum water quality as well as a variety of other reasons. The extent of mortalities may range from day-to-day mortalities of a few fish to large-scale mortalities resulting from disease or an environmental event such as an algal bloom.

All waste that is generated from the land-based aquaculture operation must be contained, collected, treated and/or disposed of in an appropriate manner as per EPA requirements in order to prevent contamination of land and waters on-site and in the receiving environment. The Crown land lease also sets out conditions to prevent and manage contamination and changes to the environment of the site.

2c. Hazardous substances

Chemicals may be used in aquaculture operations to treat stock, sterilise equipment, induce spawning and/or prevent disease. Land-based aquaculture systems are also likely to use fuels, oils, cleaning agents and other hazardous substances.

All aquaculture licence holders must only keep what is required for the aquaculture operation on site and all chemicals, inflammable liquids, acids and other hazardous substances must be stored and disposed of appropriately to ensure that they do not cause environmental harm.

2d. Translocation

The translocation of a live aquatic organism at its broadest definition encompasses any human-assisted movement of that organism. The translocation of aquatic organisms is recognised as a potentially threatening process to the environment, particularly where such translocation occurs outside the natural range of the species being translocated.

As aquaculture presents opportunities to utilise a range of species within and outside their natural range in a variety of farming systems, it is important to identify and manage the risks associated with this activity.

Translocations of live aquatic organisms pose an ecological risk through the potential transmission of diseases and parasites, potential impacts on biodiversity from changes in genetic integrity, and the establishment of feral and/or exotic marine pest populations.

Recognising the need for a nationally consistent, risk-based approach to managing translocations of aquatic organisms across Australia, a '*National Policy for the Translocation of Live Aquatic Organisms – Issues, Principles and Guidelines for Implementation*' was developed in 1999. The national policy, principles and guidelines recognised that the previous ad-hoc approach to managing translocations of live aquatic organisms did not adequately manage the risk to Australia's economic, social and environmental well-being.

In response to the national policy, the Victorian government developed the '*Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria*' in 2003. In doing so, Victoria met the National requirements for translocation of live aquatic organisms through a process consistent with that adopted by other Australian jurisdictions.

The '*Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria*' provide a structured and transparent approach to managing the risks associated with deliberate translocations in Victoria of aquatic biota to public and private waters managed under the Fisheries Act. They describe a risk management and decision-making process for assessing translocation applications.

It is a condition of aquaculture licences that licence holders comply with the requirements of relevant guidelines and protocols relating to translocation.

2e. Disease

Intensively cultured fish and shellfish are susceptible to bacterial, fungal, and parasitic infections, as systems may be stocked at high densities and animals can be under stress due to a sub-optimal environment. Diseases and aquatic pests can enter a land-based facility via a number of mechanisms including translocation of animals from another location, via supplementary feed, via staff and visitors, via equipment and vehicles, via other animals such as wild birds, or via the intake water supply.

Environmental concerns associated with diseases include the potential spread to wild populations, issues associated with disposal of mortalities and chemical use to control outbreaks.

In relation to abalone, there are a number of diseases which are currently listed as 'notifiable' including Abalone viral ganglioneuritis and *Perkinsus olseni*. A 'notifiable disease' is one for which early recognition is one of the most important factors in controlling the disease and thus reducing its economic and social impact. It is a requirement under the *Livestock Disease Control Act 1984* that notifiable diseases, if suspected or detected, are reported to the Chief Veterinary Officer, Agriculture Victoria.

As a general principle, the risk of disease can be avoided or minimised by:

- ensuring stock are free of disease prior to transfer;
- appropriately quarantining new stock before release into culture tanks or ponds;
- maintaining optimal conditions to minimise the potential for animal stress, including water quality;
- ensuring there are provisions to prevent stock escape; and
- regular monitoring of stock for signs of disease.

In relation to the farm management component, the procedures and protocols adopted by industry to avoid, mitigate and or treat disease incidents will be critical to ensuring that disease risks are (economically and environmentally) manageable.

2f. Site development and maintenance

As discussed in previous Sections, development of a site, including new buildings or expansion of existing operations, involves a planning approval process, which ensures that potential impacts on the cultural, environmental, floral, faunal and heritage values of the site are minimised or avoided.

