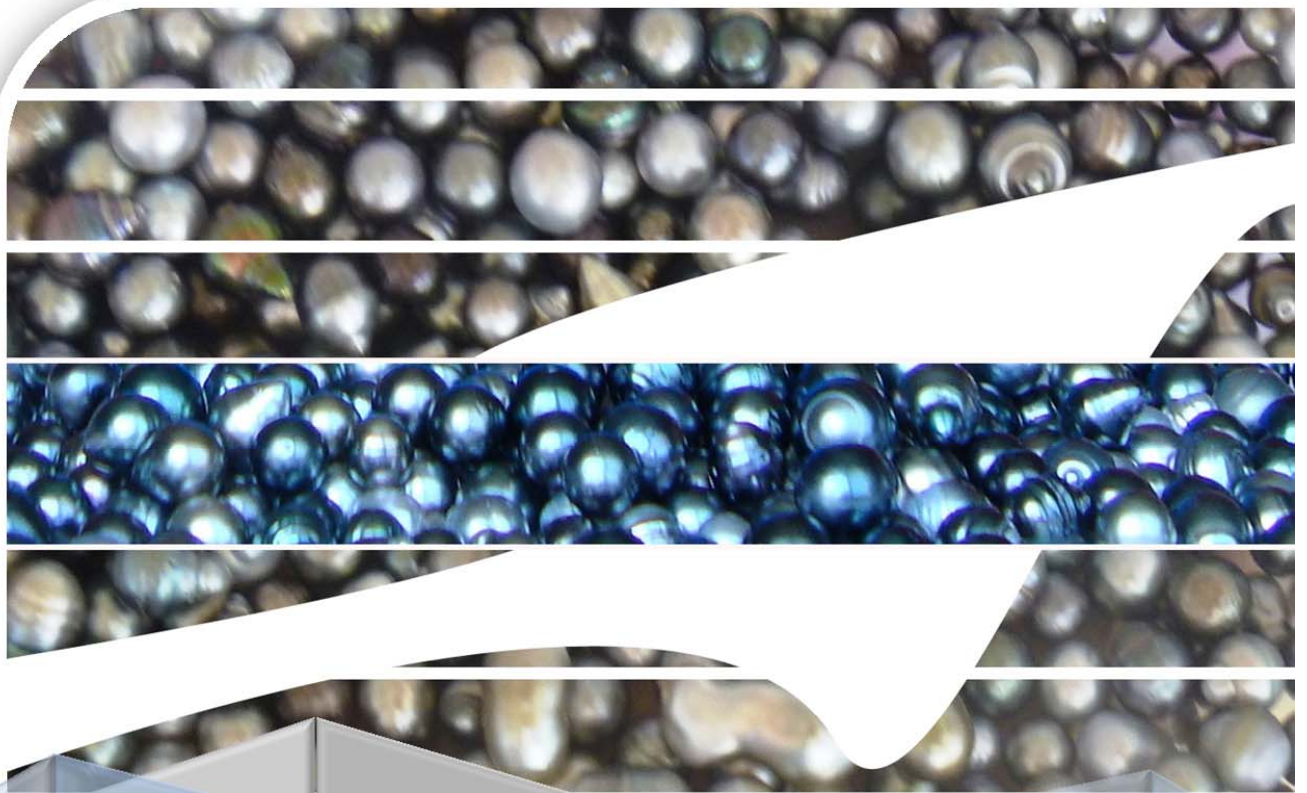


The Manihiki Pearl Farming Management Plan



2016-2026

**Manihiki Island Government
Tauhunu
Manihiki
Cook Islands**

Foreword

The aim of this Plan is to provide a handy reference source for pearl farmers regarding the Manihiki Lagoon Management Plan and its companion Code of Practice for Responsible Pearl Farming.

The Plan and Code are designed to promote, establish, and enforce environmentally sustainable pearl farming practices. This became necessary following the disease outbreak in 2000 which caused major production problems. They set out guidelines and rules that a pearl farmer is required to follow, and compliance thereof is an important condition of his or her farming permit.

The Plan and Code were prepared by the Ministry of Marine Resources for, and in consultation with, the Manihiki Island Government. The Manihiki Island Government is responsible for enforcement and the Ministry of Marine Resources will carry out inspections to ensure compliance by farmers.

The Plan and Code are an integral part of the current efforts by the Ministry of Marine Resources and the Cook Islands Pearl Authority to rejuvenate the pearl industry.

This Plan provides a handy source of reference for farmers and industry stakeholders.

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1. The Aquaculture Management Area

Manihiki lagoon, located in the northern group of the Cook Islands (10°25'S, 161°02'W), was designated as a fishery and is the designated Aquaculture Management Area for which this Management Plan has been written.

The lagoon has a total area of 4,461 hectares (ha), of this 2,860ha is considered suitable for farming cultured pearls, with water of depths between 10m and 40m. Water temperatures are generally between 26.7° and 30.3°C and water circulation rates are low, with a slow exchange of water between the ocean and lagoon. Low lagoon circulation and flushing rates increase the risk of disease outbreaks if management measures are not implemented.

The lagoon is known for its abundant natural stocks of black-lip pearl oysters (*Pinctada margaritifera*). Historically the oysters were harvested for their mother of pearl shell, however since the mid-1980's this oyster has been cultured for the production of black pearls. Manihiki lagoon now accounts for about 100% of pearl production in the Cook Islands.

2. Activities to be managed under the Management Plan

Activities managed under the Management Plan include all black-lip pearl oyster farming and associated activities within Manihiki lagoon.

3. The Manihiki Pearl Farming Management Plan

The “**Manihiki Pearl Farming Management Plan: 2016 – 2026**” will govern all pearl oyster farming and associated activities within Manihiki lagoon.

The overall objective of the Plan is to establish an ecologically sustainable pearl farming practices for “the protection, conservation and management” of the Manihiki lagoon and to improve the economic well-being of the Manihiki community.

The Plan outlines methods to manage pearl farming and related activities in Manihiki lagoon. The Plan has a **Code of Practice for Responsible Pearl Farming in Manihiki Lagoon** (the Code) as a supporting document. The purpose of the Code is to outline best pearl farming practice in the Manihiki lagoon. The Management Plan and the Code of Practice will form part of the conditions of the Pearl Farming Permit.

The duration of the Management Plan is 10 years. The Manihiki Island Government (MIG) and the Ministry of Marine Resources (MMR) will review the Management Plan at the end of the five-year permit cycle. Any changes made will be based on the best scientific information available and information collected from pearl farmers, and must be approved by the MIG.

4. Relevant Legislation

Island Government Act 2012-13

Marine Resources Act 2005

Manihiki (Natural Resources) By-laws 2003

5. Interpretations:

Act means the Island Government Act 2012-13

By-laws means the Manihiki (Natural Resources) By-laws 2003 and includes the Plan / Code

Chaplet means a set of cultured oysters attached to a farm line. There are usually 10 seeded shell, or up to 20 virgin shell (unseeded shells, pre-operation) per chaplet.

Code means the Code of Practice for Responsible Pearl Farming in the Manihiki Lagoon

Cultured Farmed black-lip pearl oysters

Farm means the area of lagoon allocated to a Farmer for the purpose of pearl farming

Farmed shell includes the black-lip pearl oyster (*Pinctada margaritifera*) that is cultured for black pearls, including; pre-seeded, first seeded, second seeded, third and fourth seeded, keishi, mabe, mantle shells, which vomits and reject oysters

Foreign Technician means a pearl technician not of Cook Islands' or Manihikian descent permitted to carry out seeding and harvest activities in the lagoon

GPS means the Global Positioning System, the technology used to locate the boundaries of pearl farms, to an accuracy of 3m

Guest Worker means a person of non-Manikian descent or resident employed by a Pearl Farmer to work on a Pearl Farm.

Haruharu means the collectors used to catch and grow juvenile black-lip pearl oysters (kati)

Hectare means an area equal to 100m by 100m (or 10,000m²)

Kaoa means a coral outcrop with its surface above the water at low tide

Kati means juvenile black-lip pearl oysters

Lagoon means the Manihiki lagoon, including the kaoa in the lagoon area.

Local Technician means a pearl technician of Cook Islands' or Manihikian descent permitted to carry out seeding and harvest activities in the Manihiki lagoon

may means Compliance is recommended, but there are no penalties for non-compliance.

