

Mr Rod Johnson
Department of Environment, Parks and Water Security
GPO Box 3765
DARWIN NT 0801

Dear Mr Johnson

Re: Invitation to comment: Blue Carbon S2C Pty Ltd - Blue Carbon Restoration research Pilot Project

The Department of Environment, Parks and Water Security (DEPWS) has assessed the information contained in the above application and provide the following comments:

Flora and Fauna Division

The Flora and Fauna Division has reviewed the referral documentation and detailed comments are provided in **Attachment 1**, including a small number of recommendations and required clarifications.

In summary, the Flora and Fauna Division has concluded that the referral:

- does not provide sufficient information to adequately assess the potential impact to biodiversity of shifting a saltmarsh ecosystem to a mangrove ecosystem;
- has not provided metrics that determine whether the pilot is successful or not; nor a timeframe for assessing its success;
- has not adequately assessed the likelihood of threatened and migratory species being present and impacts from environmental changes to these species in terms of feeding, nesting, roosting and refuge; and
- has not fully identified and assessed all potential impact pathways.

The Flora and Fauna Division considers that the works will substantially alter the current habitat, but are unlikely to pose a significant risk to biodiversity, due to the relatively small scale. However, if the proponent implements Phase 2 and 3, which are at a landscape scale, then there is a much greater potential for the impacts to be high risk to biodiversity. Flora and Fauna Division also question the value of undertaking a destructive experimental trial, even on a small scale, within an expansive area of relatively in-tact natural systems.

In the event that the pilot is successful and the proponent implements Phase 2 and 3, then there may be significant risks to flora and fauna. In addition to any recommendations outlined in **Attachment 1**, the Flora and Fauna Division recommends that:

- i. Any approval of the trial is conditioned with the proponent required to submit beforehand a document describing the metrics under which the trial will be measured a success or not and a timeframe in which the success will be measured; and
- ii. Any future referral submitted by the proponent for Phase 2 and 3 should at least include:
 - a) clear evidence of the success of the pilot study;
 - b) an assessment of how the pilot study has changed biophysical and biochemical characteristics within the footprint of the project and how this impacted on/influenced the existing terrestrial and marine ecosystems;
 - c) a scientifically robust assessment of the ecological integrity of the replaced/impacted ecosystems (e.g. saltmarsh, creek/coastal habitats);
 - d) provide evidence within a local context of how additionality is contributing in real terms to carbon budget rather than exploiting the naturally cyclic variability of mangrove extent within the Gulf of Carpentaria;
 - e) provide evidence within a local context how additionality is not detrimental to existing ecosystems, physical and biological connectivity between these ecosystems, trophic, biochemical and nutrient pathways, and feeding, nursery, roosting and refuge use by fauna (vertebrate and invertebrate);
 - f) how well the newly created mangrove habitat performs (in terms of structure, diversity and function) in comparison to a similar natural mangrove ecosystem within the project region;
 - g) scientifically robust monitoring programs with measurable objectives and clear methodologies; and
 - h) how the outcomes from a pilot project, which is established in a protected environment, can be transferred to more open-water environments, with clearly very different environmental conditions.

Water Resources Division

The Water Resources Division have provided comments in **Attachment 2**. The proposed project is located outside a water control district. The water needs of the project are not outlined in the submission.

Extraction of surface and groundwater for commercial purposes requires an extraction licence. Should take of surface or groundwater be proposed for commercial activities advice should be sought from Water Resources (08) 8999 4455 or by email to water.licensing@nt.gov.au

Rangelands Division

Weed Management Branch

In the absence of a physical inspection of the site associated with this application, a desktop assessment of the NT Weeds Database for NT Portion 2433, surrounding parcels and roads revealed data records of the following:

Common Name	Botanical Name	Declared
Neem	<i>Azadirachta indica</i>	Class B
Hyptis	<i>Hyptis suaveolens</i>	Class B
Noogoora burr	<i>Xanthium strumarium</i>	Class B
Snake weed	<i>Stachytarpheta sp.</i>	Class B
Sida - flannel weed	<i>Sida cordifolia</i>	Class B
Coffee senna	<i>Sida occidentalis</i>	Class B
Parkinsonia	<i>Parkinsonia aculeata</i>	Class B

