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Cc: "Alison Pyke" <apyke@circularhead.tas.gov.au>
Subject: FW: Planning scheme amendment to LPS (PSA2023/1)
Attachments: Representation Circular Head Scenic Protection Code Houston 27112023.pdf, GE Consulting Engineers report.pdf
Importance: High

Representation on Scenic Protection Code

Regards

From: Kerry Houston <hello@shipinnstanley.com.au>
Sent: Tuesday, 28 November 2023 5:13 PM
To: Vanessa Adams <vadams@circularhead.tas.gov.au>
Cc: Executive Officer <ea@circularhead.tas.gov.au>
Subject: Planning scheme amendment to LPS (PSA2023/1)
Importance: High

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Hi Vanessa,

Re: Planning scheme amendment to LPS (PSA2023/1)

Please find attached my representation regarding the Planning Scheme amendment to LPS (PSA2023/1) and copy of GE Consulting Engineers report. I have attached a dropbox link to my additional attachments (Geoscene reports) as they are larger than 100MB.

<https://www.dropbox.com/scl/fo/f5dd64mvtv1rsnx8e94w6/h?rlkey=7kij2g1trw4ewpvp4lnr214kw&dl=0>

Can you please confirm receipt?

Thank you,

KERRY HOUSTON
OWNER SHIP INN STANLEY



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Ship Inn Stanley acknowledges and pays respect to the Tasmanian Aboriginal people as the traditional owners and continuing custodians of the land and waters of this island, lutruwita (Tasmania), where we live and work.



24/11/2023

Vanessa Adams, General Manager
Circular Head Council
E: council@circularhead.tas.gov.au

SCENIC PROTECTION OVERLAY - STANLEY PENINSULA REPRESENTATION

I am writing on behalf of Kerry Houston, the owner and operator of the Ship Inn Stanley, in support of the proposed planning scheme amendment to apply the Scenic Protection code to five areas within the Circular Head municipality, and specifically in support of the application to the Stanley Peninsula. Accompanying this representation is:

- Stanley Coastal Landscape Assessment, Geoscene
- Stanley Geoheritage Report, GE Consulting.

It is noted these reports were originally drafted in response to a proposed development application within the peninsula, however, the evidence within them is still relevant to this representation as they outline the landscape and geoheritage significance.

Tourism Tasmania's T30 strategy, which outlines Tasmania's aspirations to become a world-class island destination, underscores the significance of regions like Circular Head. The strategy's focus is creating a sustainable, year-round tourism industry that benefits local communities.

Stanley Peninsula and its landscape, ecological and cultural values have a vital economic role within the Circular Head region, and Tasmania and underpin a thriving tourism economy.

The Nut is one of Tasmania's most iconic landscape features and a key landmark to attract visitors to the northwest and the Circular Head Municipality. It is viewed from many points in the municipality and offers 360-degree panoramic views of the coastline. Stanley Peninsula is seen upon entry into the municipality and these long vistas are highly valued by the local community.

The proposed Scenic value description is thorough and the inclusion of all scenic and ecological aspects of the peninsula, its heritage, and the recognition of these values in strengthening the tourism industry is strongly supported by this representation.

The Nut is also being currently assessed for National Heritage Listing under the Environment Protection and Biodiversity Conservation Act 1999 after nomination from local residents and has reached the Finalised Priority Assessment. Only 13 sites in Tasmania have been listed to date, of 121 sites across Australia. The

fact the nomination has reached the priority assessment signifies the importance of the Nut with the following description included within the National Heritage Assessment:

The geology and landscape of The Nut and nearby volcanic features are unique in Australia and are an important geomorphological area for the nation. Some of the features are the only documented examples in the world. The Nut is a State Geological Monument and a Tasmanian Site of Geoconservation Significance. From a geological and geomorphological perspective, the Stanley Peninsula is a world-class example of exceptionally well-preserved submarine volcanoes and lava. The geological features have been the subject of several publications in international volcanological journals.

The application of the scenic protection code will align with any future national heritage listing and provide strong statutory protection of the place.

This representation also strongly supports the application and operation of the Scenic Protection Code, which still provides opportunities for sensitive and responsive development in the applicable zones. and exempts development for agricultural buildings and works that support the agricultural economies in the area that form an integral part of Circular Head's character.

In addition to the above response to the Scheme Amendment, the following comments have been provided by Kerry Houston:

As owner / operator of Ship Inn Stanley; I support the proposed scenic values because We renovated extensively, and whilst our building is heritage listed and located within a local heritage precinct, we did not find the extra layers in the approval process to be too onerous.

