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Our Reference: J6963
28 April 2022

Byron Shire Council
Via: NSW Planning Portal & email

Attention: Chris Larkin – Manager Sustainable Environment and Economy

Response to Request for Further Information- 10.2021.698.1
Reflections Holiday Park Coastal Protection Works, Clarkes Beach, Byron Bay

Dear Chris,
I refer to the abovementioned application (the Proposal), and Council's request for further information dated 11 February 2022. In relation to the matters raised, we provide the following information as per your request under section 37 of the *Environmental Planning and Assessment Regulation 2021*.

> *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?*

Comment: As detailed within Section 1.3 of the submitted Environmental Impact Statement (EIS), it was identified through consultation with the Arakwal Corporation, that the sandbag walls had been placed within close proximity and seaward of 2x Aboriginal middens. The middens comprise registered Aboriginal Objects (AHIMS #04-5-0358 & AHIMS #04-5-0359).

Aware of the provisions of the *National Parks & Wildlife Act 1974*, Reflections Holiday Parks (RHP) promptly commissioned further investigations, namely the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHA). Through the preparation of the ACHA, it was confirmed that removal of the sandbags would harm the Aboriginal Objects, requiring the issue of an Aboriginal Heritage Impact Permit (AHIP).

Whilst the 90-day period afforded through section 19(2)(a) of *State Environmental Planning Policy (Coastal Management) 2018* (now the Resilience & Hazards SEPP) ended on approximately 22 October 2019, an AHIP was still not in place. Accordingly, removing the sandbags at this time, as per the 90 day threshold, would have resulted in a breach of the *National Parks & Wildlife Act 1974* as in pertains to Aboriginal Objects.

Whilst undesirable to breach any applicable legislation, RHP did not decommission the sandbags at the end of statutory timeframe as:

- the coastal threat remained,
- alternative/long term solutions were not yet in place,
- ongoing risk to the environment and public safety were identified, and
- to uphold the provisions and ongoing actions of the ACHA.

An AHIP was secured on 20 March 2020, which effectively coincided with nationwide lockdowns for the COVID 19 pandemic. Of note, at this time, the threat of coastal erosion still remained high, with the sandbags providing the only line of defence to the Aboriginal Objects and Holiday Park behind.

Post lockdown, RHP were again able to trade and a legislative planning pathway was clear to remove the sandbags and remove/harm the shell midden. Notwithstanding, threat of coastal erosion was still present and Clarkes Beach remained in a sand depleted state. RHP commissioned inspections by several coastal and geotechnical consultants, whom advised that removal of the sandbags would result in imminent slumping of the dune, raising concern for public

safety risk, and high likelihood of damage to environmental and park assets. Routine monitoring of the sandbag walls had identified sound performance and not identified notable environmental impact. Accordingly, RHP determined it was not yet safe to progress with the sandbag removal and made the decision to seek development consent to retain the coastal protection works. This decision was largely validated when NSW Crown Lands were forced to pursue similar works in the final quarter of 2020 to mitigate coastal risks immediately adjacent.

The positioning of a sand slug in front of Clarkes Beach in the first quarter of 2021 provided the first opportunity to safely and responsibly remove the sandbags. Notwithstanding, RHP were still faced with a number of unknowns and variables, including but not limited to:

- unknown period where the sand slug would provide additional temporary coastal buffering
- commencement of a lengthy program to review and update the Plan of Management (PoM) for the site to provide a long-term blueprint to respond to coastal risk
- unknown time period to remove, reposition or retrofit assets within vulnerable areas of the site, as identified through the PoM
- avoiding key holiday periods, particularly when local businesses are recovering post the impacts of COVID-19
- preparation of the subject application already being well advanced, which facilitates sufficient timeline to undertake appropriate strategic planning .

The Coastal Engineering Assessments undertaken to-date have identified the suitability of the sandbag walls for the short-medium term. Modelled environmental impacts are able to, and will be offset through a combination of monitoring and beach nourishment. Accordingly, it appeared (and continues to appear) counter productive to remove the sandbags. Alternatively, the subject application seeks approval for 5x years to investigate and resolve the abovementioned matters of uncertainty. Finally, delaying the removal until greater strategic planning is undertaken will support a more holistic strategy for the Holiday Park/Clarkes Beach interface, including environmental protection works, as is considered to be best practice.