All land in the Northern Territory is subject to the *Weeds Management Act 2001* (WM Act). The WM Act describes the legal requirements and responsibilities that apply to all persons, owners and occupiers of land regarding declared and potential weeds. General duties described in Division 1 of the WM Act include the requirement for owners or occupiers of land to take all reasonable measures to prevent land being infested with a declared weed, and to prevent a declared weed from spreading. There are additional duties including a prohibition on buying, selling, cultivating, moving or propagating any declared weed.

There are four types of classifications for a declared or potential weed under the WM Act: Class A (to be eradicated); Class B (growth and spread to be controlled); Class C (not to be introduced into the Territory or part of the Territory); and Class D (prevent the growth and spread by actions of persons).

The proponent must ensure that all vehicles and machinery are free of weeds, weed seeds, soil and vegetative material prior to entering or exiting the site. Vehicles must avoid driving through weeds already present on-site to prevent further spread. Vehicles and machinery exhibiting such material must be thoroughly washed down before entering/departing.

Any works that cause disturbance to vegetation and soils will create conditions favourable for the growth of weed species, and weed control will be required following disturbance caused by exploration and/or extraction. Weed control prior to seed set should be carried out in all areas affected by these works.

'Preventing Weed Spread is Everybody's Business' is a document highlighting the areas of risk for all activities associated with weed spread. The document available online¹, and details the pathways through which weeds are spread and provides actions to reduce weed spread. Proponents seeking to develop land for any purpose should address these actions.

Neem is subject to a statutory weed management plan. Management obligations outlined in this plan are legally binding on all owners and occupiers. Management requirements and copies of the statutory weed

¹ https://denr.nt.gov.au/_data/assets/pdf_file/0011/257987/preventing-weed-spread.pdf

management plans are available online² or alternatively contact the Weed Management Branch for further advice on (08) 8999 4567.

Vegetation Assessment Unit

NT Portion 2433 is unzoned. Please be aware, cumulative clearing in excess of 1 hectare on a single unzoned freehold property requires a development permit issued under the *Planning Act 1999*.

The assessment process for clearing applications is managed by DEPWS, and is subject to the *Planning Act 1999* and the NT Planning Scheme Land Clearing Guidelines, further information is available online³.

Land Management Unit

The material has been reviewed and it is noted that there are works proposed, which are likely to require erosion and sediment control measures to be implemented. Any conditions or requirements for such a development to manage erosion risks should ensure certification from a suitably qualified Certified Professional in Erosion and Sediment Control (CPESC).

Bushfires NT Division

Under the *Bushfires Management Act 2016*, the applicant is reminded that the minimum standard for a fire access trail (firebreak) is for the trail to be clear to a minimum width of 4m, as a mineral earth (machine cut) break, sprayed with herbicide (chemical break) and/ or slashed to a height of no more than 50mm with the slashed material removed within the perimeter boundary of the land. Fire access trails are to be maintained by the developer/owner until such time as the property is sold or otherwise disposed of. The applicant is requested to dispose of any felled timber resulting from the clearing of fire access trails.

The proposed development occurs within the Savanna Fire Management Zone (FMZ), not in a designated Fire Protection Zone (FPZ). This means that statutory requirements under the *Bushfires Management Act 2016* differ to that of a property within a FPZ.

Specifically:

- Standard firebreaks and permits to burn on-ground are not required/enforceable in the Savanna FMZ.
- In a Fire Management Zone:
 - The Executive Director, Bushfires NT may arrange for a regional Bushfire Management Plan (BMP), which is non-statutory (not enforceable);
 - The Minister may prohibit or require something by public notice (enforceable, but none exist for NT Portion 2433);
 - The Executive Director, Bushfires NT may require/prepare a property fire management plan (PFMP) (enforceable, but none exist for NTP 2433).
- Enforceable offences under the *Bushfires Management Act 2016* in a FMZ relate to:
 - Conduct aerial burning unless authorised by a permit issued by Bushfires NT; and
 - Non- compliance with a Property Fire Management Plan (if one applies).