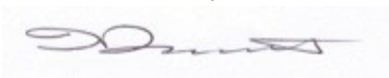
Four years ago, we opened our revamped luxury accommodation as Ship Inn Stanley. We have now received multiple state and national tourism and hospitality awards ; only this week being shortlisted in the 2023 Tourism Tasmania Awards.

Ship Inn Stanley and surrounding region has been featured in numerous magazines and newspapers, including the likes of Better Homes & Gardens, Country Style, Luxury Traveller, The Australian, The Age, The Sydney Morning Herald just to name a few.

The public relations reach for our little inn and our region has exceeded ten million readers of multiple state, national and international publications. I believe that if we had renovated the same guest house in Hobart we would not have received anywhere near the attention or the accolades. A huge part of our success has been our iconic location in Stanley and Circular Head more broadly. A location of which I am immensely proud.

In conclusion, this representation strongly supports the application of the Scenic Protection Code to the proposed areas within the Circular Head municipality.

Yours faithfully



Irene Duckett
Director

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CONSULTING ENGINEERS

+ CIVIL + STRUCTURAL + GEOTECH

gece.com.au

Proposed Western Plains Wind Farm, Stanley

Geoheritage Summary Report



CLIENT:	Respect Stanley Peninsula
CLIENT REPRESENTATIVE:	Kerry Houston
DATE OF INSPECTION:	22 May 2022

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Appendices

Appendix A - Sketch map and site photos

Appendix B - Geological timescale (portion)



Prepared by
Josef Giedl – Principal Engineering Geologist

Date: 18/06/2020

Reviewed and authorised by:
Andrew Graeme-Evans – DIRECTOR

Date: 19/06/2020

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1. Context

Respect Stanley Peninsula - No Wind Turbines Inc., (RSP) has asked GE Consulting Engineers, (GECE) to evaluate the geoheritage values and geoconservation aspects of Circular Head, (The Nut) and related geological exposures at Stanley in the northwest of Tasmania. There is the threat of a potential development of a wind farm in the area which may have geoconservation impacts upon the geological and geomorphological values of The Nut and associated geological terrain.

Epuron Projects Pty Ltd, (Epuron), a Sydney-based wind farm development company has submitted a notice of intent - Epuron Projects, Western Plains Wind Farm, Stanley Peninsula - to the Environment Protection Authority Tasmania (EPA), nominally for the development of an 8 to 13 tower wind farm and associated network connection power lines at the northern half of the Stanley Peninsula. A DA has yet to be presented to the Circular Head Council for the proposed project. The EPA is awaiting a project specific DPEMP from Epuron expected to be provided around July 2022.

The EPA issued, in March 2018, the DPEMP Project Specific Guidelines for the proposed wind farm project, which sets out the key issues to be addressed by the DPEMP. Those Guidelines fail to note geoheritage and geoconservation as among the key issues to be addressed. However, they do mention specific "Sites of Geoconservation Significance" as a subset of "Biodiversity and natural values" that the DPEMP must address, but these do not include The Nut and associated geology.

On behalf of RSP, GECE through this study, intends to more thoroughly examine and report the geoheritage and geoconservation aspects of relating to the Epuron proposal, in particular with regards to The Nut and associated geology.

2. Definition of terms

The following terms are the used throughout this report -

Term	Definition (for the purposes of this report)
Geoheritage	A set of natural or ascribed values given to geological and geomorphological features that are considered to have societal benefits
Geodiversity	The natural complexity and diversity of earth's physical geology, geomorphology and geological processes
Geoconservation	A set of actions directed at protecting and preserving geoheritage values and geodiversity
Geotourism	A form of tourism that extends the public's fascination with landforms and scenery to aspects of the geology and the formative processes of that landscape
Social Capital*	The socio-economic benefits derived from the interrelationships between people, the interactions of their cultures, the preservation of their histories and cultural artefacts (including the built environment) and preservation of the biosphere, ie the natural environment particularly including but not limited to biodiversity and geodiversity
* As no one formal definition of Social Capital has ever been adopted by researchers, this writer's definition is an amalgam of a set of concepts that are often repeated in a wide range of social and heritage research.	

3. Geoheritage / geoconservation background

The Geological Society of Australia (GSA), the principal peak body of professional geologists in Australia, identifies geoheritage as outstanding examples of geology and geological processes that can be witnessed at all scales. They are considered to be of value for teaching, research and public enjoyment and as such are "part of the Nation's heritage". This peak body considers geoheritage of such importance that it has formed a Standing Committee for Geological Heritage. Significantly the peak body also has a Standing Committee for Geotourism.

