forestry, fisheries & the environment
Department: Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

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BIVALVE SHELLFISH FARMERS' ASSOCIATION OF SOUTH AFRICA

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South African Kelp Farming Project (Phase 2 Feasibility study)

Standard Operating Procedure (SOP): General Weaning & Grow-out set-up and preparations

SOP number: BSASA-9	**Date:** 1 March 2025
Compiled by: The Project Manager (Dr Lizeth Botes) on behalf of BSASA	**Version:** 1 **Review date:** to be adapted and revised by industry

Introduction

The overall goal of the South African Kelp Farming Project (SA KFP) was to gather, analyse and disseminate evidence and research results to a broad stakeholder base, including the existing aquaculture industry and new potential entrants, to lay the foundations toward building a sustainable Kelp Aquaculture Industry in SA and the region.

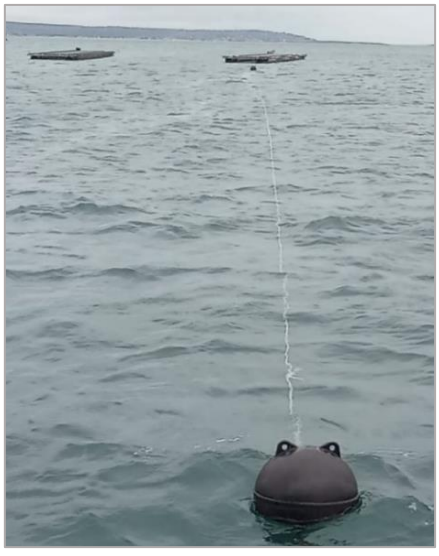
One of the project objectives was to investigate and tailor the weaning and grow-out methods for our local kelp species (based on the kelp farming manuals from elsewhere that are already publicly available and accessible on the SA KFP webpage), which can then be adapted and revised by industry to suit their own needs. Although the temporary set-ups that were used in Phase 2 of the SA KFP were aimed at achieving the short-term project objectives, it was the first successful attempt to cultivate *Macrocystis pyrifera*, *Ecklonia maxima* and *Laminaria pallida* in South Africa, and also the first successful attempt to cultivate *E. maxima* and *L. pallida* anywhere.

Purpose of SOP:

The purpose of this SOP is to provide guidance in terms of the weaning/grow-out set-up as well as the preparations that will be required during the weaning/grow-out stages of the kelp production cycle. Since very detailed kelp farming manuals are already available, these topics will be covered briefly and will refer to the manuals where relevant.

General set-up and preparations:

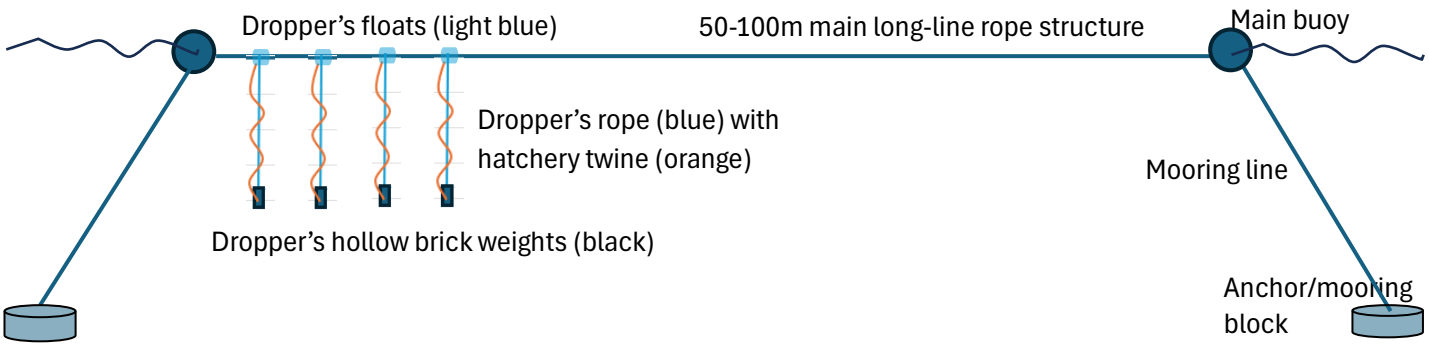
Note: We found that vertical rope droppers provided better yields than the horizontal rope structures, and will thus focus in this SOP on the vertical rope droppers. Should you prefer to grow kelps on a horizontal long-line on which the hatchery twine is unwound, consult the manuals available on the SA KFP webpage in which case it is advised that the main line of the long-line onto which the hatchery twine will be unwound, be situated at 3m depth to enable the best kelp growth.