² <https://nt.gov.au/environment/weeds/weed-management-planning>

³ <https://nt.gov.au/property/land-clearing/freehold-land/apply-to-clear-freehold-land>

Additionally, Bushfires NT recommend that the development of a BMP is the best way to manage any fire-related risk and should be included in the Emergency Preparedness Response Plan.

A BMP is central to best practice bushfire management and should cover preparedness, mitigation and response actions. A BMP should be operationally focused and must include:

- Site specific analysis of bushfire risks, including terrain, placement of fire trails and fire history;
- How you will collaborate with neighbouring landholders to ensure adequate cross-boundary fire management;
- A map, which identifies bushfire management zones on the landholding including access tracks and neighbouring land use;
- Site specific bushfire management objectives and actions to address identified risks in each FMZ delegated in the Plan.

A suitable example of an industry-centric BMP which can be used to guide the development of your own plan can be found on the DEPWS website⁴.

Environment Division

The proposal may require approvals and licences under NT legislation administered by the Environment Division such as the *Water Act 1992* (NT) and the *Water Regulations 1992* (NT), *Waste Management and Pollution and Control Act 1998* (NT) (WMPC Act), *Environment Protection Act 2019* (NT) and the *Environment Protection Regulations 2020* (NT). All persons are required to comply at all times with the General Environmental Duty under section 12 of the WMPC Act. To help satisfy the General Environmental Duty, the proponent is advised to take notice of the list of environmental considerations below. The list is not exhaustive and the proponent is responsible for ensuring their activities do not result in non-compliance with NT laws.

A non-exhaustive list of environmental issues that should be considered to meet requirements under NT law are listed below:

1. **Waste:** If the proponent will collect, transport, store, recycle or treat listed wastes on a commercial or fee for service basis as part of the development or operations of the action, then an Environment Protection Approval or Licence may be required to authorise the activity under the *Waste Management and Pollution Control Act 1998* (NT). The proponent should also consider the following Northern Territory Environment Protection Authority (NT EPA) fact sheets:
 - How to avoid the dangers of accepting illegal fill onto your land⁵.
 - Illegal Dumping - What You Need To Know⁶.
2. **Dust:** The proponent must ensure that nuisance dust and/or nuisance airborne particles are not discharged or emitted beyond the boundaries of the premises as a result of the action.
3. **Noise:** The proponent is to ensure that the noise levels from the proposed premises comply with the latest version of the NT EPA Noise Management Framework Guideline⁷.

⁴ https://depws.nt.gov.au/_data/assets/pdf_file/0006/787488/bushfire-management-planning-guide.pdf

⁵ https://ntepa.nt.gov.au/_data/assets/pdf_file/0005/285728/factsheet_avoid_danger_accepting_illegal_fill_to_your_land.pdf

⁶ https://ntepa.nt.gov.au/_data/assets/pdf_file/0008/285740/factsheet_illegal_dumping_what_you_need_know.pdf

⁷ https://ntepa.nt.gov.au/_data/assets/pdf_file/0004/566356/noise_management_framework_guideline.pdf

4. **Erosion and Sediment Control (ESC):** The proponent must ensure that pollution and/or environment harm does not result from soil erosion. ESC measures should be employed prior to and throughout the construction stage of the development. Larger projects should plan, install and maintain ESC measures in accordance with the current International Erosion and Sediment Control Association (IECA) Australia guidelines and specifications.

Where sediment basins are required, the NT EPA recommends the use of at least Type B basins, unless prevented by site specific topography or other physical constraints.

Basic advice for small development projects is provided by the NT EPA documents: Guidelines to Prevent Pollution from Building Sites⁸ and Keeping Our Stormwater Clean⁹ both are available online.