MIG means the Manihiki Island Government established under the Act

Minister means the Prime Minister or other Minister subsequently charged with the responsibility for the Ministry and administration of the Island Government Act.

MMR means the Ministry of Marine Resources established under the Ministry of Marine Resources Act 1984

must means Mandatory practice, non-compliance is a punishable offence.

parau means natural pearl shells or black-lip pearl oyster (*Pinctada margaritifera*) in the wild or grown on a pearl farm.

pearl farmer means the holder of the Pearl Farming Permit

pearl farming mean activities associated with the culture of black-lip pearl oyster

pearl farming permit means the Pearl Farming Permit issued by the MIG to the pearl farmer

pearl farming permit holder the holder of the Pearl Farming Permit

Pearl Industry includes pearl farmers, technicians, pearl retailers, jewellers, Cook Islands Pearl Association (CIPA), Pearl Brokers, MMR, Registered Pearl Buyers.

Plan means the Manihiki Pearl Farming Management Plan 2016 – 2026

technician means any person who seeds, cultivates or otherwise causes to be grown artificially any pearl, whether or not for hire or reward, but does not include a person who, being the holder of a pearl farming permit under the By-laws, carries out activities by way of trial or feasibility study on a limited number of pearl shell (not exceeding 1000 in any calendar year) belonging to him

seeding means the insertion of a nucleus and/or foreign body into the body or the inner surface of a farmed shell for the purpose of growing pearls or mabe

spat means juvenile black-lip pearl oysters (kati) gathered for use in pearl farming using spat

6. Administration of the Plan

The Plan is to be administered by the MIG.

The MIG may appoint agents to administer parts of the Plan.

7. Roles of Participants

7.1 MIG

The MIG is responsible for:

- (i) issuing Permits to farmers and technicians,
- (ii) the allocation of farm areas,
- (iii) dispute resolution,
- (iv) administering of the By-laws, Plan, Code and Compliance,
- (v) providing transparent accounting of the revenue generated from fee collection in regards to the pearl farming industry,
- (vi) providing a completed, accurate six monthly report on the activities of the Pearl Industry, such as the Revolving Fund, issues in relation to permits issued, and allocation of farm areas. The schedule of reporting is 1st January – 30th June and 1st July – 31st December.

7.2 Ministry of Marine Resources

The MMR is a department of state known as the Ministry of Marine Resources; the development, exploration, management and conservation of all living resources found in the Cook Islands waters.

MMR:

- (i) is an advisor to the MIG on marine management issues,
- (ii) provides technical information and advice to the MIG on the development of management strategies,
- (iii) will oversee all research efforts aimed at the sustainable development of pearl oyster farming in Manihiki lagoon,
- (iv) will provide technical information on the ecological parameters of Manihiki lagoon,
- (v) will provide spatial information for all farm areas and boundaries inclusive of the following:
 - (i) maintain a master copy of the map of Manihiki lagoon, including the bathymetry and location of kaoas,
 - (ii) provide a map showing the current farm boundaries for each Farming Permit, and calculate the area of each farm within these boundaries in hectares to a precision of 0.1 ha.,
 - (iii) remap areas undergoing change in activity and boundaries, provided there has been authority from the MIG to make these changes.
- (vi) will provide regular information to the MIG and pearl farmers on the water quality in the lagoon,
- (vii) will conduct 6 monthly inspections of the Manihiki lagoon to monitor the compliance of Farming Permit holders and technicians regarding the terms and conditions of their permits as well as crisis inspections in consultation with the MIG,
- (viii) will provide annual reports on pearl farming in Manihiki lagoon for the MIG and Pearl Farmers based on benchmark assessments, farm log sheets and other information,
- (ix) will review log sheets; pearl grading sheets and seeding and harvest reports submitted by the Pearl Farmer to check for compliance with the Plan and for monitoring the industry,
- (x) will provide a contact point for the collection / acquiring of information with government departments and other agencies outside of the Cook Islands.

7.3 The Pearl Farmer

The Pearl Farmer shall:

- (i) Fulfill his / her obligations under the Plan through compliance with the terms and conditions of the farming permit and the Code,
- (ii) Ensure compliance under the Plan by all employees working on, or involved with, their Permit area, and will be liable for any failure of their employees to comply with the Permit / Plan and the Code,
- (iii) Provide to MIG log sheets; seeding and harvest reports and grading sheets after each seeding event.
- (iv) Comply with standards set by the Pearl Industry

7.4 The Technician

The Technician shall:

- (i) Fulfill their obligations under the Plan through compliance with the terms and conditions of the Permit and the Code.
- (ii) Ensure equipment or materials used for seeding and harvesting are free of disease.
- (iii) Comply with the standards set by the Pearl Industry;
 - i. Harvest of First seeding: No less than 18 months.
 - ii. Second/thereafter Operation: No less than 12 months.

7.5 The Police

Every member of the Police shall enforce the provisions of the By-laws and shall exercise the powers conferred upon it by the provision of the Act.

8. Aims of the Plan

- (i) Employ environmentally sound practices for pearl farming for the long-term future sustainability of the lagoon, both for those who live on the island of Manihiki and for future generations,
- (ii) Develop the pearl farming industry in harmony with traditional values and practices of Manihiki society.
- (iii) Enhance economic prosperity and encourage the full participation of all sectors of the Manihiki community in pearl farming for socio-economic development,
- (iv) Establish a transparent and accountable system of lagoon management for pearl farming in Manihiki lagoon,
- (v) Generate the best available information to assist with decision making on the management of the lagoon and pearl farming.

9. Management Measures

9.1 Area Management System

There must be defined farm areas for all Pearl Farmers, with no overlap of farm boundaries.

All pearl farm activities must be carried out within the farm boundaries shown on the farm map issued to each Pearl Farmer (refer to Item 7.2(v) above).

Changes to the farm boundaries can only be made after getting permission from the MIG and notifying MMR of the need to remap the farm.

Any Pearl Farmer found operating outside the farm boundaries specified in the Pearl Farming Permit will be liable to be penalised under the conditions in Paragraph 12 hereof.

Explanation

Because there is a limited amount of space in the lagoon suitable for pearl farming it is important that this is managed carefully so there is no overcrowding, and people do not expand out into each other's farm areas. This system will mean that the farm area that you have mapped will be secure (no-one else will move into it), and farm densities and stocking rates will be able to be more easily monitored.

9.2 Stock Densities for Pearl Farming

MMR will set the stock densities for farmed oysters, after discussions with the MIG.

Stock densities may only be changed with the approval of MMR and the MIG in the review of the Plan at the end of the first five year permit period, or under emergency conditions such as the outbreak of infection or disease, or environmental degradation. Any changes must be based on the data collected from pearl farms in the lagoon, and the best scientific information available.

The maximum stocking density allowed for any area of the lagoon must not exceed 4,000 farmed shells per hectare.

Any Pearl Farmer contravening the conditions of the Pearl Farming Permit will be liable to be penalised in accordance with Paragraph 12 hereof.

Explanation

Density is a measure of the number of shells in one place. One of the main causes of the vibrio disease in November 2000 was that there were too many shells in a small area. This meant there was not enough food and oxygen for all the oysters and the shells became weak. Like people, when shells are weak they get sick more easily. The disease spreads more quickly because there were too many shell and they were not healthy. By limiting the shells to a maximum density of 4,000 per hectare it will help keep the shell healthy and reduce the risk of disease.

9.3 Maximum Limit on Farmed Oysters in Manihiki Lagoon

The maximum limit of farmed shell for Manihiki Lagoon will be set at 1.5 million farmed shells (not including haruharu) for the period from 2016 - 2026.

MMR shall set the maximum limit of farmed shells for the lagoon after discussions with the MIG, based upon the best scientific information available.

The maximum limit may only be changed with the approval of the Minister of MMR on the advice of MMR in consultation and with the endorsement of MIG, in accordance with the review at the end of the five-year permit period, based on the data collected from pearl farms in the lagoon, and the best scientific information available.

Explanation

Research suggests that between 1 million and 1.5 million oysters is sustainable for the Manihiki Lagoon. Work by Ponia B (2000) suggests that as oyster numbers approach 1.5 million there should be a strict monitoring programme.

