

North Western Mussels Limited – Waikato West Coast Mussel Spat Nursery

Activities and Effects – Appendix One

1.0 Activities

1.1 Activities

The Resource Management Act activities applied for as aquaculture activities are:

Activity	Description
Construction, placement, alteration, removal or demolition of structures used for aquaculture activities (RMA s12(1)(b))	Installation of 11 rows with a total of 451 longlines across four sites, with screw anchors at each end and a series of subsurface longlines including warps, droppers, and floats. Installation to be staged in accordance with a staged development plan, generally comprising 50% development of each row in the first stage with Site D being developed last.
Disturbance of the foreshore and seabed, incidental to the aquaculture activities (RMA s12(1)(c), (e), (g))	Disturbance to the seabed for the purpose of installing screw anchors and any other incidental disturbance commensurate with spat catching/nursery operations.
Deposition of material in, on or under the foreshore or seabed, incidental to the aquaculture activities (RMA s12(1)(d))	Deposition of mussel spat/seed, and mussel spat/seed biological material including shell to the sea floor commensurate with spat catching/nursery activities, including harvesting.
Occupation of the common marine and coastal area by the aquaculture activities (RMA s12(2)(a))	Occupation of 700 hectares of the coastal marine area in 11 rows across 4 sites, with subsurface longlines, spaced at 50 metres apart.
Activities that contravene a rule in the regional coastal plan (RMA s12(3))	Spat nursery activities are prohibited in the west coast Waikato region, however this application is a concurrent Plan Change and Resource Consent application so it is anticipated that a new rule will be created which will allow the activity to be assessed as a discretionary activity.
Discharge of contaminants or water into water, incidental to the aquaculture activities (RMA s15)	Discharge of mussel spat/seed, and mussel spat/seed biological material to the water column commensurate with spat catching/nursery activities, including harvesting.

The total occupied/consented area across the four sites will be as follows:

	Site A	Site B	Site C	Site D	Total
Row 1	60 ha	60 ha	60 ha	60 ha	
Row 2	60 ha	60 ha	60 ha	100 ha	
Row 3	60 ha	60 ha	60 ha		
Total consented area	180 ha	180 ha	180 ha	160 ha	700 ha

1.2 Staging Development Plan

The stages proposed are as follows:

	Site A	Site B	Site C	Site D	Total
Stage 1	90ha	90ha	90ha	N/A	270ha
Stage 2	180ha	180ha	180ha	60ha	600ha
Stage 3	180ha	180ha	180ha	160ha	700ha

The optimum commercial staging is 25 lines at a time. Construction of the sites will be undertaken by a 4 to 5 person team of specialist contractors and NWML.

The construction process consists of:

- Installing screw anchors:
 - There will be a total of 451 lines, with each line having two screw anchors (one at each end). This equates to a total of 82 anchors per row.
 - The anchors are installed with the use of a drill operating from a surface vessel. The anchors will be drilled to approximately 6-12 m depth into the substrate (depending on the specifics of the chosen location). Because the substrate is expected to consist only of sand, minimal resistance and/or disturbance is expected.
- Once the anchors are in place, the backbone and mooring lines and buoys would be attached. Navigation and lighting would then be installed as required.
- Finally, the dropper lines would be hung out to catch spat and/or to seed spat for the juvenile nursery activity.

1.3 Indicative Timeline

An indicative timeline is provided:

Milestone	Timeline
Detailed design	Complete
Procurement	Within 3 months of granting consent
Funding	Already committed
Site works commencement	Within 3 months of granting consent depending on consent conditions
Stage one (183 lines sites A – C)	Developed in groups of 25 lines taking 6 months per group to a total of 4 years
Completion of stage one	
Stage one monitoring expert consultation	Approximately 6 months dependant on expert timings and findings
Stage two (217 lines sites A – D)	Developed in groups of 25 lines taking 6 months per group to a total of 4.5 years
Completion of stage two	
Stage two monitoring and expert consultation	Approximately 6 months dependant on expert timings and findings
Stage three (51 lines site D)	Developed in groups of 25 lines taking 6 months per group to a total of 1 year
Completion of stage three	Within 11 years dependant on expert timings and findings

Note that this staged development approach provides multiple opportunities to monitor and manage the activity

and innovate to optimise the operation.

2.0 Effects

2.1 Summary of Effects

A full assessment of the effects of the activity has been undertaken and is supported by a range of independent expert assessments and peer reviews. A summary is provided here:

