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Ref: 21-018
Date: 8/3/22

Attn: Chris Larkin
Byron Shire Council
PO Box 219
Mullumbimby, NSW 2482

Email: clarkin@byron.nsw.gov.au,

Dear Chris,

RE: Request for further information – DA no. 10.2021.630.1, Clarkes Beach Coastal Protection Works, 2 Massinger Street, Byron Bay

Thank you for your request for information dated 11 February 2022. Our response has been delayed due to the flood emergency in the Northern Rivers region. We apologise for the delay.

Responses to your request for additional information are provided below.

1. Please explain why the geobag structure was not removed after 90 days as expected pursuant to s.19(2)(a) of the Coastal Management SEPP? Please explain why the geobag structure has not been removed beyond the 90 day period when it was safe to do so?

The geobag structure, in combination with beach nourishment works, was designed to maintain a specified dune slope of 32 to 35 degrees in front of the café to prevent its collapse (refer DA - '*Clarkes Beach Dune Reconstruction Summary of Geotechnical and Risk Assessment*', Ardill Payne & Partners, 3 September 2021). Preventing the collapse of the café was necessary to mitigate significant public safety and environmental risks. If the geobag structure was or is to be removed, the specified slope cannot be maintained with any confidence, as the dune will be significantly more exposed and vulnerable to dynamic coastal and geomorphological processes. The geobag structure has not been removed since the lapsing of 90 days, as it was and still is, not considered safe to do so, i.e. the risk of coastal erosion and dune (geotechnical) instability remains in this dynamic coastal environment.

The Department of Planning and Environment – Crown Lands (the Department) made the decision to submit a development application (DA) seeking consent to retain the coastal protection works, for a period that would allow for the relocation and/or reconfiguration of the cafe. Submission of a DA was the only planning pathway available to the Department to authorise the coastal protection works under the *Environmental Planning & Assessment Act 1979* (EP&A Act) for a timeframe greater than 90 days, because of provisions under '*State Environmental Planning Policy (Coastal Management) 2018*', as set out in the DA.

As is appropriate, DAs for coastal protection works require technical investigations, and they take many months to prepare. The statutory consultation, assessment and determination process is also a lengthy one. This DA is both 'regionally significant development' and 'designated development'. It has

required specialised investigations, comprehensive assessment and community and stakeholder consultation. These have included:

- preparation of an environmental impact statement (EIS), requiring:
    - coastal hazard and impact assessment
    - biodiversity assessment
    - Aboriginal Cultural Heritage Assessment Report (ACHAR)
- pre submission community consultation, as per 'Byron Shire Council Community Participation Plan' (Byron Shire Council, 2019), requiring:
    - notification of the proposed development to surrounding landowners
    - facilitated community meeting
    - consideration of feedback and submissions
    - preparation of report
- submission of DA and Council assessment, including referrals to other agencies
- public exhibition of the DA for a period not less than 28 days
- responding to requests from Council for further information (within 21 days), noting two such requests to date (dated 7/1/22 and this one, dated 11/2/22).
- final determination of the DA by the Northern Regional Planning Panel, noting the 60 day 'deemed refusal period' for designated development (from the date the DA is lodged in the NSW Planning Portal, refer s.113(1)(b) of the Environmental Planning and Assessment Regulation 2000).

In this context, the removal of the geobags at the end of the 90 day period, would have been a costly and premature action, exposing the public and the environment to significant risks, as outlined above.

2. SEPP (Coastal Management) 2018 in its General Provisions specifies that any development is not to increase the risk of coastal hazards as follows:

"15 Development in coastal zone generally—development not to increase risk of coastal hazards

Development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land."

Council acknowledges that you have supplied coastal engineering advice on the likelihood and consequence of an "end effect" near the immediate western end of the geobag structure.

Can you please provide specific coastal engineering advice as to the potential impacts of the geobag structures on coastal land further along Main Beach and beyond over the proposed 5 year life of the development?

Refer WRL letter.

3. Please explain why a 5 year consent period has been requested with sufficient information to justify how this period has been calculated?

The proposed consent period is considered a sufficient amount of time to achieve the following objectives:

- the reconfiguration and/or relocation of the café, so that the operation is no longer reliant on the geobags, and risks from coastal processes are mitigated over the medium term,
- integrated and strategic management of the precinct and coastal erosion risks, including the preparation of a certified statutory plan of management (PoM) for the adjacent Clarkes Beach Holiday Park and reserve, under the management of the NSW Crown Holiday Parks Land Manager (i.e. Reflections),
- the implementation of key elements of the PoM for the Clarkes Beach Holiday Park, so that risks from coastal erosion have been mitigated.

