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**Elements of Byron - Extension to Existing Geobag Coastal Protection Works: Updated Outline of Monitoring and Management/Maintenance Plan and Geobag Structure Removal Plan**

As you know, the requirement for preparation of an approved Monitoring and Management/Maintenance Plan and a Geobag Structure Removal Plan would be included as conditions of any consent issued for the proposed approximately 40m extension to the existing geobag coastal protection works at the Elements of Byron Resort (**Elements**).

Set out below is an updated draft Outline Monitoring and Management/Maintenance Plan (**Maintenance Plan**) and a Geobag Structure Removal Plan (**Removal Plan**). The updated draft Maintenance Plan is an amendment of the Maintenance Plan prepared in December 2024 and has been updated to address contentions raised by Byron Shire Council (**Council**). The completed Maintenance Plan and Removal Plan would be submitted to Council prior to the issue of a Construction Certificate.

The Maintenance Plan and Removal Plan have been prepared to assist with the S8.2(1)(a) Review of the Determination of Development Application No.10.2023.287.1 for the extension to the existing geobag coastal protection works.

**Outline of Monitoring and Management/Maintenance Plan**

Responsibility

Implementation of the Monitoring and Management/Maintenance Plan will be the responsibility of the owner of Elements (Ganra Pty Ltd) at its cost.



### Area Subject to the Monitoring and Management/Maintenance Plan

The area subject to the Monitoring and Management/Maintenance Plan is to comprise the footprint of the extension to the existing geobag coastal protection works plus the beach adjacent to the works (to approximately low tide mark) plus the frontal dune system extending from the commencement of the proposed extension works northwards for a distance of approximately 160m beyond the northern limit of the proposed works (inclusive of the existing public beach accessway opposite the end of Bayshore Drive).

### Monitoring and Inspection Activities

The following monitoring and inspection activities are to be carried out:

- UAV imagery at intervals not exceeding three months and within two weeks following either an ocean storm event where the significant wave height or water level exceeds 1 year ARI, or a creek flooding event where the rainfall runoff exceeds 1 year ARI. The UAV images and additional ground level oblique photography shall be supplied to the Coastal Engineer<sup>1</sup> who may carry out an inspection at this time (refer below)
- detailed land survey at the completion of the works and at such other times as may be directed by the Coastal Engineer during the life of the works
- high resolution aerial photos or satellite photos
- inspections by the Coastal Engineer at intervals not exceeding six months, or more frequently if, in the opinion of the Coastal Engineer, damage to the works, or impacts due to the works, has or is likely to have occurred following an ocean storm event or a creek flooding event as defined above. Any inspection by the Coastal Engineer triggered by an ocean storm event or a creek flooding event shall be carried out within two weeks of the event.

The inspection by the Coastal Engineer shall consider the following checklist as a minimum:

- structural: Number of displaced geobags
- serviceability: Number of geobags with tearing, vandalism, deterioration, or deformation
- erosion: Evidence of erosion above the crest of the works, below the toe of the works, and on adjacent land.

The inspection carried out by the Coastal Engineer is to be documented in a report. The report shall include a photographic record of the inspection. The report shall identify and make recommendations as to whether management/maintenance activities are required and, if so, the form that these activities should take. The report should be submitted to Council within four weeks of the inspection. Copies of the report must be retained by the Coastal Engineer and the owner.

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<sup>1</sup> Coastal Engineer means a suitably qualified and experienced engineer with experience in geobag coastal protection works and coastal processes/hazards, engaged by the owner of Elements of Byron Resort and approved by Council.

### Scope of Management/Maintenance Activities

The scope of the management/maintenance activities shall include consideration of the following:

- replacement or repair of geobags which may have become displaced, torn, vandalised, deteriorated or deformed, or the like. Replacement geobags shall be of the same size as the original geobags, and repair methodologies shall be approved by the supplier of the geobags;
- removal of any geobags that have become displaced from the structure;
- no part of the coastal protection works as a consequence of maintenance shall extend beyond the approved extent;
- grading of erosion scarps to a safe angle where they present an unacceptable risk to public safety;
- placement of a 'drip feed' volume of imported sand (at least once per year if an end effect sand deficit is observed by the Coastal Engineer) wholly within Elements' land, with this volume of sand determined by the Coastal Engineer and agreed with Council;
- restoration of increased erosion caused by the presence of the works, through importation of nourishment sand and/or beach scraping in consultation with Council;
- restoration of public beach access in consultation with Council (noting that the public beach access is consider to be beyond the impact area of the works);
- revegetation where vegetation has been lost due to the presence of the works;
- existing trees and native vegetation are to be retained and protected from damage during any management/maintenance work;
- maintenance shall be undertaken to the extent, and only to the extent, in the opinion of the Coastal Engineer, required to provide protection by the coastal protection works equivalent to that at the completion of the original works authorised under the development consent; and
- when determining a requirement for maintenance works the Coastal Engineer must consider public safety and the requirement for public access to and use of the beach.