Through the reporting system in Section 10.1 and regular farm inspections the Ministry of Marine Resources will monitor the number of shells closely. When farmed shell numbers reach 1.4 million, measures will need to be put in place to limit farm expansion and new Pearl Farmers.

Each Pearl Farmer must agree to restrictions on increasing shell numbers in the farm area as required by agreement between the MIG and in consultation with MMR.

9.4 Code of Practice

The Code is an accompanying document to the Plan. The purpose of the Code is to ensure that individual farm practices that may impact on the wider health of the lagoon are managed. The Code is a more flexible document than the Plan, and on the advice of MMR provisions in the Code may be changed or added to from time to time as the MIG deems appropriate.

Compliance with the Code is a condition of the Farming Permit.

Any Pearl Farmer contravening the conditions of the Code will be liable to be penalised in accordance with Paragraph 12 hereof.

9.5 Wild Parau

9.5.1 From time to time the Council may notify the Pearl Farmer that the Lagoon has been opened to allow the harvesting of Wild Parau or may give the Pearl Farmer special written permission, to harvest Wild Parau. In either case, this permit may then be relied on as a pearl shell diving permit under Part 1 of the By-laws. Unless the lagoon has been opened or the Pearl Farmer has obtained that special permission the Pearl Farmer shall not gather, harvest or interfere with Wild Parau. If the Pearl Farmer does so, whether within the area of the Pearl Farm or elsewhere in the Lagoon the Pearl Farmer shall be liable:

- a) to a penalty as set out in the Manihiki (Natural Resources) By-laws 2003 or
- b) to termination of this permit.

Any wild Parau forfeited to the Council may be sold by it for its own benefit.

10. Monitoring and Control

Explanation

The Code of Practice has been written to help to advise people on better ways of managing farming activities and to stop farming practices that may have a negative impact on the overall health of the lagoon.

10.1 Reporting

All information presented to MMR is private and confidential. No information from individual farmers will be available to any other party. Aggregated information will be publicly available

when public benefit is at stake.

Information from the Pearl Farmer regarding mortalities and observations that may indicate oyster disease must be reported immediately to MMR.

MMR will provide the Pearl Farmer with a farm logbook. Sheets in the logbook will be doubled – one copy is to be sent to MMR and one copy is for the Pearl Farmer's own records.

All reporting requirements are to be met by the Pearl Farmer as in Paragraph 7.2 (vii, ix) and 7.3 (iii)

Explanation

This information is needed so that MMR can manage the numbers of shells and the densities of shells in the lagoon properly. It is vital that this information is as accurate as possible. To help ensure that other parties cannot access the information you provide to MMR, it has been suggested that there is a separate agreement between Pearl Farmers and MMR. This agreement would ensure that no information is released without prior written permission from the Pearl Farmer and MMR.

10.1.1 Reporting Standards

The Pearl Farmer will provide a completed, accurate six monthly farm log sheet to MMR. The schedule of reporting is 1st January – 30th June and 1st July – 31st December.

The farm log sheet must be given to MMR no later than four weeks after the six monthly reporting periods.

Submission of the six monthly farm log sheets is a condition of the Farming Permit. Any Pearl Farmer contravening this condition of the Farming Permit will be liable to be penalised in accordance with Paragraph 12 hereof.

Log sheets and other reports should be sealed in an envelope by the Pearl Farmer and given to MMR in Manihiki. These sealed envelopes will be sent to Rarotonga for processing.

Information from the log sheets will be recorded in a database to be administered by the MMR.

MMR will provide to the MIG and Pearl Farmers aggregated annual summaries of all data submitted through the logbook system.

MMR will provide annual reports to the MIG and Pearl Farmers analysing and interpreting the information submitted through the logbook system.

Explanation

All log sheets must be submitted to MMR in Rarotonga in sealed envelopes. Only one person will have access to the log sheets and the data to ensure that the information received remains confidential.

10.2 Lagoon Monitoring Systems

MMR (or agents delegated these responsibilities) will:

- (i) Provide information on the physical, chemical and microbiological water properties from the various monitoring stations around the lagoon to the MIG, Pearl Farmers and employees of Farmers on a regular basis via email, mobile phone text messages, facsimile and the public notice board,
- (ii) Monitor the health of the lagoon and provide early warning of conditions which may increase the risk of disease outbreak such as low water circulation, low dissolved oxygen levels and increasing ambient water temperatures.
- (iii) Take pathology samples and monitor for *vibrio* and any disease, in the lagoon.
- (iv) Survey the population of wild black-lip pearl oysters in Manihiki lagoon every three years.

10.3 Inspection and Enforcement

MMR (or an agent working on its behalf) will:

- (i) Randomly inspect pearl farms up to a maximum of four times a year,
- (ii) Monitor farm management log sheets, and any other relevant documentation for irregularities in reporting,
- (iii) Report on Pearl Farmers non compliance with the Code, or Pearl Farming Permit and the Plan to the MIG.
- (iv) In consultation with MMR any abandoned or inactive farm area the MIG may terminate the permit.
- (v) If a Pearl Farmer is found to be in breach of the Plan, Code or Pearl Farming Permit there will be the following course of action:
 - (i) The MIG will be notified in writing of the infringement with supporting evidence.
 - (ii) The Pearl Farmer will be notified and a meeting will be held with the Pearl Farmer to notify him/her of the steps that he/she needs to take to comply.
 - (iii) A timeframe for compliance is set, and an inspection will be done by MMR of the farm at the end of this time.
 - (iv) MMR will notify the MIG whether the Pearl Farming Permit holder has complied within the timeframe given.
 - (v) Exposed floats on the surface of the water that are likely to cause a navigational hazard can be removed by MMR and disposed as it sees fit.
- (vi) Enforcement of compliance with the Code, the Pearl Farming Permit the Technician's Permit and the Plan is the responsibility of the MIG (or an agency working on their behalf). The By-laws will be enforced by the Police
- (vii) The statutory powers of the Police to enforce the Plan, Pearl Farming Permit, Pearl Technician Permit and the Code are provided for in the By-laws and the Island Government Act 2012-13.

- (viii) Any Pearl Farmer and/or Pearl Technician who contravenes the Code, Pearl Farming Permit, Technician's Permit, or the Plan will be liable to be penalised under the conditions outlined in Paragraph 12 hereof.

10.4 Fees

- (i) The Pearl Farming Permit fee will be \$10 per hectare for each Pearl Farmer per term, payable on issue of the Farming Permit.
- (ii) The fee may be revised after the Pearl Farming Permit term expires.
- (iii) The Pearl Technician Permit fee shall be \$200 per calendar year (1 January – 31 December). The Pearl Technician Permit fee shall be reviewed by MIG annually.

11. Management Mechanisms

11.1 Pearl Farming Permit

Any person farming pearl oysters (including the collection of spat) must first obtain a Pearl Farming Permit from the MIG.

11.1.1 Allocation of Pearl Farming Permits

The lagoon is a community resource and the allocation of any Pearl Farming Permit does not confer any right or entitlement on the Pearl Farmer. It is a privilege granted to those who choose to work with, and as part of, the Manihiki community respecting the culture, traditions and values of this community.

The MIG will allocate Pearl Farming Permits taking into consideration the following criteria:

- (i) Extent of existing participation in pearl farming;
- (ii) Priority will be given to those of Manihikian descent who choose to live and work on Manihiki;
- (iii) In exceptional circumstances Pearl Farming Permits may be allocated to those of non- Manihikian descent subject to certain terms and conditions determined by the MIG;
- (vi) The ability of the applicant to comply with the Pearl Farming Permit.
 - a. Checklist (refer to Forms contained in the Schedule to the Plan)
- (v) The Pearl Farmer must complete the reporting requirements under the permit.

The MIG may grant a pearl farming permit to farm in a specified area of Manihiki lagoon subject to the conditions of the pearl farming permit (as provided in Paragraph 11.1.4) and conditions that the MIG may determine in consultation with MMR, such as research trials or spat recruitment studies.

One Pearl Farming Permit will be issued per person including his/her spouse. The MIG will reserve the discretion to issue a permit to a non-Manihikian and special conditions may apply.

Permission for a Pearl Farmer to farm in an area of the lagoon (as defined in the Pearl Farming Permit) includes permission to use kaoa or parts of kaoa included within this area, subject to provisions of the By-laws and the Plan, the Code and any other conditions that the MIG may attach to the Pearl Farming Permit.