Although not coordinated or led by the Department, it is envisaged that in parallel with the above, a certified coastal management program (CMP) will be finalised for Clarkes Beach, and the Byron Bay Embayment more broadly. In consultation with Byron Shire Council and other members of the Department's 'Clarkes Beach Working Group', the Department is working hard to ensure that the management of the precinct, including the activities outlined above, will be aligned and integrated into the CMP. This represents a best practice approach towards coastal management and mitigating risks from coastal erosion.

The five-year period is considered a realistic and feasible timeframe, to achieve the objectives detailed above. Factors influencing the nomination of this consent period are outlined in more detail below:

- There are significant environmental, land status and planning considerations that apply to the café site and surrounding Crown reserves. These include the presence of CM SEPP 'littoral rainforest', 'deferred matter' LEP zones, differing Crown land management arrangements, and the presence of Crown road reserves. A comprehensive pre planning phase needs to occur prior to settling on a new configuration and/or location for the café. This will require complex negotiations with key stakeholders, including Byron Shire Council, and technical experts.
- There are significant legal, commercial and funding considerations that need to be negotiated and agreed before detailed design commences, and planning approvals are obtained for the reconfiguration and/or relocation of the café. This will be a lengthy and time-consuming process.
- Planning and other approvals will need to be obtained for the removal of part or all of the current café building. In addition, detailed design, planning and other approvals will be necessary if the café is to be significantly reconfigured, or a new structure is built in a new location. Environmental assessment will be required under the EP&A Act for any such works,

and DAs may be required. As outlined above, the preparation and submission of a DA, is a lengthy and time-consuming process.

- Before works commence, assuming planning and other approvals are in place, there will be procurement processes and the like that need to be undertaken. On ground construction works, to either remove, reconfigure and/or relocate the café, will take several months to complete.
- Five years is consistent with the time frame estimated by Reflections, to develop, certify and commence implementation of the PoM for the Clarkes Beach Holiday Park. This process has statutory requirements, refer s.3.36 of Crown Land Management Act 2016, including a public exhibition period of 42 days, as well as certification by the Minister.
- On past experience and noting the complex issues involved for developing a PoM for Clarkes Beach Holiday Park, Reflections estimate the PoM will be completed and certified in 18 – 30 months (i.e. 2024).

Once a new PoM is established, additional environmental assessments are then required for the specific implementation components which will resolve the long-term interface treatment of Clarkes Beach and the Holiday Park. These environmental assessments are anticipated to take 6 – 12 months to undertake, extending to 18 months should development consent be required.

Please contact me on 0421 145 027 if you require any additional information.

Yours sincerely,

Robyn Campbell
Senior Environmental Engineer
Hydrosphere Consulting

Att. Letter from UNSW WRL addressing question 2.

4 March 2022

WRL Ref: WRL2020065 JTC LR20220304

UNSW Water Research Laboratory

Catherine Knight and Malcolm Robertson
Crown Lands
Department of Planning, Industry and Environment
15 Regatta Avenue
Ballina NSW 2478

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Dear Catherine and Malcolm,

Geobag works fronting Clarkes Beach Café and Reflections Holiday Park, Byron Bay

1. Introduction

Interim geobag (0.75 m^3) walls were constructed fronting Reflections Holiday Park at Clarkes Beach, Byron Bay in July 2019 in two lengths of approximately 70 m each, separated by a short length (22 m) comprising a stormwater pipe, degraded gabions, coffee rock, boulders and cobbles, with a total effective length of approximately 160 m.

In October/November 2020, an approximately 90 m long geobag wall was constructed in front of the Clarkes Beach Cafe. The new wall is contiguous with, and westward of, the Reflections geobag wall. An additional course of geobags was added to a large section of the crest of the Café geobag wall in December 2020 in response to a large storm wave event that overtopped the geobag wall and eroded some of the backfill.

This resulted in a total length of protected foreshore at Clarkes Beach of 250 m.

Coastal engineering advice regarding geobag walls at Clarkes Beach, Byron Bay was provided in WRL Technical Report 2021/12 by J T Carley and F Flocard (WRL, 2021).

The following query has been received from Byron Shire Council:

> *"Q2. SEPP (Coastal Management) 2018 in its General Provisions specifies that any development is not to increase the risk of coastal hazards as follows:*
>
> *'15. Development in coastal zone generally—development not to increase risk of coastal hazards…..Development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land.'*

Council acknowledges that you have supplied coastal engineering advice on the likelihood and consequence of an "end effect" near the immediate western end of the geobag structure.