Whilst we note the sandbag walls have been in place for a period well in excess of the legislated 90 days, active work has be pursued throughout the proceeding time period, namely:

- preparation of further specialist assessments,
- ongoing monitoring and stakeholder engagement,
- 2x formal community consultation processes and
- assessment of the subject application itself.

In this context, undesirable cultural, environmental and public safety outcomes were anticipated if RHP strictly followed the legislated provisions. Instead, each of the abovementioned steps has been pursued by RHP to ensure appropriate levels of public safety, to uphold environmental and cultural attributes of the site and resolve the statutory non-compliance of the sandbags.

> *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?*

Comment: Additional specialist coastal assessment has been provided to address this matter by University of New South Wales – Water Research Laboratory and can be found attached. In light of the supporting assessment, specifically the discussions contained within Sections 2.4 and 2.5, clause 15 (now clause 2.12 of the Resilience & Hazards SEPP) is considered to be satisfied.

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

Comment: As per Section 1.2 Project Objectives of the submitted Environmental Impact Statement, a number of short-term protection and strategic planning measures were identified, driving the purpose of the application**.** The 5x year period was sort as this time period:

1. was identified as suitable by coastal specialists considering the construction of the sandbag structure and the risk of failure
2. was identified as suitable by coastal specialists and avoids unacceptable levels of environmental impacts through end effects and sand lock up
3. enables a thorough review of the Plan of Management (PoM)
4. allows consideration of Council's ongoing Coastal Management Plan (CMP) investigations and findings as they relate to Clarkes Beach
5. facilitates immediate term approvals necessary to implement actions of the adopted PoM as they relate to the area of coastal risk.

Items 3 and 4 above are strategic policy tasks which require establishing an appropriate evidence base, effective community and key stakeholder engagement, as well as final determination by others. Appreciating the nature of their focus and public interest, review and ultimate endorsement of a new PoM is anticipated to take 18 – 30 months to complete. Although not coordinated or led by RHP, it is envisaged that Council's CMP will progress in parallel with preparation of the PoM. RHP has been an engaged stakeholder within Council's CMP investigations to-date, as well as the 'Clarkes Beach Working Group' chaired by NSW Crown Lands, in order to support the management of the precinct in an aligned and integrated manner. This best practice approach towards coastal management and mitigating risks from coastal erosion is of particular importance to ensuring sustainable, desirable outcomes to this significant site.

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 RHP. These environmental assessments are anticipated to take 6 – 12 months to undertake, extending to 18 months should development consent be required.

Accordingly, the requested 5x year period is considered a realistic and feasible timeframe, to achieve the objectives detailed above on site possesses number environmental qualities and sensitives.

Should you require any further particulars of the proposal, please do not hesitate to contact Josh Townsend of our office via email (josh@planitconsulting.com.au) or telephone (02) 6674 5001 during business hours.

Yours sincerely

Josh Townsend
PLANIT CONSULTING

4 March 2022

WRL Ref: WRL2020065 JTC LR20220304

UNSW Water Research Laboratory

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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.

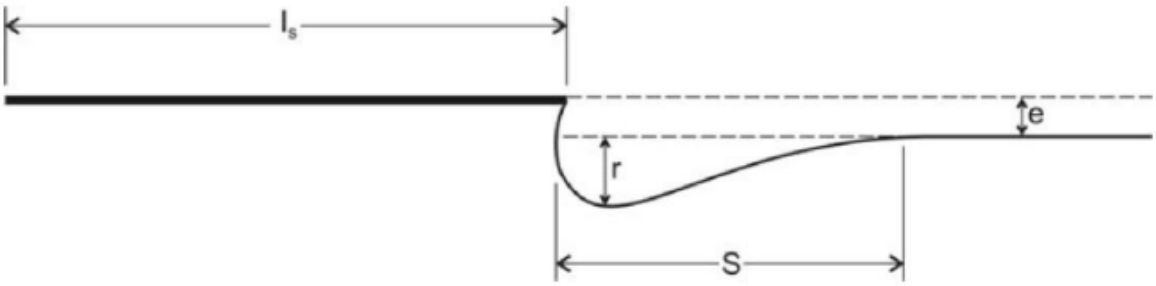

Figure 1: Seawall end effect variables (Figure 7.3 in WRL, 2021)