Geoheritage can be described as the natural values of examples of geology and geomorphology that meet the present and future scientific (educational and research), aesthetic, cultural, biodiversity and economic needs and expectations of society. The Geological Society of America (2022)¹ explains that sites of geoheritage importance have significance in terms of scientific and educational value, cultural connection and aesthetic appeal - inspiring awe and wonder and so becoming tourism destinations which provide local and regional benefits. Thus, geoheritage is a form of social capital.

3.1 Geoheritage as social capital

Traditionally, heritage values and the social capital derived from preserving heritage values have been in the domains of the built environment, archaeology and ecology. This has now progressively extended to cultural and landscape domains.

Geology is the foundation of landscape and geomorphology. The benefits of the social values of landscape and geomorphology are derived, preserved and maintained through geoheritage recognition of landscape and good geoconservation practices. Gray (2019)², identifies geology as part of our "natural capital" and emphasizes the importance of recognizing such values in decision-making.

4. Previous studies and reports

The aesthetic appeal of The Nut, its dominant form in the landscape, its uniqueness and its 'draw' on the psyche of travellers is historically well established. However, the geological events and processes that led to the creation of that dominant feature and the surrounding landscape are just now being fully recognised.

4.1 Early investigations

Early studies of The Nut, Edwards (1941)³, Gill and Banks (1956)⁴, Cromer (1972)⁵, Leaman (1973)⁶ and Baillie and Leaman (1978)⁷ were the basis of fundamental geological investigations of The Nut and the volcanics of the Stanley Peninsula, which since have generated wider interest in the volcanic development of that part of the coastline.

More recent research has revealed The Nut and other Stanley Peninsula volcanic geology as being rare on a world scale; worthy of preservation and further research. It is important to highlight here the relationships are yet to be fully determined, between The Nut and the other volcanic units that occur right around the Stanley Peninsula and preservation of this suite of features is paramount to future unimpeded research that will ultimately resolve those relationships. The expression of the landscape as bound to the geology and its interpretation (the 'story' of the landscape) becomes all the more interesting and relevant to the emerging geotourism opportunity anchored by The Nut and its visual 'draw'.

4.2 Recent research

Research within the last two decades has concluded that the volcanic sequences of the Stanley Peninsula are intraplate basaltic submarine and submarine to subaerial successions of volcanic units formed about 11mya. These are the youngest known Cainozoic volcanic rocks in Tasmania. Good, accessible exposures of such ancient sequences is uncommon around the world and modern sequences are submarine and therefore costly and logistically difficult to access and research.

Goto, Y. & McPhie, J. (2004)⁸ have described the complex and varied forms of basaltic rocks at the Stanley Peninsula and described their interrelationships. They include volcanoclastic rocks (volcanically derived sedimentary rocks), submarine basaltic lavas including pillows, mega-pillows and sheet lavas and a teschenite 'plug'. Teschenite is an unusual type of 'basaltic' rock. The teschenite is what formed the ovoid, steep sided very prominent hill that is The Nut. It is clear from the descriptions in this research paper that the relationships between these volcanic elements is important and quite rare in that they are mostly (especially at low tide) visible and accessible. It is most unusual in the world to find such a suite of related historic eruptive events that readily display the way those eruptive events occurred and why they created the residual landforms that are visible.

Fox, J (2019)⁹ describes and characterises in her recent thesis, the geology of the Stanley Peninsula volcanics, along with two other very important Australian sites. She describes these as excellent examples of accessible geology that demonstrate the succession of submarine to subaerial intraplate volcanics that are relatively poorly understood, due to most of it occurring in our oceans. She makes the notable comment that "Records of volcanic activity at Stanley Peninsula end with the Green Hills Volcanics and significant erosion has been ongoing producing a unique and interesting geomorphic landscape." [this writer's underline].

The comments by Fox and previously by others highlight the very important part that geomorphology (landforms/landscape) has with the geology and this reinforces how these are woven together in the need for geoconservation. The importance of this to research is emphasised in Fox's statement "Submarine and emergent volcanic settings can be very dynamic and produce complex deposits that are the result of the interaction of magma and water and the influence of non-volcanic surface processes. The complexity of the deposits together with the paucity of direct observations of submarine eruptions and their poor preservation potential mean that detailed observations of well-preserved deposits, as presented in this thesis, are essential to unravelling the relationships between process and products of submarine and emergent volcanism."

The vital nature of the well-preserved geology of Stanley Peninsula to geoheritage from a knowledge perspective cannot be understated and its link to remnant landscape cannot be undervalued.