Once built, the site needs to be managed according to the conditions of the Crown land lease, which state that it is the responsibility of the lease holder to maintain the site in good repair and condition and ensure the site is kept secure, clean and free from debris and rubbish.

The aquaculture licence holder is required to mark the most seaward point of any water intake or output pipes with buoys that meet the specifications of Safe Transport Victoria and Parks Victoria. Deployment and maintenance of buoys is the responsibility of the licence holder.

Objective 3: Facilitate economic viability

The economic viability of an aquaculture operation is ultimately the responsibility of the lease and licence holder but the VFA assists aquaculture operators by providing authorisation for the occupancy and use of public land.

The VFA provides security of tenure through Crown land lease agreements that allow aquaculture operators to invest in the growth and development of their business.

The VFA can also foster the extension and development of aquaculture businesses by issuing general permits that authorise aquaculture activity for the purposes of research and development. Research and development will generally be undertaken by the licence holder.

Objective 4: Maintain social licence

Implementation of the Point Lillias AFR alienates a community resource for the exclusive use of the aquaculture industry. In order to maintain community approval for this activity, the rights and safety of other users of the environment of the Point Lillias AFR need to be recognised and safeguarded, and information on the ecological health of the Crown land needs to be collected and provided for public scrutiny.

In addition, there is a community expectation that the public resource is used by the aquaculture industry in a manner that maximises the return to the community. Return to the community is achieved in part by aquaculture development within the Point Lillias AFR, output of commercially valuable aquaculture product, and the creation of employment opportunities. The provision of production data enables the public to determine if this return has been met.

4a. General public access

Other users of the environment of the Point Lillias AFR include recreational fishers, bird-watchers, and walkers. In the future, once the site has been leased for the purposes of aquaculture, other users will not be permitted within the site without authorisation under the Fisheries Act and the permission of the Crown land lease holder. This is to protect the aquaculture operation as well as to minimise human health and safety risks. The shoreline, which is outside the boundaries of the Point Lillias AFR, can be utilised by the public.

4b. Public liability insurance

The development of Crown land creates a possibility for injury/loss resulting from interactions with aquaculture infrastructure. The holder of the Crown land lease within the Point Lillias AFR is required to obtain appropriate public liability insurance covering the Crown land lease site.

Prior to the renewal of an aquaculture licence, or upon request, the licence holder must provide a Certificate of Currency for the insurance policy held by the Crown land lease holder to the VFA.

4c. Environmental monitoring and reporting

An environmental management framework was developed for offshore marine aquaculture fisheries reserves in Victoria, based on a review of survey and monitoring methods for aquaculture operations in marine environments (Gavine and McKinnon 2002). The framework is based on three components: 1) a Characterisation Survey, 2) a Baseline Survey, and 3) Ongoing Monitoring. Methods for conducting the baseline survey and ongoing monitoring of Crown land lease sites within marine aquaculture fisheries reserves are provided in the *Guidelines for Environmental Baseline Surveys and Ongoing Monitoring of Aquaculture Fisheries Reserves in Port Phillip and Western Port* (Fisheries Victoria 2006). In marine environments, the focus is on the characteristics of the sediment and seabed beneath the culture infrastructure.

A similar framework applies to land-based sites where the focus is on water quality and potential contamination of water and soils at the site. The three components are:

1. a Characterisation Survey is a broad one-off assessment of the habitat, physico-chemical and biological attributes of an aquaculture fisheries reserve. A summary of information from Maunsell Pty Ltd (1995), as well as from other sources, is provided in Appendix 1.
2. an Environmental Report sets out the condition of the site prior to the date on which a Crown land lease commences and must be undertaken in accordance with applicable Environmental Protection legislation. The Environmental Report provides a benchmark for the condition of the environment at the site on the commencement date. Information required for the planning approvals process will likely provide the content of this report.
3. Ongoing Monitoring is undertaken at intervals as specified by the Environmental Management Plan. Monitoring refers to ongoing assessment of the health of the site and provides the basis for the VFA to amend licence conditions in order to maintain the impacts of aquaculture at the site to acceptable, local and reversible.

