

Coastal Works Review

**MM CB Ltd – Proposed Marina Dock Construction and Excavation
CAYMAN BRAC
Block: 95E Parcel: 13 REM1.**



PREPARED FOR: MINISTRY OF FINANCIAL SERVICES, COMMERCE AND ENVIRONMENT

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Authored by: Technical Review Committee - Department of Environment

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Project Proposal

The Applicant, MM CB Ltd, has indicated that they are proposing to construct, within the reef enclosed south shore lagoon, a 6,480 square foot pile-supported recreational docking facility for boats up to 50ft in length, install 15 mooring buoys for Mediterranean style docking and excavate approximately 115, 691 square feet (11,977 cubic yards) of sand and seabed communities to provide deep water access (to a depth of approximately 8ft) close to shore, all associated with a proposed upland development. Please note that while the plans have been amended and contain the correct measurements, the application forms have not been updated accordingly.

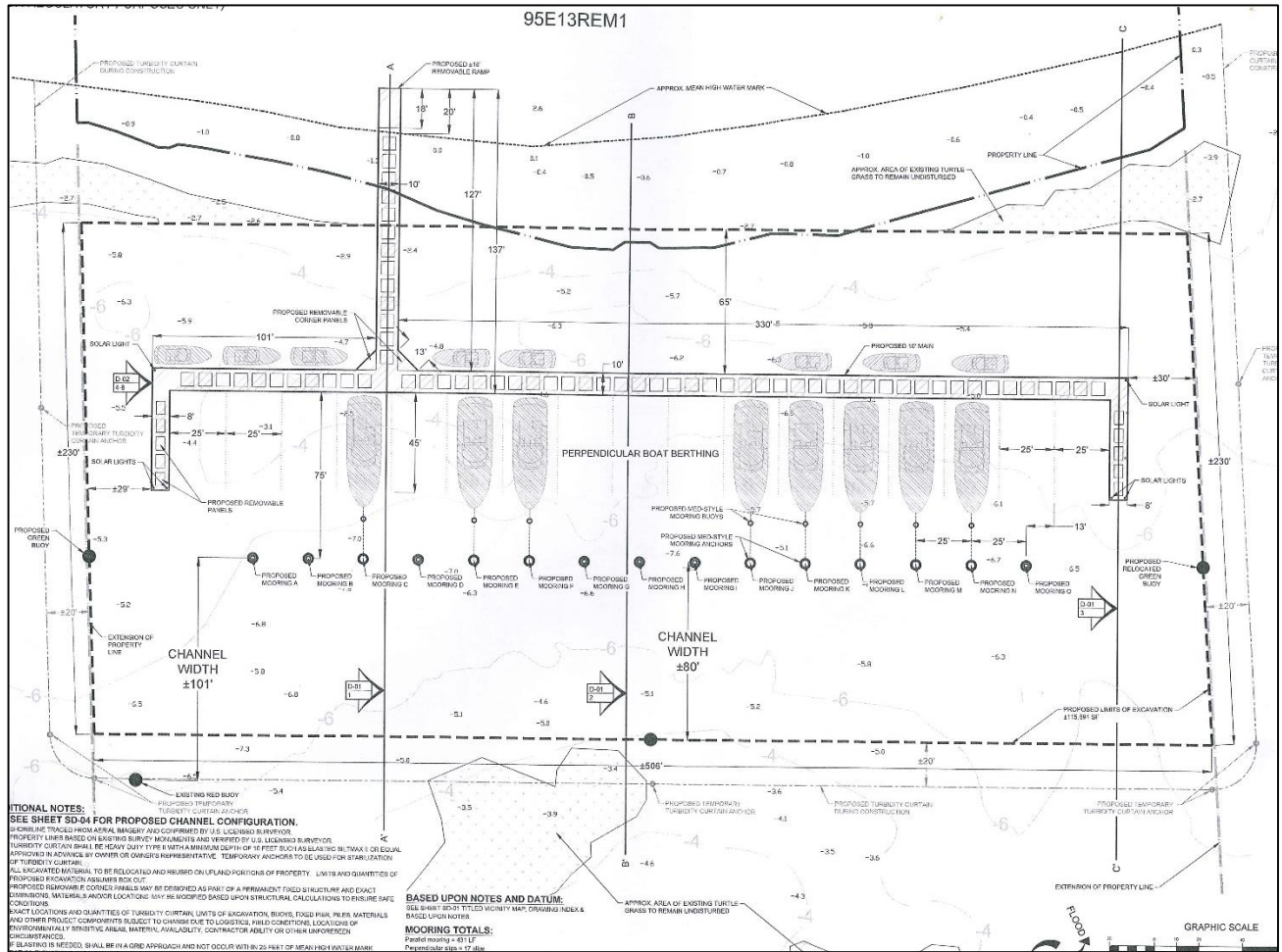


Figure 1: Proposed location of excavation and shoreline modification.

Background

Previously the Department of Environment (DoE) had been requested by the Ministry of Environment (on behalf of Cabinet) to review three separate coastal works applications for the creation of marinas/boat berthing facilities in Cayman Brac. Whilst a synopsis of all three was provided at an earlier date and as requested, the DoE still considers that based on international best practice the determination of these applications at this time is premature. On an Island as small as Cayman Brac, the siting of a marina/berthing facility should be the subject of a Strategic Assessment which would be framed within the context of a Development Plan for the Island. Such an Assessment would help identify the best potential site(s) for berthing and would identify sensitive or vulnerable sites where such development(s) should not be permitted. The objectives of the Assessment would include:

- Identifying the need and demand for berthing facilities e.g. type of facility (e.g. all-weather safe harbour); origin of vessels – local or visiting; visitation levels; tourism strategy for boating;
- Operational requirements such as: number of berths; size and draft of anticipated vessels; requirements for ancillary services such as fuelling, sewage pump out, water supply, launching ramps, boat storage, repair shop, rigging shop etc.;
- Selecting the most appropriate sites where such facilities could be established with the least environmental disturbance taking into account socio-economic factors, and
- Determining and assessing the likely environmental impacts and proposing measures to mitigate the negative impacts and maximize the benefits of such projects.