There is in fact a multiplier effect in play here due to the extensive suite of inter-related geology and geological features that are exposed.

The suite of features that contribute to this are shown in Appendix A Item1.

This writer has undertaken a field inspection of much of the Stanley Peninsula coastline to appreciate first-hand the extent of exposures, the complex character of the geology, the uniquely interesting character of it and to form a sound judgement as to the importance of it from a geoconservation perspective.

5. Field inspection

A field inspection of The Nut and a number of coastal exposures of related volcanics around the Stanley Peninsula was undertaken on 22 May 2022.

The purposes of the field inspection were for the writer to personally -

- get a spatial understanding of the exposed volcanic geology on the Stanley Peninsula
- reacquaint himself with The Nut, its scale and visual character and its physical relationship to Stanley township
- understand the scales of the geological and geomorphological features expressed in the landscape of the Stanley peninsula
- get a sense of the fragility or otherwise of those features and their likely sensitivity to nearby industrial scale development
- form an overall view about the likely levels of various impacts caused by potential development of a wind farm and identify in the writer's mind the various geoconservation elements that may be included in a formal impact assessment.

The writer selected a day for field inspection that was extremely low tide during the majority of daylight hours - low tide of 0.25m around 10am and high tide of 3.56m around 5pm (approximately mean high tide). High Water Mark*, HWM as indicated on land titles information, is the seaside property boundary of the property upon which the wind farm is proposed to be located. The landscape of the western side of the peninsula is very gently sloping and slightly undulating. It grades with a small (around 1m step) to the intertidal zone which is particularly flat. At lowest tide on that day, some 150m of the intertidal zone was exposed between the water and HWM. The writer was able to traverse the whole of this intertidal zone along the western side of the peninsula and partly extending around the northern side. The northern flank became very challenging to traverse due to the increasingly bouldery nature of the exposed intertidal zone and a decision was made to cease before reaching North Point so that time could also be allocated to examining accessible parts of the eastern side of the Peninsula. A traverse was also undertaken along the eastern side of the peninsula from the southern end of Godfrey's Beach to almost the edge of the cliffs at King's Rocks. There was insufficient time to do a further traverse along Half Moon Bay on the eastern side of the peninsula, which also had more challenging accessibility in any case. The traverses undertaken can be seen in Appendix A Item 1. An inspection of The Nut (parts of the base and the top) was also conducted.

* It is not known for certain by this writer that the HWM indicated on the Tasmanian Land Titles information for the subject land is mean high water mark. The Tasmanian Lands Titles Office circular 1/1999 explains High Water Mark boundaries of properties as follows - "The expression high water mark has been judicially defined as being the mean high water mark, which is the line of the medium high tide between the highest tide each lunar month (the spring tides) and the lowest each lunar month (the neap tides) averaged out over the year."

5.1 Observations along the western traverse

The western traverse (WT) began at the right-angled corner of Green Hills Rd at the northern end of West Beach. The traverse ended about $\frac{1}{3}$ of the way along the northern flank of the Peninsula, about 600m west of North Point.

The geology of the western flank at HWM is mostly not visible due to shrubbery and a deep pile of fine kelp, although a number of rocky protrusions that extend outwards from the peninsula towards the northern end were clearly basaltic and exhibited geological structure. These were not closely inspected as the protrusions may be above HWM.

The intertidal zone primarily consisted of sandy stretches interspersed with patches of basaltic cobbles. Among the cobbles and occasionally within the sandy stretches could be observed basaltic lava pillow structures. These features (from sparse to numerous in places) exhibited classic pillow structure. They were approximately 50cm to 1m across in diameter with an oblate rather than spherical form. The radial crack structure, so typical of lava pillows was clearly visible. A number of photos of some the features observed along the traverse can be seen in Appendix A.

The cobbles were approximately the size of the fragments of lava pillow as delineated between the sets of cracks. The crack and therefore fragment size is related to the pillow size, but this is only a casual observation and no measurements were undertaken. Interestingly, at the northern end of the traverse, a few larger (but extremely weathered) pillows were observed under/between the boulders. This again aligns with the observation that the fragment size of the cobble/boulder residue along the coast may be related to the pillow size.

Significantly more research in terms of mapping pillows, sets of pillows, cobble/boulder beds, beach edge exposures of basalt where accessible and measurement of pillow morphologies and identifying like chemistry/mineralogy of the features is needed to understand their interrelationships and their relationship with other more well investigated exposures of the volcanics.