Reporting on the environmental monitoring undertaken within the Point Lillias AFR is important for public accountability. Information on the environmental management of aquaculture fisheries reserves is published on the VFA website.

In addition to the environmental monitoring requirements of the VFA, which are specified as conditions of the aquaculture licence and the Crown land lease, the aquaculture operator must obtain permission from the Environmental Protection Authority (EPA) to operate a land-based aquaculture system. As discussed earlier, the EPA provides permission in the form of an operating licence, which has reporting and record-keeping requirements. One requirement is the submission of a Permission Information and Performance Statement (PIPS) on request.

Information provided in PIPS is made available to the public via the EPA Public Register. Each section of the PIPS states what information is included in the public statement. Commercial-in-confidence information, including volumes of waste and the product produced, is not released publicly. The EPA is required by law to maintain, and make available, information provided by businesses, thereby creating public value through a transparent reporting culture.

It is the responsibility of the Crown land lease holder to undertake and fund all monitoring requirements, as specified.

4b. Production reporting

In order to provide the VFA and the public with information on production within the Point Lillias AFR, the aquaculture licence holder is required to complete an Aquaculture Production Return Form twice per year as specified in the Fisheries Regulations 2019 as well as any further record keeping conditions as specified on the licence.

Collective production data are made available to the public by VFA in the *Commercial Fish Production Bulletin* for each financial year. All information provided on production within the Point Lillias AFR is provided in a form that protects commercial confidentiality of the licence holders.

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8. Appendices

Appendix 1: Attributes of the Point Lillias peninsula

A detailed assessment of the attributes of the Point Lillias peninsula, which includes the Avalon AFR and the Point Lillias AFR, was conducted as part of the Environmental Effects Statement for the proposed relocation of the Coode Island Chemical Storage Facility to Point Lillias in 1995 (Maunsell Pty Ltd 1995). A summary of information from Maunsell Pty Ltd (1995), as well as from other historical sources, is provided below.

Geology and soil characteristics

The geology of the Point Lillias peninsula is classified as Quaternary/Late Tertiary formed by Newer Volcanic basalt of 15 to 20 metre (m) thickness. The sub-surface commonly contains high plasticity residual basaltic clay overlying basalt of 3 to 3.5m depth throughout the centre of the area, but also comprises some isolated areas around 1m in depth. These clays react differently to moisture, resulting in changes in volume with seasonal changes from soft conditions in winter, to substantial shrinkage and cracking in summer. Basalt boulders in a clay matrix extend from 4 to 7m depth, and high plasticity clay extends from 10 to 12m.

Hydrogeology

Previous drilling investigations showed that basalt layer out-crops extend over a large proportion of Point Lillias and appear within Relative Level (RL) –8m to RL –11m of Australian Height Datum (AHD) level. An uppermost aquifer is formed in the basalt within Point Lillias, which functions as an unconfined, fractured rock aquifer. Another aquifer appears to exist in the sand layer beneath the basalt and is separated by about 2m of clay. Both aquifers are influenced by tidal processes.

A low hydraulic gradient exists at Point Lillias with water depth approximately less than 1m AHD. The salinity of groundwater in the area ranges from 2.4 to 53 parts per thousand (ppt) suggesting strong links to seawater, and possibly nearby brine evaporation ponds.

Wind

The predominant wind directions for the Point Lillias area, measured at Point Wilson, are from the west (22%) and south (19%), followed by the north-west (13%) and north (12%). Wind speeds exceeding 5 metre per second (m/s) and 10 m/s occur approximately 50% and 7.5% of the time, respectively.

Flora and Fauna

Information on the flora and fauna of Point Lillias comes from the Flora Information System (FIS) of the Department of Environment, Land, Water and Planning (DELWP, now Department of Environment, Energy and Climate Action, DEECA), and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool, which were reviewed for a 5km radius around Point Lillias.

Appendices from Maunsell Pty Ltd (1995), Blakers (1996) and the Orange-bellied Parrot Recovery Team (1998) provided specific information on the terrestrial flora and fauna of Point Lillias.