5. **Water:** If this activity requires the discharge of waste to water or could cause water to be polluted then a waste discharge licence under the *Water Act 1992* (NT) may be required. Please refer to the guidelines on waste discharge licencing¹⁰.
6. **Storage:** Unless otherwise specified in an Environment Protection Approval or Environment Protection Licence, the proponent should store liquids only in secure bunded areas in accordance with VIC EPA Publication 1698: Liquid storage and handling guidelines, June 2018, as amended. Where these guidelines are not relevant, the storage should be at least 110% of the total capacity of the largest vessel in the area. Where an Environment Protection Approval or Environment Protection Licence is required the proponent must only accept, handle or store at the premises listed waste, including asbestos, as defined by the *Waste Management and Pollution Control Act 1998*, in accordance with that authorisation.

Should you have any further queries regarding these comments, please contact the Development Coordination Branch by email DevelopmentAssessment.DEPWS@nt.gov.au or phone (08) 8999 4446.

Yours sincerely



Maria Wauchope
Executive Director Rangelands

26 July 2023

⁸ https://ntepa.nt.gov.au/_data/assets/pdf_file/0010/284680/guideline_prevent_pollution_building_sites.pdf

⁹ https://ntepa.nt.gov.au/_data/assets/pdf_file/0006/284676/guideline_keeping_stormwater_clean_builders_guide.pdf

¹⁰ https://ntepa.nt.gov.au/_data/assets/pdf_file/0005/950603/guidelines-waste-discharge-licensing.pdf

Attachment 1

Blue Carbon S2C Pty Ltd – Blue Carbon Restoration – Research Pilot Project

This submission is made under regulation 53 of the Environment Protection Regulations 2020

Government authority: Department of Environment, Parks and Water Security–Flora and Fauna Division