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)

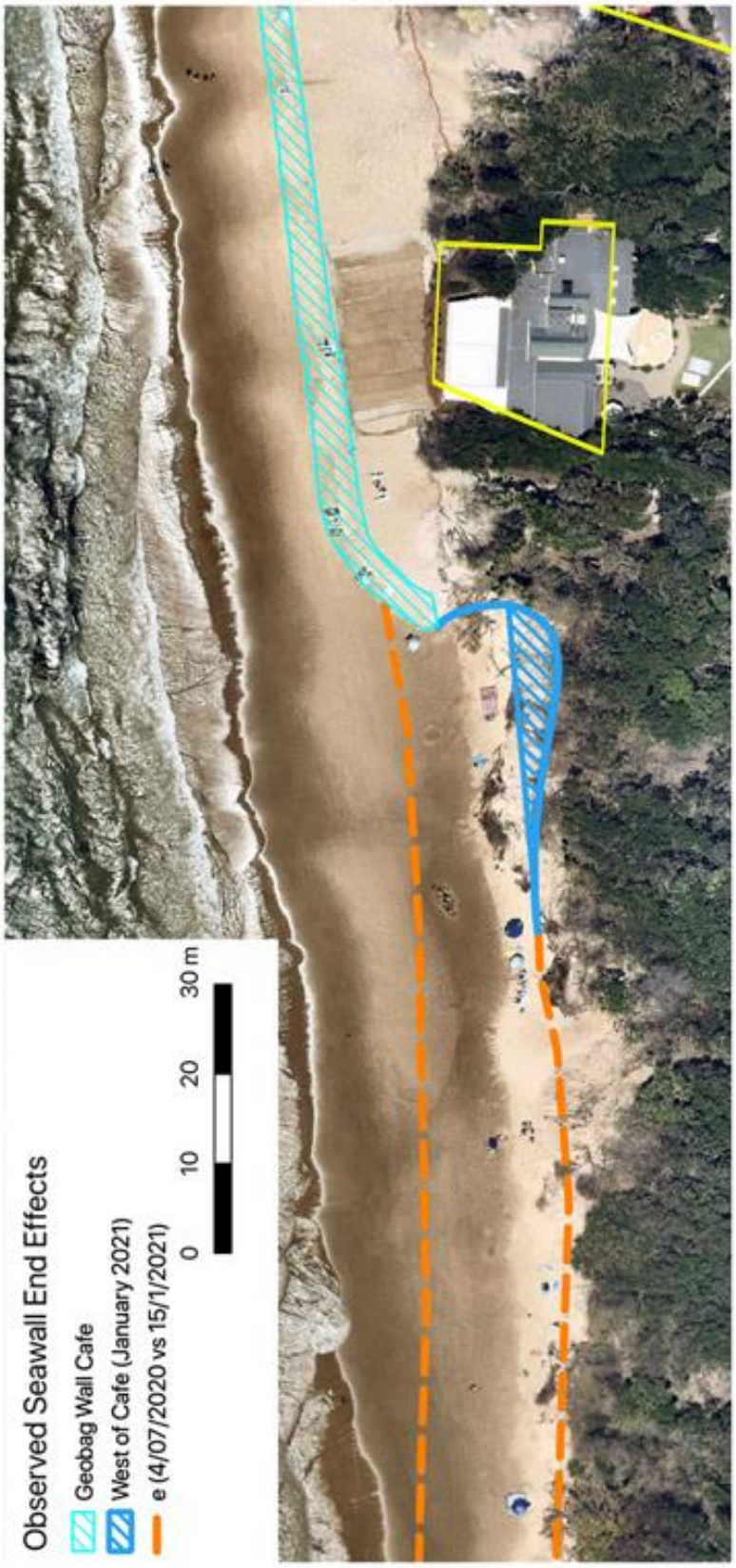

Figure 3: Observed end effect – Reflections plus Café close up (Figure 7.7 in WRL, 2021)

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.