Can you please provide specific coastal engineering advice as to the potential impacts of the geobag structures on coastal land further along Main Beach and beyond over the proposed 5 year life of the development?

This letter addresses Council's query.

2. WRL response to Council's query

2.1 End effect measurements

End effects estimates were detailed in Table 7.2 of WRL (2021) using two techniques. The form of end effects is shown in Figure 1.

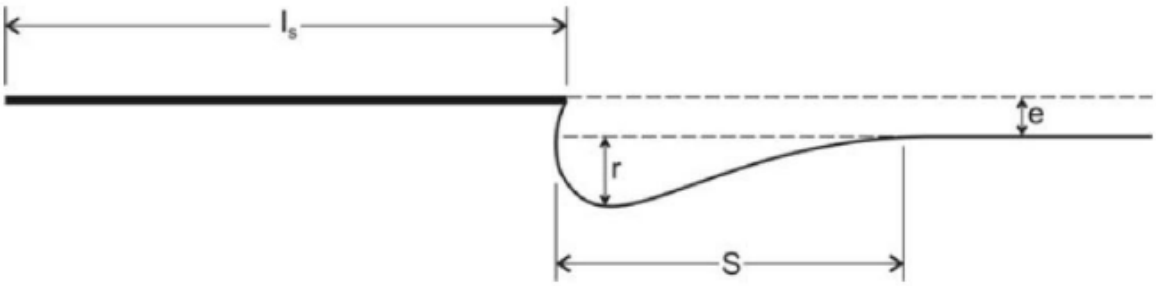

Figure 1: Seawall end effect variables (Figure 7.3 in WRL, 2021)

The distance between the western extent of the Café geobags and the eastern extent of Main Beach at the Jonson St protection works (adjacent to Byron Bay SLSC) is approximately 750 m.

Observed end effects are shown in Figure 2 and Figure 3. At embayment-wide scale (Figure 2), this is virtually imperceptible

Observed end effects to date are:

- Reflections only, l_s = 160 m (prior to October 2020)
    - r = 4 m
    - S = 20 m

- Reflections plus Cafe, l_s = 250 m
    - r = 5 m
    - S = 35 m

Figure 2: Observed end effect – embayment view (Figure 7.5 in WRL, 2021)