Ideally this would be formulated with the benefit of input from civil engineers, coastal engineers and environmental scientists. When considering options, the biophysical, economic and social costs and benefits throughout the whole life cycle of the proposal/facility should be considered. If such marina developments are not properly planned they will inevitably lead to the degradation of an already stressed natural environment, which will not only be detrimental to the country in general, but will jeopardize the tourism industry. The tourism industry in the Cayman Islands depends to a large extent on its coastal and marine resources. The environmental degradation of beaches, lagoons and coral reefs through ill-conceived and poorly-planned developments in Cayman Brac will have a profound negative impact on the number of tourist arrivals and the tourism product.

However, in the absence of an overarching strategic framework against which to assess these proposals, the DoE, as previously mentioned, carried out a high-level analysis of the three applications based upon the information supplied by each applicant which was submitted to the Ministry of Environment.

The following Coastal Works review deals specifically with the environmental considerations of the title referenced application and provides additional detail and recommendations. The DOE still maintains that each application would benefit considerably from an evidence based assessment of the need and economic viability of the respective proposal. However, the DoE is of the view that based on the information provided by the applicant a further more detailed review of the application can be undertaken and provided to Cabinet for its consideration.

The application represents a considerable infrastructure investment and has significant potential for environmental impacts, predominantly associated with the extent and location of the dredging activities. While this facility will provide relatively sheltered docking during normal weather conditions due to its location within the lagoon, it will not provide a safe harbour during storms and hurricanes. The applicant does acknowledge this in their submission.

Environmental Impacts

- The proposal is **located within the South Coast Lagoon inshore of a Marine Park.**

Impacts associated with the construction of the docks are largely understood and relate primarily to the initial disturbance during pile placement and construction and the subsequent chronic impacts of shading on light sensitive species such as seagrass. These impacts are directly proportional to the size of the dock and will include:

- Short-term mechanical disturbance during the proposed drilling and placement of the piles and moorings, and subsequent impacts associated with the machinery used to place the concrete beams and decking.
- Short-term silt and sediment impacts associated with the piling drilling and placement.
- Long-term shading of light sensitive species such as seagrass and algal communities.
- Long-term alteration to water currents and wave climate conditions that could result in scouring of the seabed around the piling bases and potential shoreline erosion.