It was clear, even from these initial observations about the changing character of the geology and beach morphology that preserving these features from an educational/research perspective is an important proposition.

To this writer's knowledge, past research has not touched upon these low lying pillow structures along the western flank of the peninsula north of Green Hills Rd.

5.2 Observations along the eastern traverse

The eastern traverse (ET) began at the southern end of Godfreys Beach, below The Nut and extended to the back of Kings Rocks within about 80m of the cliffs just north of Highfield Lookout (which is slightly inland of the edge of the coast).

The immediately observable geology is The Nut, a remnant volcanic 'plug' and the scree slopes that have formed at its bottom, parts of a dyke swarm and volcanoclastic sediment beds. As one progresses northward beyond the sandy Godfreys Beach, further volcanoclastic sediment beds occur interspersed with pillow lavas which then grade to larger mega-pillow northwards and eastwards. Next, part of another volcanic dyke, successions of pillow, mega-pillow, minor lava lobes and sheet lavas were observed, becoming massive and substantially exposed in the cliffs below Highfield.

It is noted from the previously referenced works of Goto & McPhie and also of Fox, that further substantial exposures of the volcanic succession (and the related volcanic structures) continue and are observable in the cliffs below Highfield all the way around Highfield Point to Plum Pudding Rock at the southern end of Half Moon Bay. Their work also evidences the outcrops and features that occur right around the northern end of the peninsula beyond the northern end of Half Moon Bay.

The suite of volcanics so far identified and their complex relationships are remarkable and fulsome examples of intraplate volcanic sequences. The number, extent, visible character and accessibility of what are well-preserved volcanic geological features of significance are exceptional.

5.3 Local feature names

Local geographic features often have descriptive names and this is no exception on Stanley Peninsula. Geoheritage is often reflected in these names, based on historical cultural perspectives, examples of which include "The Nut" and "Plum Pudding Rock". These are cultural elements that can be ascribed to the geoheritage values of a place.

6. Desktop review of geoheritage

Additionally, a desktop review of the identified Geoheritage values around Stanley was undertaken, including -

- i. regional geological setting and prevalence;
- ii. DPIPWE geoconservation aims;
- iii. Tasmanian Geoconservation Database entries for the locations of interest;
- iv. nationally recognised locations of interest;
- v. understanding community expectations for geoheritage;
- vi. normative geoheritage assessment model.

6.1 Regional geological setting and prevalence

The overall geological setting for the Stanley Peninsula is a series of volcanogenic rocks, mostly of the Late Miocene epoch (about 11mya). The particular exposures of the volcanic rocks of this period at this location is of intraplate marginal marine settings, whereas further east from Wynyard through to say Deloraine, the Cainozoic volcanic rocks are mostly interpreted as thick sequences of older aerial flood basalts. Intraplate, predominantly submarine volcanics (of 25my of age) are also known from the far north west of Tasmania (near Cape Grim).

Although of smaller eruptive volume than those basaltic volcanics known from further east or west along the coast, the volcanic sequences of the Stanley Peninsula are of major significance because of their considerable younger age and because they transition in character from submarine to subaerial evolution.

A chart of the nomenclature of geological ages for the past 65 million years is provided in Appendix B for reader clarity.

6.2 DPIPWE geoconservation aims

DPIPWE states that -

"Geoconservation aims to preserve the natural diversity of our non-living environment (our geodiversity). This means protecting significant examples of:

- bedrock features
- landforms
- soil features and processes."

Included within this gamut is the protection of geomorphic features of uniqueness and significance. This report has examined the two specifically identified features within the DPIPWE records concerning the Stanley Peninsula in close proximity to the proposed wind farm. These listings are given in the following part of this report.

6.3 Tasmanian Geoconservation Database

The Tasmanian Geoconservation Database has at its core a dataset of recorded natural values of significance that include geological and geomorphological features. These are identified by name, spatially located, broadly described (for listing purposes) and geoheritage classified including a statement of each listing's significance. A wide range of metadata describing the listings is provided. The complete metadata criteria are not given here but include crude tick-box items about site management (integrity) and potential threats along with criteria such as condition (over time), conservation (over time), geosite values, mapping, literature references and attachments such as photographs - links (if any) to other geosites are also given.

Whilst theLIST (the Tasmanian Government's land information system) has an information layer relating to geoconservation sites, the available information about their importance or values is very brief and refers readers to The Natural Values Atlas (ie the Tasmanian Geoconservation Database's public portal and search engine) for more information.

This report examines the records accessible through the Natural Values Atlas¹⁰ for the features of concern that have been identified all around the coast of Stanley Peninsula. Only two such sites are identified in close proximity to the proposed wind farm.