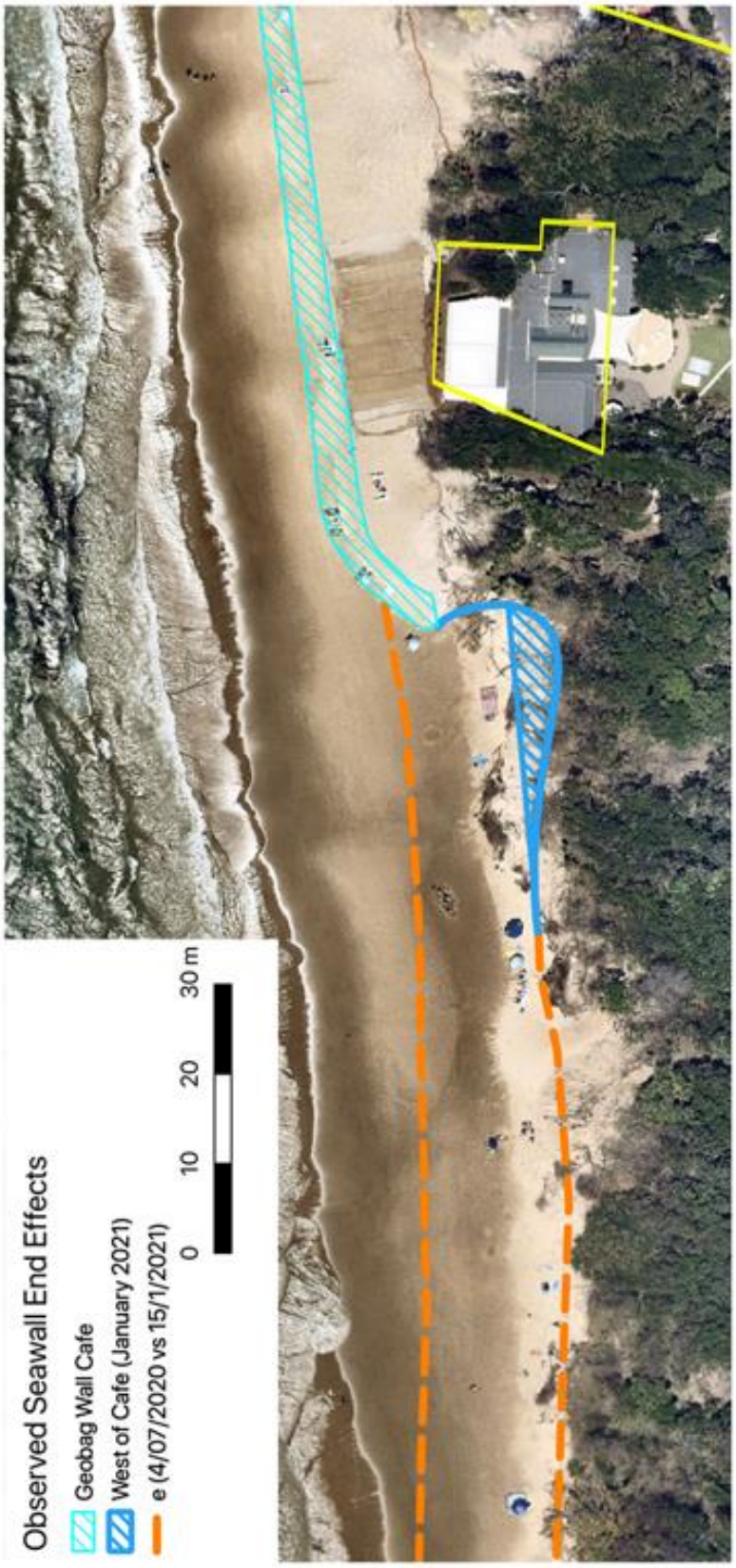

Figure 3: Observed end effect – Reflections plus Café close up (Figure 7.7 in WRL, 2021)

2.2 Theoretical end effects and measurements from other sites

Carley et al. (2013) measured seawall end effects at eight Australian sites and three sites in New Zealand. The alongshore extent of seawall end effects was generally limited to 70% of the seawall length. For the 250 m length of seawall at Clarkes Beach, this would be 175 m (versus the 750 m distance to the Jonson Street protection works). Seawalls longer than approximately 500 m were found to have end effects that were capped at 200 to 400 m, because of sand supply seaward of the seawall. Much larger alongshore effects have been observed for large groynes and training walls (such as the Tweed River), however, these are not situated at the back of the beach.

2.3 Theoretical end effects for Clarkes Beach geobags

Theoretical end effects for the Clarkes Beach geobags are shown in Figure 4. These are estimated to have an alongshore length of 170 m to 250 m for a 20 year ARI erosion event, noting that a design life of 5 years is proposed. They would be almost imperceptible when viewed at an embayment wide scale.