Recommendations will be provided to alter the design of the scheme to address and mitigate, as far as possible, the more significant environmental concerns.

The most significant environmental impacts associated with the proposal centre mainly on the requirement for offshore dredging of 11,977 cubic yards (115,691 sqft) of sand and rubble to provide adequate water depths for larger boats using the facilities. Impacts are likely anticipated from:

- **Direct loss of marine communities** including seagrass resources and other sand based lagoon species removed during the dredging operation. Limiting the excavation to 8 ft will promote the potential recovery of the seagrass and algal communities in areas not shaded by dock structures or subjected to additional impacts from boat and dock usage.
- The proposed methodology for excavation of the channel is from a barge mounted excavator. The in situ dewatering of extracted material will result in the creation of **significant and detrimental sedimentation plumes that will be transported by local currents to surrounding lagoon and reef communities.**
- The applicant states that silt screens will be deployed to control sedimentation. The use of silt screens in some instances can mitigate the release of sediments in calm or sheltered inland waters. The Department is concerned that **prevailing wave and current patterns in the area will limit the ability of screens to control sediment release.**
- Silt screens and their placement can scour and abrade the seabed and the living resources over which they are situated if they are not placed carefully and anchored securely. Deep silt screens, as proposed in the application (skirt depth 10ft), present a greater risk.
- Barge mounted excavators require spuds and anchors deployed to the seabed to stabilize the barge against the forces generated by the excavation bucket. Spuds and anchors have the potential to cause significant impacts to the marine resources on which they are placed.

- The **requirement for occasional maintenance dredging** to keep the basin clear following storms and the deposition of rocks and rubbles will present an ongoing disturbance issue from mechanical clearing and sedimentation.

Longer term impacts include:

- Immediate and long-term **beach erosion** is likely a significant concern with respect to the proposal. The close proximity of the excavation foot print to the adjacent beach (< 50ft) will result in a strong gradient to deep water that will draw sand from the beach as the upland source.
- Additionally the loss of the stabilizing seagrass communities will exacerbate sediment and sand movement in the area leading to the potentially increased movement of sand from the area.
- The excavated footprint will allow deeper water closer to shore that will result in a **higher wave energy environment** that will impact the adjacent beaches and increase the potential for erosion.
- The creation of docks and the excavated footprints will greatly alter the near shore current and wave climate that could have significant impacts on the local sediment transport processes leading to significant erosion in the immediate area and adjacent beaches.
- Increased boat traffic and associated impacts will expose surrounding marine resources to greater risk.
- Although the applicant has provided a bathymetric survey indicating water depths in the rest of the lagoon are adequate for navigable access, the DOE is concerned that the dock will stimulate a requirement for additional dredging activities in the South coast lagoon to promote increased boat traffic.

Comments & Recommendations

As with the other Brac marina applications, this proposal would benefit considerably from an evidence-based assessment for the need and economic viability of the proposal. The Department recommends that the Cabinet requests this additional information from the applicant in order to allow Cabinet to reach an informed decision regarding the economic and social merits of this application, balanced against the predicted environmental impacts.

Similar to the other two berthing applications in Cayman Brac, this proposal involves significant modification of the natural environment and accompanying loss of environmental function and resources. However, much of the proposed dredging footprint is situated within an area of the lagoon which has been previously dredged. Whilst this area will have stabilized in the intervening period (approximately 20 years), it does not represent pristine, undisturbed habitat.

As outlined above, the potential coastal erosion resulting from the proposed dredging activity and removal of seagrass in close proximity to the shore line remains the greatest long term concern of the Department. We believe that the extent of this impact could be mitigated through a modification to the dredging footprint, which moves the shoreward extent of dredging to the south of the shore parallel dock footprint, leaving some of the seagrass in situ. Having reviewed the bathymetry submitted by the applicant, it appears that small vessels will still be able to utilize the northern shoreward side of the proposed dock with larger vessels being restricted to the seaward southern side of the dock (as shown on Figure 2).