11.1.2 Issuing of the Pearl Farming Permit

The Pearl Farming Permit will not be issued until:

- (i) The fee is paid,
- (ii) Outstanding penalties have been paid,
- (iii) Outstanding reporting (as in section 10.1.1 and 7.3)
- (iv) All other obligations have been met by the Pearl Farmer.
- (v) Business plans are received by MIG for new farmers and for new developments.
 - a. Refer to Section 11.1.1(iv)

When the MIG issues the Pearl Farming Permit it will:

- (i) Allocate farm boundaries including notification of total farm area,
- (ii) Notify the Pearl Farmer of farmed oyster stock densities.
- (iii) Provide copies of the Management Plan and the Code

11.1.3 Terms of the Pearl Farming Permit

The term of the Pearl Farming Permit will be for five (5) years, unless expressly stated otherwise.

The Pearl Farmer who fulfils the conditions of their Pearl Farming Permit will be given the first option to renew their Pearl Farming Permit for the respective farm areas at the end of the term of their previous Pearl Farming Permit.

If a Pearl Farmer has not made a significant investment (i.e. a minimum of 1,000 shells per hectare) in pearl farming by the end of the second year of the Pearl Farming Permit, then the Pearl Farming Permit will expire at the end of that term.

11.1.4 Conditions of the Pearl Farming Permit

The Pearl Farmer must ensure that their pearl farming operation:

- (i) Complies with the Plan and Code,

- (ii) Complies with the terms and conditions of the Pearl Farming Permit,
- (iii) Is contained within their farm boundaries (as provided by Paragraph 9.1),
- (iv) Complies with the shell density ratios for that Pearl Farming Permit (as provided by Paragraph 9.2),
- (vi) Completes all farm management log sheets, seeding and harvest report, grading sheets after each seeding event and returns them to MMR on time (as provided in Paragraph 10.1).

The Pearl Farmer will:

- (i) Allow an inspector approved by the MIG at all reasonable times to enter their farm to inspect pearl shells or oysters in the possession, or appearing to be in the possession of the Pearl Farmer;
- (ii) Be responsible for employees working on their farm, and ensure that this complies with the conditions of the Pearl Farming Permit, Plan and Code;
- (iii) Be of Manihikian descent, 18 years of age or older. If there is any doubt to the validity of a person's claim to Manihikian descent, written verification may be required. In the absence of written verification that person may prove to the satisfaction of the MIG of his or her claim.
- (iv) Application for a Pearl Farming Permit must be made in person, in Manihiki;

The Pearl Farmer or any of his/her employees are not permitted to work on the farm or collect haruharu on their Sabbath, Christmas Day, Good Friday, Ui Ariki Day, Cook Islands Gospel Day, Manihiki Gospel Day, ANZAC Day, 1 November, 4th August or if there is a death on Manihiki. For twenty four hours (24hrs) after a death of a person on the island of Manihiki and when a body is brought on the island of Manihiki for burial, during the period between the arrival of that body and the laying out of that body in the home of the family or burial or whichever occurs first. The MIG will issue a public notice to the effect that there must be no work for the period of burial.

All Pearl Farmers that are qualified for renewal must apply for the renewal of their Pearl Farming Permits no later than three months before expiry of their term.

If the MIG after due and proper consideration finds that the Pearl Farmer has consistently and without good excuse breached the conditions of his or her Farming Permit, the Pearl Farming Permit may be cancelled. A period of six (6) months is allowed for the Pearl Farmer to sell or dispose of his/her assets provided no further cultivation of pearls takes place from the date that the notice was served and provided further that the Pearl Farmer shall be entitled to harvest any shells that have already been seeded prior to the receipt of the notice of termination of the Pearl Farming Permit. Otherwise the MIG may suspend the Pearl Farming Permit for such period of time as the MIG may determine, and that the period of suspension must be in consultation with MMR.

The MIG reserves the right to change the terms of the Pearl Farming Permit at any time provided that this change is also applied to all similar Pearl Farming Permits and that change is for the benefit of the management of the Manihiki Lagoon.

If a Pearl Farmer cancels his/her Pearl Farming Permit the farm area must be cleared of all farmed oysters and pearl farming equipment, and the farmed area returned to the MIG for reallocation, unless other arrangements have been made with the prior approval of the MIG.

11.1.5 Transfer of Pearl Farming Permit

A Pearl Farming Permit may not be transferred to another person except with the written approval of the MIG.

11.1.6 Termination of Farming Permit

The MIG may terminate a Pearl Farming Permit where a Pearl Farmer:

- (i) Fails to make proper use of the Pearl Farming Permit area (as defined in Paragraph 11.1.3),
- (ii) Has furnished untrue or incomplete information in connection with an application for a Pearl Farming Permit,
- (iii) Contravenes or fails to comply with a condition imposed in respect of a Pearl Farming Permit,
- (iv) Contravenes or fails to comply with the Plan or the By-laws,
- (v) Is convicted of an offence under the By-laws,
- (vi) Contravenes the Code (in a manner that is likely to seriously prejudice or impact upon the aims of the Plan).
- (vii) Has abandoned the farm or become inactive with farming in consultation with MIG and MMR.

A Pearl Farmer may terminate his or her Pearl Farming Permit at any time. On termination of a Pearl Farming Permit the farm area is returned to the MIG for reallocation.

Pearl Farmers have a right to appeal the termination of their Pearl Farming Permit to the Minister for MMR.

An aggrieved Pearl Farming Permit holder may within 21 days of receipt of notice of termination appeal in writing to the Minister for MMR stating the grounds of the appeal.

The Minister's decision shall be final.

11.2 Technician's Permit

Any person who wishes to seed pearl oyster shells in Manihiki must first obtain a Technician's Permit from MIG.

11.2.1 Issuing of the Technician Permit

The Technician's Permit will not be issued until

- (i) The fee (only applicable for a foreign technician) is paid
- (ii) Any outstanding penalties have been paid.
- (iii) The provisions of Part 3 of the By-laws are complied with

11.2.2 Transfer of the Technican's Permit.

A Technician's Permit may not be transferred to another person except with the consent of the MIG.

11.2.3 Conditions of the Technician's Permit

The terms and conditions of the Technician's Permit shall be determined by the MIG pursuant to Part 3 of the By- Laws.

11.2.4 Termination of the Technician's Permit

The MIG may terminate a Technician's Permit where a Technician

- (i) Is in breach of her/his Permit
- (ii) Is in breach of the Plan, the Code or the By –Laws.

An aggrieved Technician may within 21 days of receipt of notice of termination appeal to the Minister for MMR stating the grounds of the appeal.

12. Penalties

The Minister's decision shall be final.

Penalties will be imposed for:

- (i) Not reporting information:

First offence -A warning is issued.

Repeat offence -Either a monetary fine not exceeding \$200 or the Pearl Farmer undertakes community service for up to five (5) consecutive working days.

- (ii) False reporting of information:

First offence -A warning issued.

Repeat offence -Either a monetary fine not exceeding \$500 or the Farmer undertakes community service for up to ten (10) consecutive working days.

(iii) Non-compliance with the Plan, Code and Permit

In accordance with the guidelines attached hereto as they relate to the Code.

Pearl farming activities being conducted outside of farm areas may result in the confiscation of pearl oysters and pearl farming equipment.

13. Savings

If any part of this Plan or any conditions imposed are found to be invalid, this does not affect the validity of any other part of the Plan or any other conditions imposed.

14. Attachments

Guidelines for Penalties
Pursuant to Paragraph 12 (iii) of the Plan

Note: The severity of the offence is ranked from Category 1 (least serious) to Category 10 (most serious or critical). The severity of the penalty increases as the ranking of the categories increases.