Section of Referral	Theme or issue	Comment																																								
Terrestrial Ecosystems Aquatic Ecosystems	Threatened Species	<p>Based on a search of DEPWS databases within 20km of the boundary of the application area, expert knowledge of species' habitat requirements, and information about habitats occurring within the site, the following threatened species have been recorded or may occur within or adjacent to the referral area:</p> <table border="1"> <thead> <tr> <th>Common Name</th> <th>Scientific Name</th> <th>TPWC Act</th> <th>EPBC Act</th> </tr> </thead> <tbody> <tr> <td>Black-footed Tree-rat</td> <td><i>Mesembriomys gouldii gouldii</i></td> <td>Endangered</td> <td>Endangered</td> </tr> <tr> <td>Brush-tailed Rabbit-rat</td> <td><i>Conilurus penicillatus</i></td> <td>Endangered</td> <td>Vulnerable</td> </tr> <tr> <td>Common Brushtail Possum (north-west)</td> <td><i>Trichosurus vulpecula arnhemensis</i></td> <td>-</td> <td>Vulnerable</td> </tr> <tr> <td>Northern Brush-tailed Phascogale</td> <td><i>Phascogale pirata</i></td> <td>Endangered</td> <td>Vulnerable</td> </tr> <tr> <td>Northern Quoll</td> <td><i>Dasyurus hallucatus</i></td> <td>Critically Endangered</td> <td>Endangered</td> </tr> <tr> <td>Pale Field-rat</td> <td><i>Rattus tunneyi</i></td> <td>Vulnerable</td> <td>-</td> </tr> <tr> <td>Masked Owl</td> <td><i>Tyto novaehollandiae kimberli</i></td> <td>Vulnerable</td> <td>Vulnerable</td> </tr> <tr> <td>Red Goshawk</td> <td><i>Erythrorchis radiatus</i></td> <td>Vulnerable</td> <td>Endangered</td> </tr> <tr> <td>Red Knot</td> <td><i>Calidris canutus</i></td> <td>Endangered</td> <td>Endangered</td> </tr> </tbody> </table>	Common Name	Scientific Name	TPWC Act	EPBC Act	Black-footed Tree-rat	<i>Mesembriomys gouldii gouldii</i>	Endangered	Endangered	Brush-tailed Rabbit-rat	<i>Conilurus penicillatus</i>	Endangered	Vulnerable	Common Brushtail Possum (north-west)	<i>Trichosurus vulpecula arnhemensis</i>	-	Vulnerable	Northern Brush-tailed Phascogale	<i>Phascogale pirata</i>	Endangered	Vulnerable	Northern Quoll	<i>Dasyurus hallucatus</i>	Critically Endangered	Endangered	Pale Field-rat	<i>Rattus tunneyi</i>	Vulnerable	-	Masked Owl	<i>Tyto novaehollandiae kimberli</i>	Vulnerable	Vulnerable	Red Goshawk	<i>Erythrorchis radiatus</i>	Vulnerable	Endangered	Red Knot	<i>Calidris canutus</i>	Endangered	Endangered
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		<p><u>Flatback Turtle, Green Turtle:</u> Both species' are expected to occur in the waters around Kangaroo Island. As the works are planned for tidal flats and mangroves they pose a very low risk to suitable nesting habitat. Foraging turtles may use the proposal area on peak tides. The risk to both species using the area during foraging is considered low.</p> <p><u>Large-tooth Sawfish:</u> This species is likely to occur in the estuarine and brackish waters around Kangaroo Island. The risk posed by this project is considered unknown. Although the proposed works do not require the removal of the species and are unlikely to entangle them using tidal flats/mangroves during peak tides there is uncertainty around the changes to water quality due to the creation of new channels and disturbance of acid sulphate soils (ASS). It is recommended that the proponent documents water quality conditions and the frequency of use by sawfish.</p> <p><u>Other species:</u> The Flora and Fauna Division notes that a range of other conservation significant species have the potential to use the site or adjacent marine habitats despite a lack of records. These include migratory/marine species such as Estuarine Crocodiles, Dugongs, Cetaceans and a range of migratory shorebirds. The impact to these species' is expected to be low due to the relatively small scale of the change.</p>
Aquatic Ecosystems	The Proponent has mapped the presence of threatened species and matters of national environmental significance (refer to Figure 4-1).	<p>The Proponent has provided a map of the known records of threatened species and conservation significant species' with a 100m exclusion area (Appendix D). No information about the records was attached to the map and the survey effort in the rapid assessment was not discussed. As the area is remote, it is unlikely that there has been extensive surveys and the absence of records does not support the claims that the site is unsuitable or does not support other threatened species. The environmental values are said to be mapped in "Figure 4-1" of the referral, however this figure contains no information about threatened or the conservation of significant species'.</p> <p>As the area is relatively unsurveyed, the importance of the site for threatened species' is uncertain. There may be important roosting/foraging habitat present and this needs to be documented by the Proponent.</p>
Terrestrial Ecosystems	Three (3) samples across the intertidal zone (and replicates) along a transect that focuses on recording:	The Proponent uses the metrics 'good', 'poor', 'to be restored' conditions for mangroves. Parameters for how the proponent will determine what is a 'good' or 'poor' condition is, and a benchmark against, which this will be measured should be provided.

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3.3.2.4 and 3.3.2.5	i. Reference area A = good condition site. ii. Reference area B = poor condition site. iii. Reference area C = site to be restored.	
Terrestrial Ecosystems Marine Ecosystems 4.2.5.1	Flora and fauna/Ecosystem and habitats	<p>This section briefly describes existing flora and fauna. It does not place the ecosystems in context with existing environmental conditions/drivers or values, nor how the project may impact and change these values and ecosystem drivers.</p> <p>The referral would have benefitted from conceptual diagrams to assist with understanding of the ecosystem drivers for the project area and wider region.</p>
Terrestrial Ecosystem Marine Ecosystem 4.2.6.4	Biochemical processes.	<p>The summary in the referral is relatively brief given the potential impacts of the project activities on biochemical processes. The referral would have benefitted from conceptual diagrams to assist with understanding of the biochemical processes associated with project activities (for example, creating new channels, changes in topography, water drainage, lowering ground water and ASS formation) and connectivity with marine waters.</p>
Terrestrial Ecosystems Wildlife Habitat 4.2.6.6	<p>The Proponent states that: "Initial rapid assessment field work suggests there remains some areas of suitable habitat for breeding and/or migratory birds. However, a continued loss of water supply and hydraulic connectivity, particularly in low flow conditions, will see habitat suitability decline.</p> <p>Consequently, fauna populations across the site may experience population declines, increased</p>	<p>It is unclear what the results of the "initial rapid assessment fieldwork" are as no information on breeding/habitat for migratory birds was provided in the referral. The referral did include a map identifying the location of records of threatened/migratory species' but with no information on the species/dates etc. (Appendix D).</p> <p>Furthermore, it is unclear what is considered "suitable habitat for breeding and/or migratory birds". It is recommended that the Proponent clarify, which species' are breeding in those habitats and how a continued "loss of water supply and hydraulic connectivity:" will see habitat suitability decline.</p> <p>As this section refers to migratory species' being identified in the rapid assessment fieldwork it is recommended that the NT EPA request further information from the proponent about the survey</p>