Red denotes the area that DoE recommends is NOT dredged

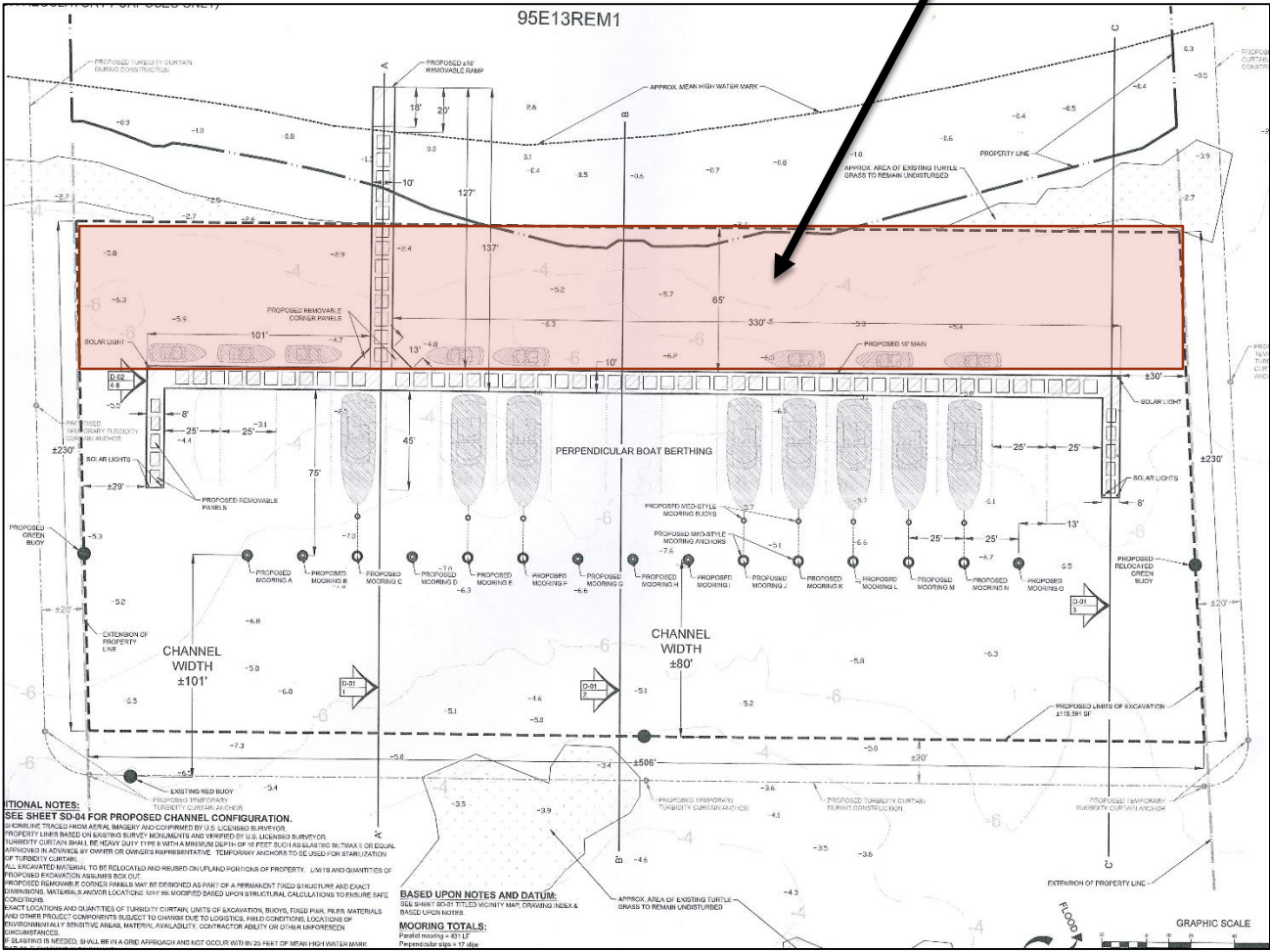


Figure 2: DoE recommended location of excavation to the south of the proposed shore parallel dock footprint.

If the proposal is modified and the applicant provides evidence of the need and economic viability, as recommended above, the DoE recommends approval of this application subject to the standard conditions outlined in the draft licence (Appendix 1) and recommended licence fees (Royalty, Environmental Mitigation and Administration & Monitoring). In addition to the standard conditions, the DoE recommends the imposition of the following conditions:

- All material removed during dredging shall be placed onto the property 95E/13REM1. Beach quality sand shall be removed first (to allow for its placement on the beach upon completion of works) and the residual material shall remain on the site.
- The licensee shall follow the Best Management Practices (BMPs) outlined in the application submission.