Level of Offence	Paragraph of the Code	Activity	Penalty
1 – 4	2.1.2 2.1.3 2.1.13	Haruharu Maintenance of farm lines Use of scuba and hooker	Monetary fine with a maximum of \$500
4 – 6	2.3.8	Keeping of livestock on the Koa	<ul style="list-style-type: none"> · First Offence: monetary fine with a maximum of \$700 · Repeat offence: termination of Pearl Farming Permit
6 – 8	2.1.12 2.2 2.3.1 2.3.4	Use of chemicals and fuel Closed areas Construction (on kaoa) Use of detergents	<ul style="list-style-type: none"> · First Offence: monetary fine with a maximum of \$1,000 · Repeat offence: <ul style="list-style-type: none"> - termination of Pearl Farming Permit - farmer given time to remove stocks
8	2.1.1 2.1.4 2.1.5 2.1.6 2.1.7 2.1.8 2.3.2 2.3.3 2.3.6 2.3.7	Line and chaplet spacing Treatment of parau during seeding Killing vomits and rejects Removal of dying and dead parau Transfer of live parau to/from Manihiki Disposal of fouling material, rubbish, etc. Storage & handling of fuel Use of pesticide Cleaning of parau Disposal of rubbish	<ul style="list-style-type: none"> · First Offence: monetary fine with a maximum of \$2,000 · Repeat offence: <ul style="list-style-type: none"> - termination of Pearl Farming Permit - confiscate stocks
10	2.1.9 2.1.10 2.1.11 Para. 9.2 of the Plan	Introduction of new marine organisms into Manihiki Use of imported used-farming materials Use of imported seeding instruments & equipment Stock densities for pearl farming	<ul style="list-style-type: none"> Termination of Pearl Farming Permit Confiscate stocks

Code of Practice for Responsible Pearl Farming in the Manihiki Lagoon

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1. INTRODUCTION

The “CODE OF PRACTICE FOR RESPONSIBLE PEARL FARMING IN THE MANIHIKI LAGOON: 2016—2026” (the “Code”) has been developed along with the MANAGEMENT PLAN FOR PEARL FARMING IN MANIHIKI LAGOON: 2016-2026” (the “Plan”).

1.1 Objective

The objective of the Code is to establish ecologically sustainable pearl farming husbandry practices for the “protection, conservation and management” of Manihiki lagoon.¹

1.2 Relevant Legislation and Permits

The Plan incorporates this Code. The Ministry of Marine Resources (“MMR”) will liaise with the Manihiki Island Government (the “MIG”) to include the Code into the Pearl Farming Permits when they are issued.

1.3 Administration of the Code

The Code is to be administered by the MIG. The MIG may appoint agents to administer parts of the Code. The MIG may amend the Code from time to time with input from pearl farmers and MMR.

1.4 Interpretations

Act means the Island Government Act 2012-13

By-laws means the Manihiki (Natural Resources) By-laws 2003 and includes the Plan / Code

Chaplet means a set of cultured oysters attached to a farm line. There are usually 10 seeded shell, or up to 20 virgin shell (unseeded shells, pre-operation) per chaplet.

Code means the Code of Practice for Responsible Pearl Farming in the Manihiki Lagoon

Cultured Farmed black-lip pearl oysters

Farm means the area of lagoon allocated to a Farmer for the purpose of pearl farming

Farmed shell includes the black-lip pearl oyster (*Pinctada margaritifera*) that is cultured for black pearls, including; pre-seeded, first seeded, second seeded, third and fourth seeded, keishi, mabe, mantle shells, which vomits and reject oysters

Foreign Technician means a pearl technician not of Cook Islands’ or Manihikian descent permitted to carry out seeding and harvest activities in the lagoon

GPS means the Global Positioning System, the technology used to locate the boundaries of pearl farms, to an accuracy of 3m

Guest Worker means a person of non-Manikian descent or resident employed by a Pearl Farmer to work on a Pearl Farm.

Haruharu means the collectors used to catch and grow juvenile black-lip pearl oysters (kati)

Hectare means an area equal to 100m by 100m (or 10,000m²)

Kaoa means a coral outcrop with its surface above the water at low tide

Kati means juvenile black-lip pearl oysters

Lagoon means the Manihiki lagoon, including the kaoa in the lagoon area.

Local Technician means a pearl technician of Cook Islands' or Manihikian descent permitted to carry out seeding and harvest activities in the Manihiki lagoon

may means Compliance is recommended, but there are no penalties for non-compliance.

MIG means the Manihiki Island Government established under the Act

Minister means the Prime Minister or other Minister subsequently charged with the responsibility for the Ministry and administration of the Island Government Act.

MMR means the Ministry of Marine Resources established under the Ministry of Marine Resources Act 1984

must means Mandatory practice, non-compliance is a punishable offence.

parau means natural pearl shells or black-lip pearl oyster (*Pinctada margaritifera*) in the wild or grown on a pearl farm.

pearl farmer means the holder of the Pearl Farming Permit

pearl farming mean activities associated with the culture of black-lip pearl oyster

pearl farming permit means the Pearl Farming Permit issued by the MIG to the pearl farmer

pearl farming permit holder the holder of the Pearl Farming Permit

Pearl Industry includes pearl farmers, technicians, pearl retailers, jewellers, Cook Islands Pearl Association (CIPA), Pearl Brokers, MMR, Registered Pearl Buyers.

Plan means the Manihiki Pearl Farming Management Plan 2016 – 2026

technician means any person who seeds, cultivates or otherwise causes to be grown artificially any pearl, whether or not for hire or reward, but does not include a person who, being the holder of a pearl farming permit under the By-laws, carries out activities by way of trial or feasibility study on a limited number of pearl shell (not exceeding 1000 in any calendar year) belonging to him

seeding means the insertion of a nucleus and/or foreign body into the body or the inner surface of a farmed shell for the purpose of growing pearls or mabe

spat means juvenile black-lip pearl oysters (kati) gathered for use in pearl farming using spat

2. CODE OF PRACTICE

2.1 Responsible Pearl Farming Practices in the Manihiki Lagoon

2.1.1 Line and chaplet spacing (Hanging shells)

- a) Farm lines must be separated by at least 10 metres, with a recommended distance of 20 metres. See Figure 1.0 below.
- b) Chaplets with cultured Parau must be separated by at least 1 metre (see Figure 1.0 above).
- c) Chaplets must have a maximum of 10 parau on them, with the exception of pre-ops, which may have up to 20 parau (10 sets of two oysters).
- d) It is recommended that there is a gap of 20 cm's between parau on the chaplet.
- e) There must only be one layer of farm lines in any area (see Figure 2.0 below).
- f) It is recommended that each area be left without farmed shell in it (fallow) for 12-18 months from time to time.
- g) It is recommended that where possible you have a buffer zone of at least a minimum 25m around your farm.
- h) Lines, chaplets and parau are to be maintained free of bio-fouling and bio-fouling disposed of appropriately.

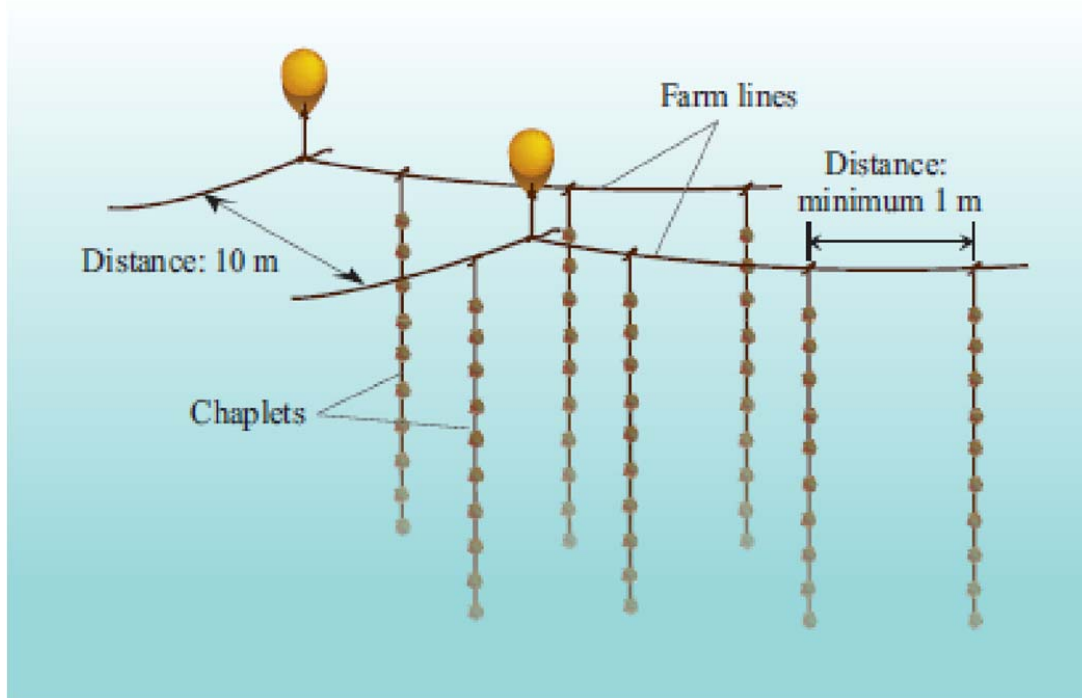


Figure 1.0: Line and Chaplet Spacing

Mature oysters filter around 20 litres of water an hour. On one 220m line there could be a maximum of 2000 seeded shells when using this spacing, this equals 40,000 litres of water– nearly equivalent to 1 shipping container per hour – or 29 shipping containers of water per day for one line (one twenty foot container contains 33 cubic metres). If the lines are not adequately spaced food and oxygen are removed from the water and oysters will filter each other's waste products.