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	competition, and reduced genetic diversity. These factors will be investigated as part of the research pilot project.”	results. The results should also inform an assessment of the proposal against the Australian Government’s Significant Impact Guidelines 1.1 –Matters of National Environmental Significance.
Coastal Processes	The proposal involves the clearing out of drainage channels, creating new ones, lowering or raising substrates, to establish a perfect natural environment for the preferred mangrove system.	<p>The Flora and Fauna Division notes that this may have consequences for water flows across adjoining salt flats depending on the preferred mangrove system. This may also affect the mangrove community structure and have flow on effects on feeding wader birds and other fauna.</p> <p>The Flora and Fauna Division considers that the trial at the 6ha site will impact the local hydrology along a small tributary of the Carrington Channel but is unlikely to significantly impact the broader coastal processes in that area. If works are not planned appropriately, it is possible that future stages may significantly impact extensive areas of the coast. The Proponent should be aware of this prior to progressing to Stage 2 of the proposal.</p>
Marine Ecosystems Section 4.2.7	<p>Figure 4-1 summarises the proposed works within the referral area. The works identify reference sites (good condition) as well as areas of decline (poor condition).</p> <p>Over the last 25 years, the research pilot project site has suffered a gradual loss of mangrove and saltmarsh habitat due to water level losses and reduced hydraulic connectivity</p>	<p>The referral document does not provide any information about what is considered to be a ‘Reference site (good condition)’ or how ‘Areas of Decline (poor condition)’ are defined. This information is important as definitions of ‘good condition’ and ‘poor condition’ are subjective particularly where ecosystem restoration in remote intact areas is proposed. It is recommended that further detail is provided by the Proponent to understand what is considered to be a ‘Reference site’ and the other habitats that are considered ‘poor condition’.</p> <p>Annual satellite imagery between 1984 and 2022 suggests that the research pilot site has had mangrove cover increasing over this period naturally. Areas that are described as ‘poor condition’ appear to just be unsuitable rather than requiring intervention or ‘restoration’.</p>
Figure 4-1	Figure 4.1 is confusing with different legend colours for the Areas of Decline and Proposed Laydown.	It is assumed that the mapped ‘Areas of Decline’ are in the central and eastern part of the research area and the ‘Proposed Laydown’ is the area immediately south of the ‘Site Access’. This needs to be clarified as the figure has conflicting information making it difficult to understand the scope of works.
Table 8-5 Land	Activity and potential impacts	Earthworks, i.e. digging channels, will besides disturbing ASS or potential acid sulfate soil (PASS) sediments will also influence the ground water level through draining of the soils water content and groundwater. This has the potential to affect vegetation community composition and structure. It