Please do not hesitate to contact the Department should you have any questions.

Timothy J. Austin
Deputy Director, Research and Assessment, For Director of Environment

Appendix 1 – Draft Licence Conditions

1. Commencement and Duration

- 1.1 This Licence shall be **valid for one (1) year**.
- 1.2 The Works must be completed within **the six (6) month duration of the Permit**. The Licensee is required to provide, in writing, to the Grantor a request for an extension if the Works are not completed within the six (6) month duration but fall within the Term of the Licence.
- 1.3 The Licensee is required to re-apply for permission should he fail to commence within the twelve month duration of this Licence which is activated upon signing of this agreement by the Ministry of Environment (on behalf of the Cabinet) and the Licensee and agent and/or contractor on his behalf.

2. Licence Fees

2.1 **Royalty:** [REDACTED]
[REDACTED]
[REDACTED]

- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]

2.2 **Mitigation:** [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

- [REDACTED] [REDACTED]

2.3 **Administration and Monitoring Fees:** [REDACTED]
[REDACTED]
[REDACTED]

- [REDACTED] [REDACTED] [REDACTED]
- [REDACTED] [REDACTED] [REDACTED]

[REDACTED]
[REDACTED]

3. Obligations of the Licensee

3.1 The Licensee covenants with the Grantor to undertake the following:

Satisfy Conditions Prior to Commencement of Works

- 3.2 Provide **written notification** to the Department of Environment (DoE) at P.O. Box 10202 GT, Grand Cayman **five (5) working days prior to commencement** of any coastal works for the purpose of activating the coastal permit process and inspection of the silt screen installation.
- 3.3 Obtain two (2) coastal permits from the DoE. **Work shall not commence without issuance of such permits.**
- 3.4 Display one coastal permit near the area of coastal construction and the other by the roadside. **Failure to display the permits at the site shall constitute a breach of the Licence, which will result in suspension of works and may incur penalties.**
- 3.5 **Install silt screens** around the Licensed Area, to the satisfaction of the DoE.

Observance of Conditions of Plans & Licensed Area

- 3.6 The Licensed Area within which all work must be carried out shall be the **excavation footprint of 115,691 square feet and dock footprint of 6,480 square feet** as shown on the approved plans (Drawing Ref: SD-03 Rev 27 Feb 2014). Excavated material shall not exceed **11,977 cubic yards** and shall be placed on the site. All machinery used during construction must operate within this area and in a manner that minimises environmental impact. Should post-construction inspection determine that impact has exceeded the Licensed Area, the Licensee and agent and/or contractor on his behalf may be held liable and may incur penalties.
- 3.7 All works shall be in strict accordance with plans stamped approved by the Ministry of Financial Services, Commerce and Environment and appended to this Coastal Works Licence. Any alteration from the Plans will be at the written consent of the Grantor, and any additional Royalty or licence fees deemed necessary will be paid prior to construction of any alterations. A copy of these plans shall remain on site with the construction crew for inspection purposes by DoE personnel for the duration of the Works.

Observance of Planning Regulations

- 3.8 The Licensee covenants to observe all planning requirements and all statutory provisions, regulations and orders made by any duly constituted Authority relating to or effecting this Licence and permission hereby granted and to produce to the Grantor forthwith any notices or other documents received pursuant to any such requirement, provision, regulation or code.

Carrying Out of Works

- 3.9 The Licensee agrees that in carrying out the Works that:
- a) Works shall consist of construction of a 6,480 square foot pile-supported recreational docking facility for boats up to 50ft in length, installation of 15 mooring buoys for Mediterranean style docking and excavation of approximately 115,691 square feet (11,977 cubic yards) of sand and seabed communities to provide deep water access (to a depth of approximately 8ft) close to shore. excavating up to **814 cubic**

yards of material from the seabed and placing on the property's shoreline. Work shall be carried out in accordance with the methodology outlined in the application submission and in accordance with Best Management Practices.