2.1.2 Haruharu

- a) Haruharu lines must be at least 10 m apart.
- b) Haruharu collectors must be at least 0.50 m apart. Once the kati has caught on haruharu it is recommended that after 12 months, or when the kati is between 1½ – 2 inches (40–50mm) you spread it out, moving half the haruharu (drops) onto another line (see Figure 4 and 5).
- c) It is recommended that Kati be removed from collectors before they get to 3 inches (75mm).
- d) After kati larger than 3 inches (75mm) have been harvested and / or sold or given to other Pearl Farmers. It is recommended that the rest are destroyed.
- e) All haruharu must be within farm boundaries – either your own, or by private agreement with another Pearl Farmer.
- f) If your haruharu is on someone else's farm this must be noted on your log sheets, and the other pearl farmer's farm's log sheets.
- g) Unattended haruharu (haruharu not being harvested regularly, with high number of

- large shells) may be confiscated.
- h) Any haruharu installed outside of farm boundaries, or set in someone's farm without the permission of the Farmer Permit holder may be confiscated along with any equipment.
 - i) Unattended haruharu (haruharu not being harvested regularly, with high number of large shells) may be confiscated.

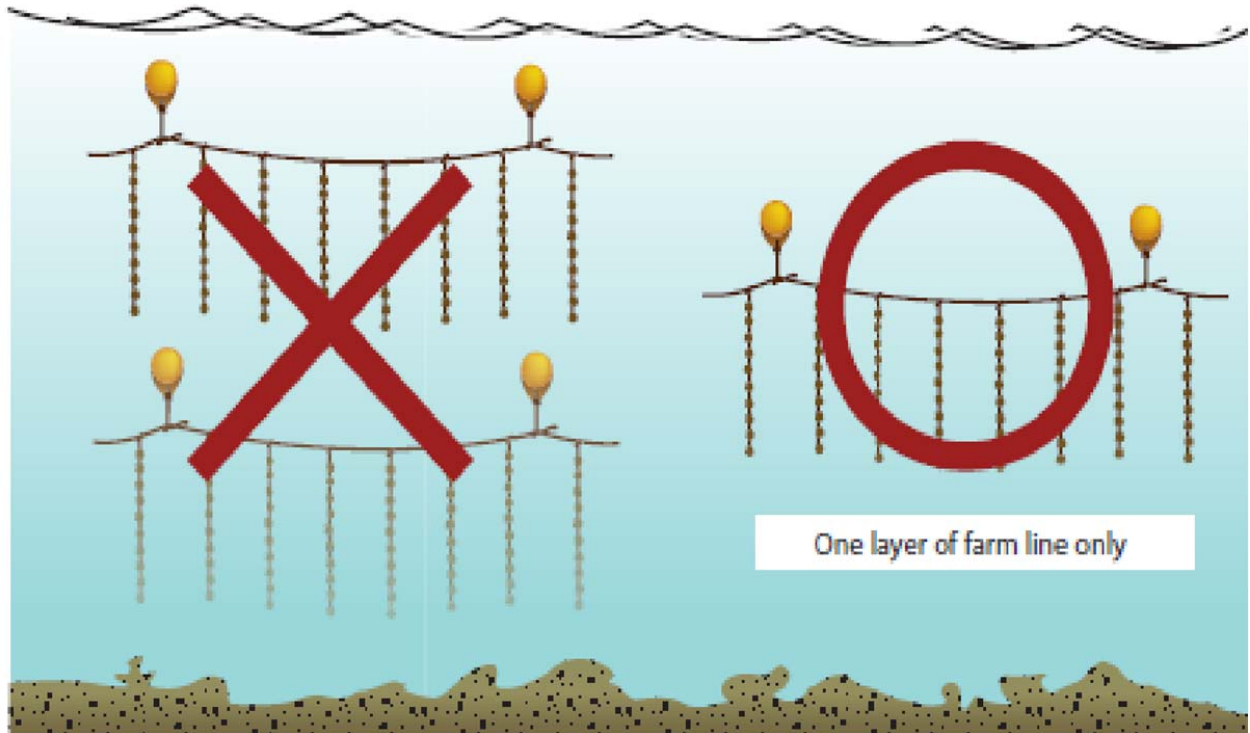


Figure 2.0: Line and Chaplet Spacing

A system of moving the lines every 12 – 18 months is needed to give the area under the lines time to recover. A fine layer of sediment (waste products) falls from the oysters and the fouling on the lines, and over time this builds up killing plants and animals underneath them, and making the lagoon an unhealthier environment.

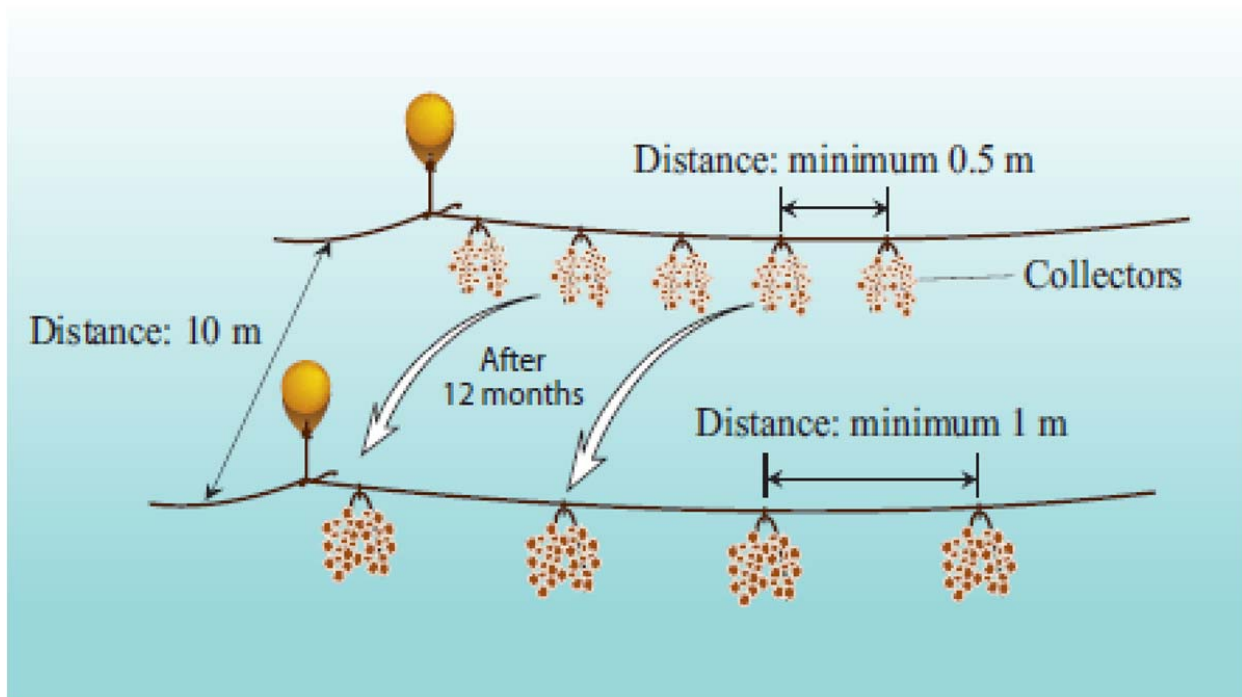


Figure 3.0: Spacing of lines and collectors and how to spread out collectors after 12 months or 1-2 inches growth.