Effect	Discussion	Cross Reference
Water Column	<ul style="list-style-type: none"> There will be negligible water column effects. Typically, little if any effects are detectable beyond the boundaries of the farm and the proposed sites are in a well-flushed environment. 	<ul style="list-style-type: none"> Section 5.3 of AEE. Baseline Survey, by NIWA. Ecological Assessment, by Coast and Catchment. WRC Peer Review of General Ecological Matters, by Pisces Consulting.
Benthic Habitat	<ul style="list-style-type: none"> There will be less than minor effects on benthic habitat including reefs or biogenic habitat. The farm rows have been carefully sited over suitable habitat and the proposed area is a highly dispersive environment. 	<ul style="list-style-type: none"> Section 5.4 of AEE. Baseline Survey, by NIWA. Ecological Assessment, by Coast and Catchment. Additional Baseline Survey, by Coast and Catchment. WRC Peer Review of General Ecological Matters, by Pisces Consulting.
Marine Mammals and Fish	<ul style="list-style-type: none"> There will be negligible effects on fish. Potential effects on marine mammals include entanglement, habitat exclusion, trophic effects, marine debris, vessel strike, underwater noise and cumulative effects. There will be no more than minor effects on Māui dolphin. The spatial extent of the proposal is small relative to the range of the Māui dolphin sub-species, and the proposed structures are designed to minimise entanglement risk. The habitat at the proposed sites is not considered valuable for prey. A range of monitoring initiatives and best management practices will be incorporated into the staged development plan (SDP), the operational management plan (OMP) and the marine wildlife management plan (MWMP) to minimise any residual risk. There is an opportunity to utilise the farms to host monitoring devices and carry out research on toxoplasmosis thereby contributing to an increase in understanding of Māui dolphins. There will be negligible to minor effects on other marine mammals. A range of monitoring initiatives and best 	<ul style="list-style-type: none"> Section 5.5 and 5.6 of AEE Marine Mammal Assessment, by Anemone. WRC Peer Review of Marine Mammal Assessment, by SLR. Draft Marine Wildlife Management Plan incorporating recommendations from Anemone and peer reviewed by SLR.

Effect	Discussion	Cross Reference
	management practices will be incorporated into the SDP and the MWMP to minimise any residual risk.	
Seabirds	<ul style="list-style-type: none"> There will be neutral effects on seabirds. A range of seabirds utilise the area but the potential for entanglement, habitat exclusion, benthic habitat changes, foreign debris, navigational lights disturbance and noise all pose a very low risk to seabirds and some effects may be positive. 	<ul style="list-style-type: none"> Section 5.7 of AEE. Seabird Assessment, by Wildlands. WRC Peer Review of Seabird Assessment, by Pisces Consulting. Draft Marine Wildlife Management Plan incorporating recommendations from Wildlands.
Biosecurity	<ul style="list-style-type: none"> There will be no more than minor biosecurity effects. Any residual effects will be mitigated to the extent practical by the applicant operating biosecurity best practices set out in the AQNZ A+ Sustainable Management Framework. A biosecurity management plan (BMP) will be implemented. 	<ul style="list-style-type: none"> Section 5.8 of AEE. Biosecurity Assessment, by Coast and Catchment. WRC Peer Review of General Ecological Matters, by Pisces Consulting.
Landscape, Natural Character, and Visual Amenity	<ul style="list-style-type: none"> Sites A to C are located outside the Very High Coastal Natural Character (VHCNC) area in the Natural Character Study of the Waikato Coastal Environment²¹. The visual and natural character effects will be no more than minor. Site D is located off the coast south west of Mt Karioi and also outside the VHCNC. Site D is within the 5km outstanding natural landscape buffer in the draft Waikato Regional Coastal Plan maps however the plan is subject to submissions and appeals. Furthermore, the scale of the draft landscape overlay in the context of the proposal means that it is not anticipated to be affected in any material sense by the farms in their proposed offshore locations. Due to the distance from shore the greatest level of effect will be experienced from boats rather than from the land and in the context of the seascape the effects will be less than minor. There are limited opportunities for viewing any of the sites in a single outlook from land. The cumulative landscape and visual effects will be less than minor. The natural character of the marine environment has been modified by land-based activities such as run-off, and as the farm is to be sited over soft habitat the effects on the biogenic components of natural character will be no more 	<ul style="list-style-type: none"> Section 5.9 of AEE Landscape and Visual Assessment, by WPS Opus. Updated Landscape and Visual Assessment, by Wayfinder (provided to WRC December 2023). WRC Peer Review of Landscape and Visual Assessment, by Graham Mansergh Landscape Architects. Landscape Questions Response, by Wayfinder (provided to WRC February 2024).