6.3.1 Geosite listing ID 2158 - "The Nut Volcanic Neck"

The Natural Values Atlas listing for The Nut is given as ID 2158 - "The Nut Volcanic Neck"¹⁰. The complete listing details are not given herein, but the entire landform of The Nut is identified as the feature. It is considered significant because it is "Striking both as a landform and an example of crater ponded lava lake".

This geosite's management at the present time is limited to integrity of form and integrity of formation process (that is the creative volcanic and subsequent weathering forces that have shaped it). Curiously, in this listing, The Nut has not been noted for management of its scientific reference value, notwithstanding that five scientific references (covering 33 years) are provided further down in the listing and much new reference material also exists about it.

6.3.2 Geosite listing ID 3290 - "Green Hills Miocene Submarine Lavas"

The Natural Values Atlas listing for the coastal exposures of the volcanic lavas that are nearby Stanley township is given as ID 3290 - "Green Hills Miocene Submarine Lavas"¹⁰. The complete listing details are not given herein, but a small portion of the known lava sequence and associated landforms is identified as the feature (two locations). It is considered significant because "The three-dimensional exposure here contrasts with the more common ocean floor and drill core presentation of submarine lavas. This allows a new interpretation of the frequently observed alternation of pillow and massive facies: the propagation of pillows from the basal margins of advancing sheet lavas".

The listing states that this geosite's management at the present time is limited to integrity of form and scientific reference value, however, strangely not for integrity of formation process (that is the creative volcanic and subsequent weathering forces that have shaped it), given how these creative processes have been the key to the many interesting geological forms that are abundantly visible.

6.4 Geoheritage of national interest

6.4.1 Preamble to the national listings

The Commonwealth of Australia has enacted the Environment Protection and Biodiversity Conservation Act 1999 (EPBC) for the protection of nine matters of national environmental significance including national heritage places. There are two registers of heritage listings at the Federal level; one is the National Heritage List (NHL) which includes places of "outstanding heritage value to the nation"; the other is the Commonwealth Heritage List (CHL) which includes places of "significant heritage value to the nation". There is an important difference in the wording, the former as outstanding and the latter significant. The places on these lists are protected by the Environment Protection and Biodiversity Conservation Act 1999. The other notable difference between the lists is that the CHL deals specifically with places owned or managed by the Australian Government.

The Australian Heritage Council is the national advisory body to the Federal Government on heritage matters including assessing nominations for listing on either list. If a nominated place is considered by the Australian Heritage Council to have heritage value it is required to advise the Federal Minister for the Environment that the place meets one or more of nine criteria (for either list). The NHL always adopts the words "outstanding heritage value" in the nine criteria whilst the CHL always adopts the words "significant heritage value" in the nine criteria. "Under the heritage system, the Commonwealth Heritage List and the National Heritage List have similar criteria. The key difference is the level or 'threshold' of significance required to be reached to meet the criteria. Heritage experts are able to 'test' a place for heritage value against these criteria."

6.4.2 National Heritage List

The NHL has at present only 120** places listed within Australian territory, of which 13 are Tasmanian and of those only one, being The Tasmanian Wilderness (also World Heritage Listed), makes reference to the importance of earth's evolutionary history, geological processes and spectacular landscape.

6.4.3 Commonwealth Heritage List

The list of places entered in the CHL numbers 389** of which 19 are Tasmanian and of which all but one is built heritage. The exception is the Tasmanian Seamounts Area which is listed for its submarine ecology, but does contain a brief low-level description of its submarine landscape.

6.4.4 Register of the National Estate

Those places that have not achieved recognition on either the NHL or CHL may still be found on the Australian Heritage Database¹¹ (AHD), which is the archived Register of the National Estate, which became obsolete in 2012 under new listing and protection arrangements of the EPBC. The AHD includes numerous places that are of state significance and much of the protection of heritage values now rests with the states.

The AHD lists 34** entries associated with "Stanley" (as searched within the town or suburb database field). Two of these Stanley Coastal Landforms and Ecosystems (not within the gamut of this report) and The Nut State Reserve. The other geological features of the coastline around Stanley Peninsula are not mentioned. In fact, the AHD has only 37* non-interrelated Tasmanian entries with either "geology" or "landform" mentioned (as searched within the keyword database field). Most of these listings provide little more than a remark on the geology/geological age. The Nut State Reserve is one of these.