Haruharu is the start of the pearl producing process. The more food and oxygen that they have, the healthier the oyster will be. When kati gets too big (greater than 3 inches) they behave in the same way as a cultured oyster – eating the same amount and having the same amount of waste. Having big kati on the collector is the same as spacing your farm lines too closely together - they quickly deplete the food and oxygen, and the shell becomes weak, therefore vulnerable to pathogens causing hotspots for disease.

A pearl farmer may make private arrangements to set haruharu lines on other pearl farmers farms, but it is important that this is noted in the log sheet so that the densities can be correctly calculated for each farm and the lagoon as a whole. The Pearl Farmer that lets other pearl farmers set lines into their farm must be careful to make sure that there are not too many lines in his/her area.

MMR will keep monitoring the haruharu situation closely through the logbook system and visual inspection.

2.1.3 Maintenance of farm lines

- a) Farm lines must be at least 2 metres below the water surface.
- b) Pearl Farmers must not interfere with the normal right of passage by boats across their farms.
- c) Pearl Farmers must ensure that the boat access track between Tauhunu and Tukao is maintained.
- d) Small line markers used during seeding must be removed when they are no longer being used.
- e) Farm lines must be adequately buoyed and not in danger of sinking.
- f) Unattended sunken haruharu collectors or Parau lines must be re-floated or removed by the Pearl Farmer or they may be confiscated.

- g) (g) Lines, chaplets and parau are to be maintained free of bio-fouling and bio-fouling disposed of appropriately as much as possible.

Hanging lines 2m below the surface will prevent damage to boat motors and boats.

On lines that have sunk to the bottom, kati and Parau still feed and generate waste in the same way that hanging shells do, taking food and oxygen from the system that could be used for pearl producing oysters. Shells on the seafloor smother other organisms that are living underneath it.

2.1.4 Treatment of parau during seeding

- a) Pearl Farmers must not stack Parau in crates.
- b) It is recommended that Parau are brought in for a maximum of 24 hours if they are coming into shallow water for seeding. It is better to bring the Parau to the seeding house in the morning and return them in the evening.
- c) When there are high temperatures (over 30oC) it is recommended that shells are only removed from the water in the early morning and late afternoon, not during the middle of the day (this practice is also recommended when cleaning shells). Strong winds will also dry Parau very quickly.
- d) Catch bags must be removed at least 8 weeks after seeding.
- e) It is recommended that minimum stress be applied when handling parau at all times to reduce death, disease occurring in the lagoon.

During seeding there is a lot of activity in the lagoon, with large numbers of Parau being moved and often being held at high densities. During this part of pearl farming process, it is vital that extra care is taken to avoid conditions that stress and weaken the shells.

There seems to be a problem with farmers holding shells in extremely stressful conditions pre-seeding (more stressful than normal conditioning). Talk to your technicians about their requirements for shell conditioning, but shells should never be held in shallow water at high densities for long periods of time as water in the shallow area is prone to high temperatures and oxygen depletion. Holding shells in stacked crates must never happen. Some farmers have noticed that the number of rejects is much higher when the temperature is over 30°C.

2.1.5 Killing Vomits and Rejects

- a) If vomits and rejects are not being used for mabe or keshi it is recommended that these parau are killed.
- b) You must not store (bank) large numbers of vomits and rejects on the seafloor or at high densities.

Vomits and rejects are not productive parau unless they are being used for mabe or keshi pearls, however they still filter, remove oxygen and produce waste in the same way as hanging shell, taking food out of the system for the productive shell. Stacking vomits and rejects in banks around kaoa is the same as farming shell at very high densities and this sort of farm practice creates disease hotspots. Kill oysters that you are not using to reduce food and oxygen depletion.

2.1.6 Removal of dying or dead Parau

- a) A Pearl Farmer must remove all dying or dead Parau from the lagoon immediately.
- b) A Pearl Farmer must report weak oysters and shells displaying signs of disease if they are occurring in significant numbers on your farm (if there are more than 20% weak oysters).
- c) Any occurrence or suspicion of high numbers of dead Parau on any pearl farm (i.e. disease outbreak) must be reported immediately to the MMR by the Pearl farmer.

2.1.7 Transfer of live Parau to or from Manihiki

- a) A Pearl Farmer must not export live Parau from Manihiki to another destination.
- b) A Pearl Farmer must not import live Parau into Manihiki from another destination without the approval of the MIG (based on recommendations from the MMR).

Introducing new marine organisms to Manihiki lagoon has its risks – prevention of new diseases and/or bacteria entering the lagoon.

2.1.8 Disposal of fouling material, cleaning waste and rubbish

- a) Fouling or waste matter collected (for example during cleaning) at the Pearl Farmer's farm or on the boat must be disposed of on land and not into the lagoon.
- b) A Pearl Farmer must ensure that the disposal of fouling or waste matter must not cause problems for other Pearl Farmers or residents e.g. odour or insects.
- c) Disposal of waste must be done at least 10 m on the landward side from the high tide level.
- d) Debris from pearl farming must not be disposed of in the lagoon.
- e) Rubbish must not be disposed of in the lagoon

Minimising the amount of waste and rubbish that goes into the lagoon helps to keep the water clean and the lagoon environment healthy. Water changes in the lagoon very slowly so anything that goes into the water will take a very long time to come out.

When cleaning shells and equipment on the boat or at the seeding house the waste must be disposed of on land. When cleaning fouling from lines in the water it is not practical to dispose of the waste on land, but it is important to rest the area under the lines every 12-18 months to prevent a thick build-up of silt under your lines (see Section 2.1.1).

If lines/floats are not being used for long periods of time, take them out of the water, clean them and store them for future use or sell to someone else. Some farmers drop unused lines to the bottom for fish to keep clean and to prevent sun damage that can occur when lines are stored on land. Ensure that you know where these lines are.

Don't throw rubbish into the lagoon. This includes drinking bottles, food wraps, wrapping from around farming material etc. If you see rubbish in the lagoon, remove it. Things like roofing iron, old fridges etc. should be removed as they may be releasing toxic substances into the lagoon as they begin to rust and break down.

2.1.9 Introduction of new marine organism(s) into Manihiki lagoon

- a) A Pearl Farmer must not introduce new organisms (plants, animals and microorganisms) into the Lagoon without first seeking the approval of the MIG.
- b) A Pearl Farmer who accidentally causes the introduction of harmful marine organisms into the Lagoon must notify the MIG immediately.
- c) A Pearl Farmer who wishes to maintain a collection of marine species not found naturally in Manihiki on land, kaa or Lagoon must first obtain the approval of the MIG and must satisfy the MIG that strict containment procedures are adhered to.
- d) Equipment or shipments suspected of harbouring new marine species may be inspected or confiscated by the MIG.

This is to prevent the accidental introduction of new species or diseases into the lagoon, as it is not clear what impact these may have.

2.1.10 Use of imported used farming material

- a) Used pearl farm materials (excluding seeding equipment, boats and outboards) from pearl farms overseas must not be reused in Manihiki lagoon.
- b) Any used materials from any aquaculture or agriculture farm or abattoir must not be used in Manihiki.
- c) Permit holders must not use containers for floats that have had chemicals or substances that you are unsure about in them.

Used gear such as ropes and floats may have plants, animals, pests or bacteria on them that you are unable to see. To prevent the accidental introduction of any of these potentially harmful organisms, used pearl farm materials must not be used. Make sure that boats and outboards are thoroughly flushed out and then scrubbed down and dried in direct sunlight to kill any organisms that may be on them.

If you are not sure about what has been in a container you would like to use for a float, or you know it had contained chemicals, it must not be used. If the used containers have held food ensure that the container has been properly washed before using it.

2.1.11 Use of imported seeding instruments and equipment

- a) All used imported surgical instruments associated with seeding must be sterilised and free of pathogenic matter or agents prior to entry into Manihiki.

The MMR in Rarotonga clears seeding tools that come from overseas with technicians. Please make sure that any technician that comes to your farm from either Penrhyn or Rakahanga sterilises their tools before working on your farm.

2.1.12 Use of chemicals and fuel

- a) Quantities of non-biodegradable or toxic chemicals (such as anaesthetic, anti-fouling etc.) must not be used in the Lagoon without prior approval from the MIG.
- b) Non-biodegradable chemicals or fuel must not be disposed of directly into the Lagoon.
- c) It is recommended that four stroke boat engines replace the two stroke engines.