²¹ <https://www.waikatoregion.govt.nz/services/publications/tr201605/>

Effect	Discussion	Cross Reference
	<p>than minor.</p> <ul style="list-style-type: none"> Overall, the landscape, natural character and visual amenity effects will be no more than minor and appropriate in the context of the location. 	
Hydrodynamic effects	<ul style="list-style-type: none"> Given the dropper line density and angle to the predominant current flow, the proposed operations are likely to have some impacts on wave energy transfers and current velocity within the nursery. Further away from the nursery the impacts are expected to be minimal or negligible at the coast. Overall, based on the available information, it is likely that the hydrodynamic impacts of the proposal will be no more than minor. Further hydrodynamic modelling is being undertaken to ground-truth the expert assessment. 	<ul style="list-style-type: none"> Section 5.10 of AEE Hydrodynamic Assessment, by MetOcean. WRC Peer Review of Hydrodynamic Assessment, by Tonkin and Taylor. Additional hydrodynamic modelling currently being undertaken by MetOcean due 30 May 2024.
Navigation safety, security of structures and management of debris	<ul style="list-style-type: none"> There will be no more than minor navigation effects. The farm will be installed and marked in a manner that enables safe navigation through and around the farm. Any residual effects will be mitigated to the extent practical by the applicant operating industry best practices set out in the AQNZ A+ Sustainable Management Framework and the Operational Management Plan (OMP). 	<ul style="list-style-type: none"> Section 5.12 of AEE.
Fishing	<ul style="list-style-type: none"> Effects on fishing are not anticipated but will be appropriately assessed by the Ministry for Primary Industries (MPI). Navigation through and around the farm for fishing vessels will be enabled. Effects on fisheries resources will be no more than minor and, in some respects, positive. 	<ul style="list-style-type: none"> Section 5.13 of AEE.
Cultural effects	<ul style="list-style-type: none"> NWML has sent copies of the draft application to all relevant groups and is committed to ongoing engagement and partnerships. 	<ul style="list-style-type: none"> Section 5.14 of AEE. Tangata Engagement Summary.
Recreational amenity	<ul style="list-style-type: none"> There will be no more than minor recreational effects. The proposed sites are away from the coast and not specifically popular with recreationalists. Mussel farms are known to have positive effects for recreational fishing. The farm blocks are sited in a manner that allows for navigation to and along the shore. Public access to the sites will still be enabled. 	<ul style="list-style-type: none"> Section 5.15 of AEE.
Air and noise	<ul style="list-style-type: none"> There will be no more than minor air and noise effects, and only for people who recreate in the immediate vicinity of the farms. The sites are away from the coast and not specifically popular with recreationalists. Any residual effects will be mitigated to the extent practicable by the applicant operating industry best practices set out in the AQNZ A+ Sustainable Management Framework and the Operational Management Plan (OMP). 	<ul style="list-style-type: none"> Section 5.16 of AEE.

Effect	Discussion	Cross Reference
Historic heritage	<ul style="list-style-type: none"> There will be no more than minor effects on historic heritage. 	<ul style="list-style-type: none"> Section 5.17 of AEE.
Economic and social effects	<ul style="list-style-type: none"> Effects on fishing are not anticipated but will be appropriately assessed by the Ministry for Primary Industries (MPI). Navigation through and around the farm for fishing vessels will be enabled. Effects on fisheries resources will be no more than minor and, in some respects, positive. Aquaculture plays a key role in the Government's growth agenda. A new spat catching/nursery farm in the cooler waters of the west coast of Waikato will enable the mussel industry to make a greater contribution to achieving the Government's aim of a 3-billion-dollar industry by 2035, as set out in the Government's Aquaculture Strategy. This in turn would support contribution to the range of 'wellbeings' envisioned by the Government in its support of aquaculture as a transformational industry. NWML project that the associated production resulting from full operation of the nursery would be in the order of 35,000 tonnes per year equating to a value of s 9(2)(b)(ii). NZIER project that a 50% increase in production in the Waikato mussel farming area would equate to an additional s 9(2)(b)(ii) to the region's GDP. In any event the economic effects are likely to be significant. 	<ul style="list-style-type: none"> Section 5.2 of AEE.
Food provisioning and ecosystem effects	<ul style="list-style-type: none"> Mussel farming, is known to contribute positive ecosystem services, including the provision of a healthy, affordable, low carbon protein source, as well as habitat creation and nutrient mitigation. 	<ul style="list-style-type: none"> Section 5.2 of AEE.

2.2 Effects on Māui Dolphin

NWML are conscious that the location is Māui dolphin habitat and have sought expert advice on potential effects on Māui dolphin and other marine mammals in the proposed location. WRC have sought a peer review of the NWML expert advice which concurs with its findings. In particular it is considered that effects can be managed through a staged and monitored development programme carried out in consultation with a marine mammal expert, as well as with implementation of a comprehensive Marine Wildlife Management Plan.

A summary of the potential effects on Māui dolphin and other marine mammals is as follows:

Effect	Maui dolphin	Other marine mammals
Entanglement	Minor as long as weighted spat lines used.	Minor on dolphins and baleen whales as long as weighted spat lines used. Negligible on fur seals.
Habitat exclusion	Minor as 700 hectares in 35.5 km range.	Negligible.
Trophic effects	Minor as 700 hectares in 35.5 km range.	Negligible.

Marine debris	Negligible as long as high quality UV stabilised ropes used, and practices followed.	
Vessel strike	Minor as long as care and slow.	Negligible.
Underwater noise	At most minor.	Negligible.
Cumulative effects	Minor (refined from at least minor).	Minor.

2.3 Overall Assessment

The environmental effects of mussel farming, and by association, spat/nursery activities, have been comprehensively researched and are well known. Effects arise from the visibility of the farms, an impact on navigation and the use of public space, potential effects on the water column due to current attenuation, and potential effects on the seabed due to shell drop and pseudo faeces. In addition, vessels servicing the sites can impact on amenity. Effects are possible on indigenous biodiversity including marine mammals and seabirds, but they will be no more than minor. Mussel farming provides positive economic and social effects as well as ecosystem benefits.