** As at June 2020.

6.5 Community geoheritage expectations

Regardless of the limited listings at a Federal level of geoheritage values around Stanley and the general paucity of listings about the natural physical world, geoheritage is among a number of natural values about which there are community expectations with regard to protection, access and uses.

In light of this the states including Tasmania have for some time been compiling and maintaining their own registers and in 'high value' settings have been producing management plans and or conservation agreements for places recognised for their heritage values (often in conjunction with local authorities). Examples are the Wellington Park Management Plan 2013 (on the edge of Hobart) and The Nut State Reserve Management Plan 2003¹² (on the edge of Stanley).

6.6 The Nut State Reserve Management Plan

The opening paragraph of The Nut State Reserve Management Plan (TNMP) states " The Nut State Reserve protects the most significant landform on the north-west coast of Tasmania. It is an integral part of the life and landscape of Stanley, the historic town lying at its foot. The Nut, or Circular Head as it is also known, is the symbol for Circular Head Municipality. It is the central landmark of the north-west coast, and central to the tourism industry of that part of Tasmania." [this writer's underline].

There is a broad expectation that through the regulatory setting of the Environment Protection Authority (EPA) Tasmania, the natural environment, tourism, education and recreation benefits of the TNMP can be protected from high impact development. Included in the values for protection are geoheritage values - with the plan identifying protecting geodiversity from potential adverse impacts as one element of conservation. The key objective is to avoid or minimise the impact of development works on reserve values. This is the backdrop for any impact assessment during planned development.

6.7 Associated volcanic geology of the Stanley Peninsula

Whilst the Green Hills Miocene Submarine Lavas and the many other volcanic geological features distributed around the Stanley Peninsula coastline have limited reference within heritage listings, this report has identified research that shows the important connection of The Nut to those volcanic features. Any assessment of the Nut geoheritage is in this writer's opinion inseparable to the geoheritage of these other features. Moreover, the intrinsic connection of these features in an assemblage is a major drawcard for research and for future geotourism.

The nature of the developing geotourism component of the long-established tourism industry at Stanley leads to the conclusion that the Nut is the 'headline' to that geotourism and that protection of all of the features as a suite of related geology with one geological 'story' is paramount to conserving that geotourism value. The Nut and the associated surface expression of the collection of Miocene volcanics of the Stanley Peninsula are genuinely unique in an Australian and perhaps even a world setting.

Fox, J. (2021)¹³ comments that "From a geological and geomorphological perspective, the Stanley Peninsula is a world-class example of exceptionally well-preserved submarine volcanoes and lava." and further goes on to say that "In addition to the national and international geological significance and uniqueness of these features, together they produce a dramatic and extraordinary landscape. The fact that they occur close together in unique setting of a tombolo (sandy isthmus) means that they form a stunningly beautiful landscape that occurs nowhere else in Australia."

6.8 Geotourism - an emergent extension of landscape tourism

During the Holocene epoch Tasmanian indigenous culture (the palawa people) is known to have been established in north western Tasmania (lutruwita). Australian indigenous peoples have a long and intimate connection with the lands they inhabited, including sourcing food from the land and the sea, finding shelter, establishing cycles of activity related to the seasons, nurturing their resources and creating enduring stories of their life (and their own origins) often linked to the land. In Tasmania that continuity has been disrupted through colonisation and dispossession, but their stories and culture and their connection to 'place' have still been able to be perpetuated and to some degree be reconstructed. Connection to place is reflected in their place names, particularly of notable landscapes. The Nut is known by the palawa name munatrik. The European name for The Nut, as it colloquially known, is Circular Head, named by Bass and Flinders (1798) during their expedition to circumnavigate Tasmania. Thus, the landscape feature The Nut is long and well established in the minds of two distinct cultures. Any tourism 'anchored' on The Nut can genuinely make this link between past and present values.

Geotourism is an emergent extension of landscape and culture tourism. Tourism of the nineteenth century in particular was centred on aesthetics of landscape and the novelty of different cultures and different species. This has gradually evolved to seeking out a degree of understanding and acquisition of knowledge about landscape, environment and culture. Most recently, an element of educated or expert, interpretation of what places are about and how they came to be, in both physical and cultural contexts has developed. Emerging from this text-book understanding are new aspects of tourism relating to detailed knowledge about the histories of connected cultures, the formative processes of landscape and the interconnectedness of ecology.

Geotourism is one element of that emergence, impelled by tourists who wish to not only gaze upon and admire landscapes, but who want to gain an appreciation of landscape well beyond the scenic aesthetic. Geotourists want to know not only how the surface processes have shaped the morphology of what they see but also what is below the surface and what processes have formed the fabric of the landforms and the basement below. Such tourism is about 'themes', that is, explanations of interconnected detail that form a coherent story. Old world tourism = *facts*; modern tourism = adding the *fabric* between the facts; emerging tourism = stitching together the facts and fabric into a cohesive narrative.