Section of Referral	Theme or issue	Comment
		<p>will also allow the surface sediments to be aerated, thus potentially changing bacterial activity (nutrient and biochemical processes) exacerbating ASS/PASS impacts on a wide scale.</p> <p>Earthworks will also change the topography and sediment deposition characteristics, thus changing run-off characteristics which again may influence vegetation community structure and composition.</p> <p>The Proponent should include impacts to soil and groundwater characteristics, sediment deposition and run-off characteristics in the trial project's research and monitoring programs and assess whether these environmental changes have resulted in vegetation community composition and structure.</p>
Table 8-5 Water	Activity and potential impacts	<p>Earthworks may have detrimental impact on water quality through ASS/PASS and sediment run-off (increased turbidity and increased sediment discharge into the Carrington Channel). The Proponent has not provided any information on the benthic communities/phytoplankton characteristics for receiving marine environments. Therefore, there is uncertainty how the sediment run-off may affect primary producer habitats, e.g. seagrasses, which are known to occur in the region.</p> <p>The Proponent should include monitoring of sediment discharge into the creeks and the Carrington Channel.</p> <p>The Proponent may want to consider how the seaward migrating sediment bank may impact on the hydrology of project area's creeks (see Figure 4-1 and Google time lapse images for the project site).</p>
Table 8-5 Sea	Activity and potential impacts	<p>Project activities (channel creation, silt curtains, equipment access) will change hydrological conditions across the site, including creeks and channels. This has the potential to change biochemical conditions and pathways, including nutrient characteristics being discharged into the receiving marine environment. Further, sediment run-off may also impact on water quality (see above).</p>
Table 8-6 Land	Impact assessment - Landforms	<p>The Proponent has judged that the potential for a significant impact is uncertain. The general consensus for impact assessment is that if an action causes a shift in ecosystem state then this is considered a significant change. Given that the proponent aims to change the geomorphological characteristics and shift a saltmarsh ecosystem to a mangrove dominated ecosystem, then the 'potential significant impact' assessment should be 'yes', not uncertain.</p>

Section of Referral	Theme or issue	Comment
		The significant impact is not solely driven by ASS/PASS. Other factors play a role – see comments on Table 8-5.
Table 8-6 Land	Impact assessment – Terrestrial Environmental Quality	<p>The Proponent makes the statement that: “The disturbance or removal of threatened species habitats will be avoided”.</p> <p>Firstly this statement does not relate to threatened species and their habitats, which is better considered under Terrestrial Ecosystems. Nevertheless, the Proponent should clarify how the above statement is accurate given that the sole purposes of the project is to shift saltmarsh habitat to mangrove forest habitat, and that saltmarsh provide foraging habitat to a different suite of fauna than a closed mangrove forest. So therefore, some fauna will be displaced and others will gain from the intended ecosystem shift.</p> <p>Furthermore, the Flora and Fauna Division does not agree with the assumption that the restoration will enhance and improve threatened species habitats. This is entirely dependent of the suite of species considered for this assessment, some are solely dependent on saltmarsh habitats and others on open tidal flats for foraging and seldom use mangrove closed forests.</p> <p>In terms of Terrestrial Environmental Quality (changing soil water content and groundwater characteristics, soil biochemistry and bacterial composition, changes in hydrology and run-off characteristics, sedimentation characteristics) the project has ample pathways for impact upon Terrestrial Environmental Quality. Therefore the assessment of potential impacts of the project on should be a yes, rather than uncertain (see comments in Table 8-5).</p>
Table 8-6 Land	Impact assessment – Terrestrial Ecosystem	<p>The Proponent has assessed the impacts to the terrestrial ecosystem as not significant. However, the comments above under Landforms and Terrestrial Environmental Quality demonstrate that it is highly likely that significant change to the ecosystem will result from this project at least at a local scale. Whether or not this is significant to any individual biodiversity value is uncertain.</p> <p>The project may require to clear mangrove trees to establish drainage creeks. In the NT mangroves are considered sensitive and a significant habitat, which will require clearing approval.</p>
Table 8-6 Water	Impact assessment – Hydrological processes	The Proponent considers the impacts to hydrological process as insignificant.