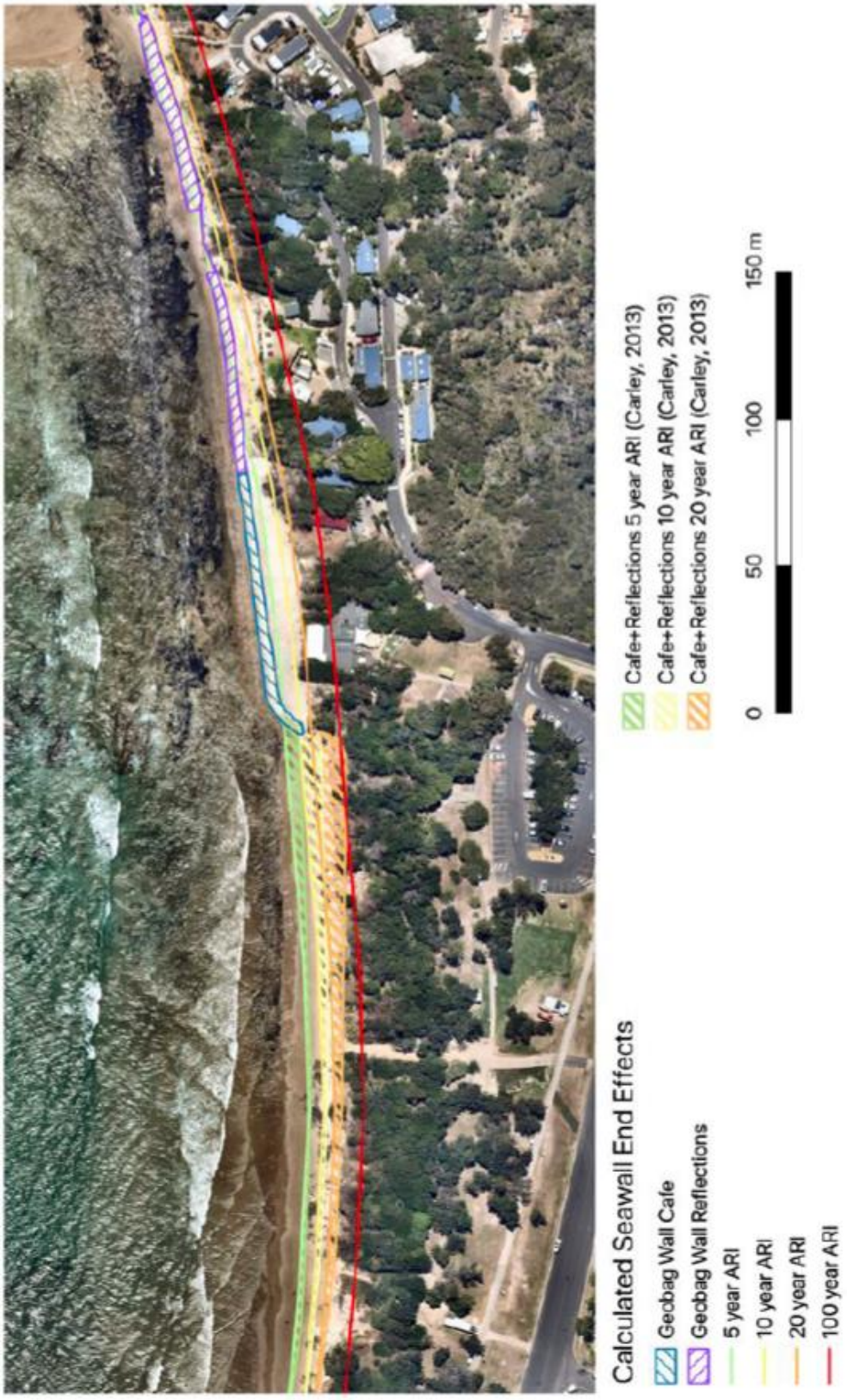

Figure 4: Future end effect estimates – Café, Carley, close up (Figure 7.15 in WRL, 2021)

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).