- b) All material removed during dredging shall be placed onto the property 95E/13REM1. Beach quality sand shall be removed first (to allow for its placement on the beach upon completion of works) and the residual material shall remain on the site.
- c) If any damage occurs to the marine environment as a result of a breach by the Licensee of any covenants on its behalf in this Licence, the Licensee shall covenant that it will remedy such damage to the reasonable satisfaction of the Department within such time as the Department may reasonably specify. If this is not done the Grantor may remedy the damage and recover the costs from the Licensee.
- d) Turbidity resulting from construction shall be mitigated through the installation of silt screens with **4-ft minimum skirt depth** and of sufficient length to fully enclose the work area. **Work shall not commence without such screens securely anchored.** Screens must be maintained to the satisfaction of the DoE and remain in place throughout the construction until the water contained in the screen has cleared to the same appearance as the water immediately outside of the screen.

Notice to Cease Work

- 3.10 The Licensee and agent and/or contractor on his behalf will comply with verbal or written requests by the DoE regarding means of reducing environmental impact. The Licensee and agent and/or contractor on his behalf shall also comply with verbal or written notification by the DoE for immediate cessation of work if the work is causing an unacceptable environmental impact due to unsatisfactory screen maintenance or other reason determined by the DoE. Operations shall resume at the authorisation of the DoE once corrections to work methods to safeguard against further environmental degradation have been made in accordance with DoE specifications.

Inspection of Works

- 3.11 The DoE shall be afforded reasonable access to the site, both offshore and inland, for the purpose of monitoring the Works.

Protection of the Environment

- 3.12 The Licensee shall ensure that all works are to be carried out to the satisfaction of the DoE in such a way as not to cause any damage or injury to any property, land or person (including Government property or land not authorised in this licence). In the event of any such damage or injury, the Licensee shall pay fair and proper compensation and indemnify the Government against any resulting claims, costs or other proceedings.
- 3.13 If any damage occurs to the marine environment as a result of a breach by the Licensee of any covenants on its behalf in this Licence, the Licensee shall covenant that it will remedy such damage to the reasonable satisfaction of the DoE within such time as the DoE may reasonably specify. If this is not done the Grantor may remedy the damage and recover the costs from the Licensee.

Stockpiled Material

- 3.14 The Licensee shall suitably contain or store stockpiled materials associated with the Works in locations away from the water's edge so as not to cause problems with leaching of sediments as a result of run-off from wave activity, rain and drainage.

Return of Coastal Permit

- 3.15 The Licensee shall upon completion of Works, return one (1) of the permits to the Department, after which a post-construction inspection will be performed by the Department to verify compliance with Licence conditions.

Assignment

- 3.16 This Licence is personal to the Licensee and is not transferrable.

Liability

- 3.17 To remedy damage or pay compensation, all Works shall be carried out in such a way as not to cause any damage or injury to any property, land or person (including Government property or land not authorised in this Licence).
- 3.18 In the event of any such damage or injury to a third party, the Licensee agrees to indemnify the Grantor in respect of any third party claim, loss or damage, settlement, legal cost and expenses against the Grantor which may be paid to such third party as a result of any matter relating to this Licence or use of Licensed Area.

Cabinet Policy

- 3.19 Changes in the Cayman Islands Government Cabinet Policy on Coastal Works Licences may apply to this Licence.

4. Termination of Licence

- 4.1 The Grantor may terminate this Licence immediately by notice in writing to the Licensee if:
- (a) any payment of the whole or part of the Licence fee shall remain unpaid for thirty (30) days upon the grant of the Licence;
 - (b) there is non-observance or non-performance of any of the covenants or conditions on the Licensee's part contained in this Licence;
 - (c) there is failure to conduct the Works in accordance with Plans or covenants set in this Licence, or
 - (d) there is a breach of any condition of this Licence.
- 4.2 In whatever manner this Licence or permission to use the Licensed Area shall determine such determination shall be without prejudice to the right of the Grantor to recover from the Licensee any sum or sums then remaining due under this Licence and also without prejudice to and so as to not in any manner affect any liability hereunder on the part of the Licensee which may then be subsisting or have accrued.

4.3 Failure to conduct works in accordance with approved drawings or conditions set in this Licence may be construed as a breach of the Licence and/or a violation of the Marine Conservation Law and may incur penalties and/or cause the Grantor to terminate the Licence.