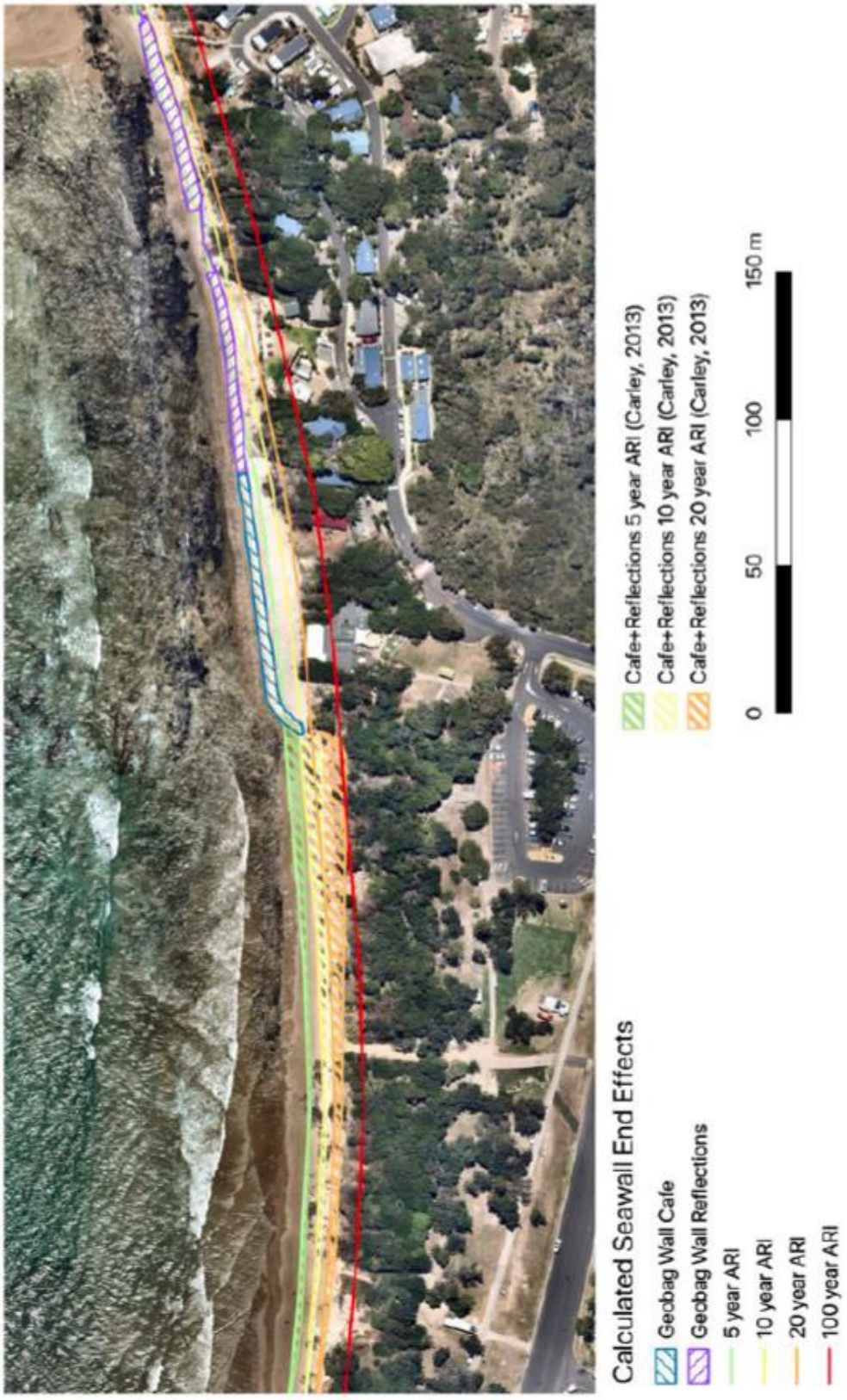

Figure 4: Future end effect estimates – Café, Carley, close up (Figure 7.15 in WRL, 2021)

2.4 Management of potential impacts of 'locked up' sand behind Clarkes Beach geobags

Before the installation of the Clarkes Beach geobags, sand in the unprotected dunes was available to contribute to the long-term littoral system. Once constructed, the Clarkes Beach geobags 'locked up' a portion of this sand. WRL (2021) proposed the importation of nourishment sand to offset sand 'locked up' by the works, which previously contributed to littoral transport.

This follows principles enshrined in legislation in some states of the USA. The geobags may still create a localised end effect planform during erosion events, similar to rock outcrops to the east of the geobags, and the Jonson Street protection works to the west. However, with the ongoing addition of nourishment sand, there would be limited long-term loss of sand from the system due to the presence of the geobags.

2.5 Historic erosion

Historic erosion has occurred at Main Beach in the past. This led to the construction of geobag walls fronting Byron Bay SLSC in c2001 (Figure 5) following serious erosion from 1999. This was well before any geobag works were constructed at Clarkes Beach. A historical photo of the beach fronting First Sun Caravan Park from c1999 is shown in Figure 6.

Figure 5: Construction of geobags fronting Byron Bay SLSC c2001 (Source: Byron Shire Council)

Figure 6: Erosion to the west of Jonson Street protection works, First Sun Caravan Park c1999 (Source: Byron Shire Council)

3. Summary

WRL (2021) estimated end effects for the Clarkes Beach geobags. This included both the end effects measured to date and potential future end effects.

The distance from the western end of the Clarkes Beach geobags to the eastern end of the Johnson Street protection works is approximately 750 m.

The maximum alongshore distance observed to date for end effects from the Clarkes Beach geobags is 20 m.

The maximum alongshore end effect distance estimated for the Clarkes Beach geobags for a 20 year ARI erosion event is 170 m to 250 m, noting that a 5 year design life is proposed.

It is proposed to import nourishment sand to offset sand 'locked up' by the Clarkes Beach geobags based on principles enshrined in some states from the USA. Local planform change west of the Clarkes Beach geobags may still be observed following storm events, however, there will be no long-term loss of sand from the system.

Erosion at Main Beach has occurred in the past, prior to the construction of the Clarkes Beach geobags. This necessitated the construction of geobag works protecting Byron Bay SLSC in c2001. Such erosion appears to be a large scale, embayment wide process.

Yours sincerely,

Duncan Rayner
Director, Industry Research (acting)

4. References

Carley, J. T., Shand, T. D., Mariani, A., and Cox, R. J. (2013), "Technical Advice to Support Guidelines for Assessing and Managing the Impacts of Long-Term Coastal Protection Works", Final Draft WRL Technical Report 2010/32.

WRL (2021), "Coastal engineering advice regarding geobag walls at Clarkes Beach, Byron Bay", WRL Technical Report 2021/12 by J T Carley and F Flocard (WRL, 2021).