Maunsell Pty Ltd (1995) concluded, although that the natural values of Point Lillias itself were relatively low, the values of adjoining areas were very high and should be protected.

I. Flora

Point Lillias was inspected by a botanist on 20 January 2005 (GHD Pty Ltd 2005). One local area plant species list (T02905) was sampled from Point Lillias. Discussion of the surrounding terrestrial, wetland and marine environments are based on general observations and information from previous studies.

Native vegetation in Victoria is classified into unique units known as Ecological Vegetation Classes (EVCs). EVCs are described according to a combination of unique floristic, life form and ecological characteristics, and through an inferred fidelity to particular environmental attributes. Each EVC occurs under a common regime of ecological processes within a given biogeographic range and may contain multiple floristic communities.

The majority of Point Lillias is dominated by introduced herbland (no botanical significance). There are, however, patches of Coastal Saltmarsh, Coastal Tussock Grassland and Wetland Formation EVCs along the eastern, western and southern boundaries of Point Lillias. Coastal Saltmarsh and Wetland Formation are classified as “endangered” in the Victorian Volcanic Plains Bioregion and Coastal Tussock Grassland is classified as “vulnerable”.

A total of 85 flora species (41 endemic, 44 introduced) were recorded at Point Lillias (GHD Pty Ltd 2005). Two State significant species (rare in Victoria) were recorded at Point Lillias, Coast Saltwort *Salsola tragus* ssp. *Pontica* and Tasman Grass-wrack (*Heterozostera tasmanica*).

Small pockets of prickly speargrass (*Stipa stipoides*) grassland (of local-regional significance), grey glasswort (*Halosarcia* spp.) shrubland (of State significance), beaded glasswort (*Sarcocornia quinqueflora*) shrubland and shrubby glasswort (*Sclerostegia arbuscula*) shrubland (both of local-State significance) are also present at Point Lillias. The coastline is generally comprised of shoreline saltmarsh on exposed basalt.

II. Avian Fauna

Detailed fauna records for Point Lillias come from Ecology Australia (1995), the FIS, and the EPBC Act Protected Matters Search Tool. No field survey was conducted in 2005 (GHD Pty Ltd 2005).

The Werribee-Point Lillias area is an area of international and national importance for wading birds, with resident and migratory species identified in the region (Ecology Australia 1995).

Ecology Australia (1995) found that a large number of waders and waterbirds utilise the area in and around Point Lillias. The adjacent saltworks typically support approximately 20% of the internationally significant Port Phillip Bay shorebird community, internationally significant numbers of Banded Stilts and nationally significant numbers of Double-banded Plovers and Marsh Sandpipers. The majority of shorebirds that are in the area utilise the ponds of the saltworks including the shallows around the Point Lillias Beach Main Pond. Relatively few birds have been observed on Point Lillias itself, however they are observed in ponds directly adjacent to Point Lillias. The inshore waters around Point Lillias are foraging sites for Cormorants and Grebes and foraging and roosting sites for Fairy Terns and Crested Terns following breeding. The 1995 sighting of a recently fledged Fairy Tern chick being fed by an adult on rocks on the eastern shore of Point Lillias suggests the area may be an important post-natal foraging site. Bird Rock, just offshore from Point Lillias, supports large numbers of waterbirds.

The distinctive fauna of saltmarshes includes numerous shorebird species including the Orange-bellied Parrot (*Neophema chrysogaster*), a species that is considered critically endangered and is listed under the EPBC Act as being of national environmental significance. However only patches of significant Coastal Saltmarsh were identified at Point Lillias (GHD Pty Ltd 1995).

Ecology Australia (1995) provided a detailed account of Orange-bellied Parrot sightings at Point Lillias. While numerous (12-13) birds were sighted in the past (Pescott 1983), only one bird was repeatedly sighted near the southern edge of Point Lillias over a period of two months during the 1995 study. As the bird was able to survive in the area for two months, it demonstrates that suitable Orange-bellied Parrot habitat exists in the area.

Characteristic fauna of beaches and intertidal flats is largely comprised of a diverse shorebird assemblage, of regional to international significance.