In terms of the replacement of geobags due to damage by wave impacts, Coghlan et al (2009) provides a useful damage classification system to guide maintenance. The failure/damage of a geobag coastal protection structure was expressed in percentage terms and defined as the number of displaced geobags divided by the total number of geobags within a reference region x 100%. The damage classification system is summarised in Table 1 for a double layer design as is the case for the proposed extension. Maintenance of the works shall be carried out prior to 15% damage or as directed by the Coastal Engineer.

Sand used to fill replacement geobags shall not be sourced from the beach, but from an external source approved by the Coastal Engineer.

*Table 1 Damage classification system for geobag coastal protection structures*

| <b>Damage Classification</b> | <b>Percentage Displaced<br/>(Double Layer)</b> |
|------------------------------|--|
| No Damage                    | 0%   |
| Initial Damage               | 0-2%   |
| Intermediate Damage          | 2-15%  |

Failure ≥ 15%

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#### Timing of Management/Maintenance Activities

The management/maintenance activities recommended by the Coastal Engineer shall be carried out as soon as practicable following submission of the Coastal Engineer's report to Council, subject to factors such as beach state, inclement weather, safety considerations, and procurement of a Contractor. The expectation would be that the activities would be commenced within a period of 1 to 2 months from submission of the report.

#### Certification of Management/Maintenance Activities

At the completion of any management/maintenance activities, the Coastal Engineer shall certify that the activities have been undertaken in accordance with his/her recommendations. A copy of the certification must be provided to the Council and retained by the Coastal Engineer and the owner.

#### Access for Management/Maintenance Activities

Access to the area for management/maintenance activities shall be via Elements land.

It is noted that if any management/maintenance activities require access to Belongil Beach, outside of Elements' land, such access must be subject to a Cape Byron Marine Park Permit and Crown Lands Licence.

Relevant authorities should be provided a minimum of 2 business days written notice when management/maintenance activities are proposed to be carried out, unless in an emergency when, nevertheless, prior written notice shall be given.

#### Ceasing of Responsibility by the Owner of Elements of Byron Resort

The owner of Elements of Byron Resort (Ganra Pty Ltd) would cease to be responsible for monitoring and management/maintenance activities following removal of the extension to the existing geobag coastal protection works and upon completion of any management/maintenance obligations due to the presence of the works.

## **Outline of Geobag Structure Removal Plan**

#### Timeline for Geobag Removal and Site Rehabilitation

The extension to the geobag coastal protection works shall be removed by the 5<sup>th</sup> anniversary of the determination date of the development consent or on the adoption by Byron Shire Council of an endorsed Coastal Management Program, whichever is the sooner.

Site rehabilitation following removal of the extension to the geobag coastal protection works shall commence immediately following removal of the works. The object of the site rehabilitation is to:

- (1) remove the geobags comprising the extension to the geobag coastal protection works; and

- (2) restore the area on which these geobags were placed and surrounds to their condition prior to the installation of the extension to the geobag wall.

#### Site Rehabilitation

Site rehabilitation shall be in accordance with an approved Site Rehabilitation Plan prepared by a suitably qualified person(s) engaged by the owner of Elements of Byron Resort and approved by Council, having regard to the then existing conditions. The Plan shall be submitted to Council for approval three months prior to proposed commencement of the site rehabilitation.

Access to the area for site rehabilitation shall be via Elements land. It is noted that if any site rehabilitation activities require access to Belongil Beach, outside of Elements' land, such access must be subject to a Cape Byron Marine Park Permit and Crown Lands Licence.

All native vegetation used in the rehabilitation is to be endemic to Byron Bay.

#### Waste Management and Recycling

The Site Rehabilitation Plan shall include details of waste management and recycling. The individual geobags utilised in the extension to the coastal protection works shall be carefully cut and the sand within the geobags released onto the beach and/or within the dunal system and shaped to a natural profile. All geobags removed from the extension works shall be taken off site to an approved waste and recycling centre.

#### Maintenance Period for Site Rehabilitation

The maintenance period for rehabilitation shall be included in the approved Site Rehabilitation Plan but shall not be less than three months.

Yours sincerely,



**Greg Britton**

Technical Director  
Water & Maritime