Do not use or dispose of chemicals, fuel or substances that you are unsure about into the lagoon. Very

small amounts of some chemicals can do a large amount of damage to plants and animals living in a lagoon. The Manihiki lagoon changes very slowly, so if any toxic substance gets into the water it will be there for a long time.

Large amounts of oil and benzine are lost into the ocean from two stroke engines, and these have been banned in many lagoons and lakes in other countries. On this issue, MMR will provide more information.

2.1.13 SCUBA and Hookah use

- a) All SCUBA and hookah users and operators must have a valid certificate.
- b) It is recommended that divers and farm workers have current CPR/first aid certification.
- c) The MIG must ensure that adequate first aid supplies are kept available for farm workers.
- d) SCUBA and hookah apparatus may be used to assist in the farming of pearl shells on the Pearl Farmer's farm and for haruharu collection, but for no other reason.
- e) All dive tanks must have a visual inspection every 2 years and a hydrostatic test every 4 years.

Dive safety is the difference between life and death. Exercise caution – don't dive without a gauge, make sure your gear is working properly, do your deep dives first and shallow dives last, and ensure that you are doing decompression stops after deep dives.

2.2 Closed Areas

A closed area is described as an area in Manihiki Lagoon that is not available for Pearl Farming or any Pearl Farming activities unless expressly stated otherwise. Pearl farming or pearl farming activities must not take place in the following areas:

- a. Tukao Bay at the northern end of the Lagoon,
- b. Around the edge of the lagoon in areas where the lagoon depths are less than 10 meters. Seeding platforms are permitted in this area, and chaplets containing Parau can be held for a maximum of 24 hours during seeding. Refer to map in Figure 4.0 of the Plan

2.3 Management of On-Land Activities: Activities on Koa

2.3.1 Construction

- a) There must be no construction of permanent or semi-permanent structures on a kooa without the approval of the MIG.
- b) In considering whether to grant approval the MIG must be given plans of the proposed structure and details of the materials to be used on the structure to be submitted to the MIG.

This is to ensure that any structure built on a kooa will not blow over in a strong wind, and is not built with harmful materials such as asbestos, old roofing iron etc. MMR will provide more information.

2.3.2 Storage and handling of fuel

- a) A Pearl farmer who wishes to store bulk containers of fuel and chemicals on the kaoa must first seek the approval of the MIG.
- b) A Pearl Farmer who wishes to store fuel and chemicals on the kaoa must have proper and approved storage areas for such fuel. These storage areas can be in the form of a non-leaking containment area in concrete, metal or plastic depending on the fuel or chemical properties.
- c) All fuel and fuel oil handling and storage must be done in this impermeable area.
- d) Fuel must not be disposed of on a kaoa.

2.3.3 Use of pesticides

- a) There must be no agricultural pesticides used on kaoa, with the exception of domestic fly spray.

2.3.4 Use of detergents

- a) Only biodegradable, enzyme free, low phosphate detergents (including hand and bath soap should be used.
- b) In order to limit direct disposal of pollutants into the Lagoon, all kaoa residents are recommended not to place dishwashers and washing machines on kaoa.

Many soaps and detergents contain chemicals or substances that cause an imbalance in the natural chemistry of the lagoon water. Some products are much less harmful than others - MMR will provide information to pearl farmers about the best types of products to use.

2.3.5 Treatment of sewage

- a) It is recommended that composting toilets or septic tanks built to Department of Health standards be used in place of over-water toilets.

2.3.6 Cleaning of Parau

- a) A Pearl farmer must not dump waste and fouling material directly into the Lagoon when cleaning Parau on kaoa, but keep it on land.
- b) It is recommended that bio-fouling on the parau be kept either free from it or at a minimum coverage.

2.3.7 Disposal of rubbish

- a) A Pearl Farmer must not dispose of rubbish directly into the lagoon.
- b) All rubbish must be transported to accepted rubbish dumping areas on the main islands.

2.3.8 Keeping of livestock

- a) Livestock must not be kept on a kaoa.

2.3.9 Environmental Eco-Friendly Practices

- a) Encourage usage of 4-stroke engine with phase out of 2-stroke within the next 5yrs
- b) Use of eco-friendly products that reduces harmful compounds entering the lagoon

2.4 Management of on-land activities: Activities on Manihiki Atoll

Land based activities on Manihiki Atoll are controlled by By-laws and are beyond the scope of this Code of Practice. However, any land based activities that impact on the health of Manihiki lagoon and the sustainability of pearl farming must be taken into account by the MIG in their decision-making.

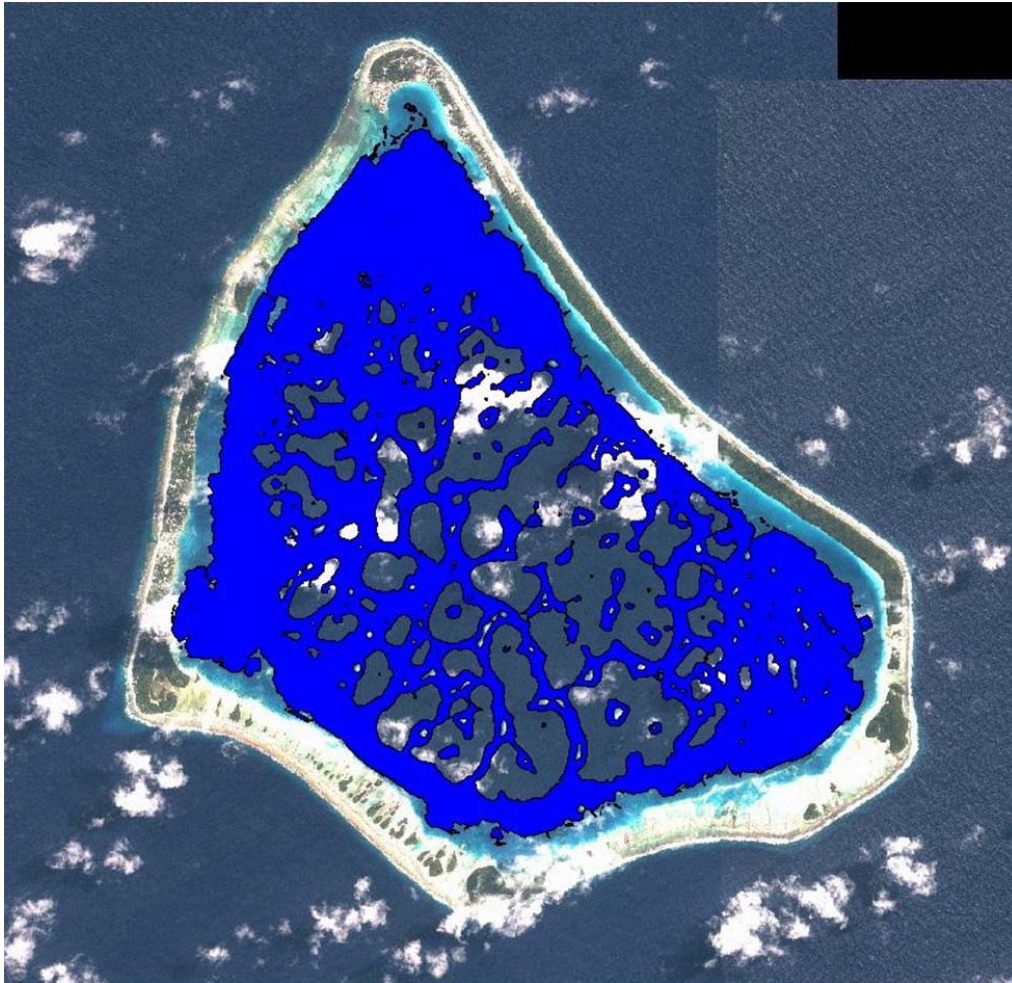


Figure 4.0: The area in dark blue mark areas with depth more than 10 meters. All areas outside of this area are closed to pearl farming activities to maintain access. Seeding platforms are allowed in the areas outside of the area in dark blue, however shells must not be held for longer than 24 hours. The water around the edge of the lagoon is shallow and more likely to heat up quickly and lose oxygen. Leaving shells in this area for long periods of time will make them weak and oxygen deprived.