III. Other Fauna

Specific studies of terrestrial faunal assemblages in the region of Point Lillias are limited. Brief surveys of vertebrate terrestrial fauna have been conducted throughout the area encompassed by the Avalon and Point Lillias AFRs (Ecology Australia 1995). The introduced Rabbit, Fox and Dog were observed either directly or from predator scat analysis in the area (Ecology Australia 1995). An Echidna (*Tachyglossus aculeatus*), Fat-tailed Dunnart (*Sminthopsis crassicaudata*), and the introduced House Mouse (*Mus domesticus*) were sighted during the GHD field visit (GHD Pty Ltd 2005).

Threatened fauna including Short-beaked Echidna, Fat-tailed Dunnart, Swamp Wallaby, White-striped Mastiff Bat, Lesser Long-eared Bat, Gould's Wattled Bat, and Water Rat have all been recorded in the area (Ecology Australia 1995).

In general, the area is likely to support 20 (including 8 introduced) mammal species, 169 bird species (11 introduced), 5 frog, 9 reptile and 1 freshwater fish species (Ecology Australia 1995). Of these, 27 are threatened species.

Marine Habitat

The marine habitats adjacent to the Point Lillias peninsula are largely determined by seabed and sediment type, water depth, light penetration, water circulation and shelter from wave action (Marine Science and Ecology Pty Ltd 1995). The seabed along the east coast of Point Lillias is characterised by rocky reef and scattered reef with Tasman Grass-wrack (*Heterozostera tasmanica*) to approximately 200m offshore (Marine Science and Ecology Pty Ltd 1995).

Seagrass beds are distributed among the intertidal zones and subtidally to a depth of around 5m. Light penetration is the main limiting factor for seagrass distribution subtidally, although distribution can vary from year to year. Dwarf Grass-wrack, *Heterozostera muelleri*, dominates the intertidal zones, and Tasman Grass-wrack, *Heterozostera tasmanica*, dominates the subtidal zones, however they are often found together in mixed seagrass beds. Filamentous algae is often found growing epiphytically on seagrass.

Seagrass mapping by Blake and Ball (2001) shows dense beds of *Heterozostera* and filamentous algae south of Point Lillias Beach, while on the southern and eastern sides of Point Lillias there is a combination of bare reef, medium and sparse *Halophila* / filamentous algae and sparse *Heterozostera* / filamentous algae beds.

In addition to subtidal seagrass beds and rocky reef, the majority of the marine habitat adjacent to Point Lillias consists of soft silty to muddy substrate, with sediment grain size diminishing with depth (Marine Science and Ecology Pty Ltd 1995).

Marine Flora and Fauna

Infauna in the subtidal soft bed habitat adjacent to Point Lillias is comprised of numerous species, in order of abundance and diversity, within the taxa Polychaeta, Crustacea, Mollusca and Echinodermata, with a mean of 57 species per 0.1 m² and 16262 organisms per m² (Marine Science and Ecology Pty Ltd 1995).

The epibenthic communities consist of sponges, the ascidian *Pyura stolonifera*, the sabellid worm *Sabella spallanzanii*, the holothurian *Stichopus mollois* and a number of sea star species (Marine Science and Ecology Pty Ltd 1995). The most abundant epibenthic organism in the subtidal zone adjacent to Point Lillias is the introduced sabellid worm, *S. spallanzanii* (Marine Science and Ecology Pty Ltd 1995).

Data from the study of three intertidal reef outcrops on the eastern side of Point Lillias indicates the most common organisms were gastropods, mussels and seastars, with decreasing trend in the abundance of mussels and seastars heading southward along the Point Lillias peninsula (Marine Science and Ecology Pty Ltd 1995).

Subtidal reef habitat is generally colonised by the green algae, *Ulva* and *Caulerpa*, and small brown and red species. Below a depth of about 1m dominant species are sea urchins (*Heliocidaris erythrogramma*), Blue Mussel (*Mytilus edulis*), Flat Oyster (*Ostrea angasi*), sponges, ascidians, sea stars and hydroids (Marine Science and Ecology Pty Ltd 1995).