Section of Referral	Theme or issue	Comment
		Again, the Flora and Fauna Division disagrees with this assessment – see comments Landforms, Terrestrial Environmental Quality and Terrestrial Ecosystems and Table 8-5. Impact assessment should be considered 'yes, there will be a significant impact'. Channels and Mangrove communities will change hydrological process. If the change to hydrology is not significant, then the project will be a failure.
Table 8-6 Water	Impact assessment – Inland water environmental quality.	The Flora and Fauna Division agrees with Proponent's assessment. The Proponent should consider the additional impact that drainage channels may influence ground water table levels through facilitating water discharge from saltmarsh sediments (see comments Table 8-5).
Table 8-6 Water	Impact assessment – Aquatic Ecosystems.	The Proponent makes the statement: "The proponent will not directly disturb or remove any vegetation during research pilot project site". It is unclear how this can be implemented given that channels are created, equipment access to the site, planting of mangroves. The Proponent should clarify this statement.
Table 8-6 Marine	Impact assessment – Coastal processes.	The Proponent considers impacts to be insignificant. The Flora and Fauna Division considers this uncertain, given that the creation of channels has the potential to change hydrodynamics and sediment transport, especially when the new channels link different creek systems that feed into Carrington Channel.
Table 8-6 Sea	Impact assessment – Marine environmental quality.	The Flora and Fauna Division agrees with Proponent's assessment. The Proponent should consider the additional impact from sediment run-off and how drainage channels characteristics influence sediment transport and suspended sediment characteristics. (see comments on Table 8-5).
Table 8-6 Sea	Impact assessment Marine Ecosystems	The Proponent considers this a positive significant impact. The Flora and Fauna Division questions the Proponent's assessment in terms whether it is positive or negative. Once the channels opened up to the environment, then the Proponent will be unable to control potential impacts from elevated sediment transport, elevated turbidity. Further channels may require clearing/'dredging' to keep them clear from sediments to facilitate water exchange. This will negatively impact on water quality and primary producer habitats.

Section of Referral	Theme or issue	Comment
Marine Ecosystems Table 8-6	The proponent has stated that the potential release of channel sediments during channel hydrology enhancement will be controlled via no offsite connectivity during excavation. Once channels are enhanced and finally reconnected to surrounding waterways installations of silt curtains and associated best practice controls work consistent with guidelines (below) will be followed and maintained....	<p>It is unclear what is meant by this statement and there has been no information provided about the offsite receiving environment and whether the release of sediment during enhancements pose a risk. The guidelines referenced in the referral are for building sites, terrestrial erosion and sediment control, stormwater and open drains. If sediments have the potential to be released during channel enhancements then the receiving environment needs to be documented with relevant trigger thresholds identified. Furthermore, the application of guidelines for terrestrial and urban environments are not considered appropriate for the referral area.</p> <p>In addition, the Proponent should clarify how they plan to implement silt curtains on extensive saltmarsh flats and discuss the effectiveness.</p> <p>If the relevant guidelines are followed, the Flora and Fauna Division does not support the Proponent's claim that there will be a 'positive significant impact'. The risks remain uncertain as the extent of works, the end landform and the receiving environment is unknown.</p>

Attachment 2

Submission on the referral

Blue Carbon S2C Pty Ltd - Blue Carbon Restoration research Pilot Project

This submission is made under regulation 53 of the Environment Protection Regulations 2020

Government authority: Department of Environment, Parks and Water Security – Water Resources Division

Summary: The application proposes to undertake a suitability study for Blue Carbon restoration on NT Portion 2433 – Kangaroo Island. The proposed project is located outside a water control district. The water needs of the project are not outlined in the submission.

Section of Referral	Theme or issue	Comment
Main referral document	Legislative requirements	The <i>Water Act 1992</i> or the <i>Water Regulations 1992</i> are not articulated anywhere in the proposal. There is several areas of the <i>Water Act 1992</i> that may require permitting and/or licensing to support the project.
	Interference with Waterway	The project proposes to desilt and create new channels in waterways. A permit is required to interfere with a waterway if there is; <ul style="list-style-type: none"> • a material change to the shape of a waterway; • a material change to the volume, speed or direction of the flow or likely flow of water in or into a waterway or; • an alteration to the stability of the bed or banks of a waterway.
	Extraction Licence	The project proposes a research facility. The water needs for this area of the project are not outlined in the submission.

Water Resources Division recommends the Proponent prepare the project in a presentation. This can then be presented to DEPWS to better understand the needs of the project and to give more informed advice.