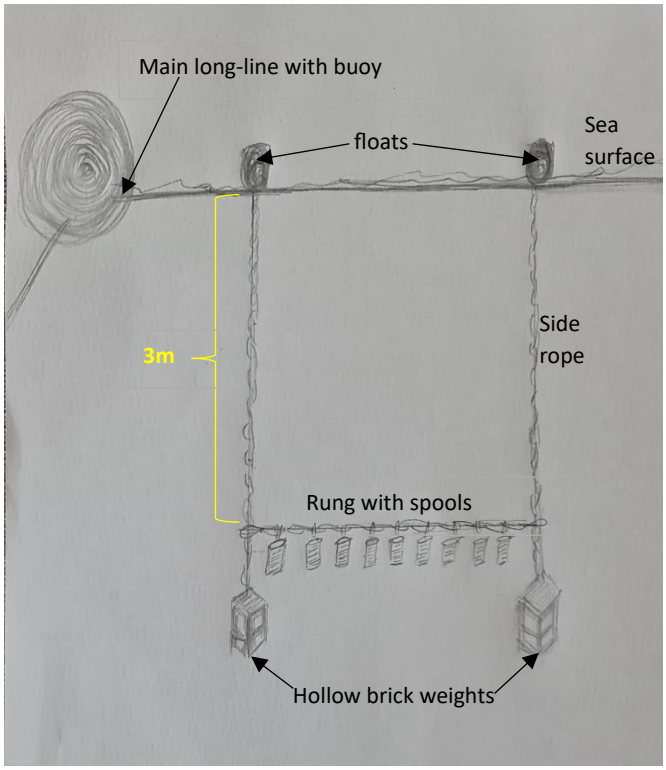
Assuming all permits and approvals are in place, there are 3 main structures that are used during the weaning and grow-out stages, namely the main long-line, the temporary weaning rope hanger on which the juvenile kelps will be weaned until they are ~2cm and the vertical dropper rope structures on which the kelps will grow until they are harvested.

1. Basic set-up of the main long-line
   In the picture to the right, the newly installed two main buoys and the 100m main long-line are visible with 2 mussel rafts in the background of the Blue Ocean Mussels (BOM) site where Saldanha Diving Services was contracted to assist with installations of the two mooring blocks and their

respective mooring lines under water which hold the entire structure in place (as per the diagram below).



2. Basic set-up of the temporary weaning rope hanger:
   Depending on the number of spools that will arrive from the Nursery, a few temporary rope hangers need to be prepared. These will be attached to the main long-line for approximately 2-3 weeks. This is where the spools will hang to acclimatise and grow the kelps until they reach ~2cm before being unwound onto vertical droppers.
   - To construct a "temporary rope hanger" you will need two hollow brick weights, two floats and rope.
   - Assemble as per picture.
   - The spools will be hung at 3m depth. The eyes on either side of the rung at 3m must go through the side rope. This can be done by opening the side rope with a splicing fid and sticking the end of the rung through before being spliced closed as per this video to form the eye.
   - Both ends of the two side ropes should also end with an eye so that it can be tied with knots to the floats and the brick weights. The bricks and floats can be attached with knots (as per these videos).



3. Basic set-up of the vertical rope dropper in Grow-out:
   Once the kelps have reached ~2cm, the spools will be unwound onto 6-7m long vertical droppers 1.5-2m apart on the long-line as indicated in diagram above.
   - To construct the vertical droppers you will need one hollow brick, one float and 6-7m rope for each dropper.
   - Ensure both ends of all the droppers are ending with an eye as described in the videos.
   - DO NOT assemble the entire dropper beforehand. The floats will be attached to the long-line with knots prior to the day when the spools will be unwound, but the bricks and the dropper ropes will be attached with knots on the day as per SOP11.
   - Optional- The farmer may want to monitor and inspect the kelp growth on the droppers, and to do this handles (50cm short pieces of rope with the two ends spliced together as in this video) can be attached with cable ties at every meter down the dropper AFTER the entire dropper has been assembled and AFTER the hatchery twine on the spools have been unwound onto the dropper. On a 6m dropper one will need 5 handles (but less can also be used)

3. Main components of rope structures:
   The basic components are anchor/mooring blocks, mooring lines, shackles, big black buoys on either end (in the

case of a 100m line an extra buoy can be placed in the middle), the main long-line rope (32mm Danline polypropylene twisted rope), dropper and temporary hanger ropes (16mm polysteel 3-string rope)

4. Tools & Consumables:
   The basic tools and consumables that will be used in Grow-out include scrapers, knifes, various sizes cable ties, side cutters, heavy duty gloves, splicing fid tool, measuring reel, ruler, pressure hose, Q20 lubricant, brushes, knife, clipboard, pens/markers, paper towels, PPE etc.

5. Suppliers:
   The consumables, tools and equipment as well as safety and protective clothing are generally available at local outlets such as hardware shops and plumbing shops.

6. Maintenance:
   Biofouling build-up on the structures within 2 weeks and it is advised that all structures (main line, buoys and floats) be cleaned twice a month (as per SOP12).