Stanley Peninsula, anchored by the drawcard feature The Nut is one of the prime geotourism locations in Tasmania where a geological theme can readily be established, interpreted, conveyed and moreover demonstrated to tourists by the physical presence of the features from which the interpretation is derived. Scale and juxtaposition of the geological features are paramount in conveying the theme and this is so well enabled by the geological exposures of the Stanley Peninsula.

Whilst each geological feature around the Stanley Peninsula has its own value, any geoheritage and geoconservation assessment of this landscape and geology must emphasise the suite of features, their interconnectedness and their collective value as greater than the sum of the individual components. Geotourism will need to connect to the collective whole to maximise the experience for tourists and therefore any development impacts on individual features will be amplified to a greater impact on the overall assemblage.

Geotourism in Tasmania began with visitation of scenic attractions that were created through geological and geomorphological evolution. This includes the Nut for its dramatic and unique character as a coastal landmark. Geological sites of interest were soon signposted and included in touring guides and the like. This led to state and local authorities introducing limited interpretation of well-known sites on signboards, often strategically located at the beginning of walking trails.

Geotourism in Tasmania has now matured to a point where premium professionally guided tours occur, often as part of eco-tours. These are not only conducted on foot but also by sea where viewing coastal landforms by boat provides an unusual contrast and very different perspective to what is visible on land.

Tourists are seeking out authentic geotourism experiences that provide detailed insights into the earth's past and how the earth's features and processes are intimately connected with ecology.

A geotourism trail 'Created from Chaos Coastal Trail' has been established in the north west of Tasmania since around 2004. It is a self-guided trail that extends from Mersey Bluff at Devonport to Gardiner Point at Arthur River.

The most natural extension from self-guided to high-value geotourism westwards along the north coast of Tasmania is centred on The Nut and the complex volcanic geology of the Stanley Peninsula.

The outstanding character of the features coupled with the accessible nature of the sites by foot and by boat within a compact space places this area near the top of the Tasmanian geotourism list.

Significant protections of The Nut and other geoheritage coastal features are required to safeguard the long-term socio-economic benefits derived from geotourism.

The following outlines the proposed formal impact assessment process.

6.9 Proposed impact assessment method

The detailed Heritage Impact Assessment (HIA) of the features cannot be fully conducted until the exact details of the proposal have been finalised (eg tower heights and exact locations, erection processes including on-site construction activity and knowledge of the transmission route to the network), nor before the proponent's EMP is lodged.

None-the-less, an outline of the way in which the formal assessment will be undertaken can be given. The knowledge about the features and their importance as demonstrated in this report will carry over into the HIA process, possibly with some follow up research. The proposed HIA methodology is broadly as follows;

Each individually identifiable location of geological/geomorphological interest around the Stanley Peninsula (per this report) is listed and the salient characteristics of the features at each location are summarised. The whole suite of features is also listed as an item of interest and the reason for their aggregate interest summarised.

The geoheritage values to be assessed and attributes such as scale, aesthetics, rarity and so forth are identified. Geoheritage values can range from profound to abstract. They can be deconstructed into layers of attributes that each add to a value. Those attributes are often easier to recognise and assess against criteria than a whole value.

The primary values and attributes identified below, broadly the ones to be used in the HIA process, are widely used throughout the world in geoconservation settings. A modified set of the NHL criteria are then what the geoheritage values are evaluated against to determine the level of importance of protection of those values.

The following (initial) list outlines those values and attributes

Value #1 - intrinsic - attributes: eg natural morphology/geometry; geochemistry and mineralogy.

Value #2 - scientific and educational - attributes: eg rarity; contribution to understanding the earth's evolution and formational processes; discovery and training.

Value #3 - ecological and active processes - attributes: eg coastal processes; contribution to eco-haven and preservation of species; influence on climate.

Value #4 - cultural and historical - attributes: eg ancient cultural connections; archaeology; recent history and folklore.

Value #5 - aesthetic - attributes: eg grandeur; uniqueness; scale and contribution to local/regional landscape; visual and artistic appeal.

Value #6 - recreational - attributes: eg walking, climbing, abseiling.

Value #7 - socio-economic - attributes: eg contribution to tourism and geotourism; therapeutic.

The range of potential impacts that might occur due to the proposed development are outlined - this list may not be exhaustive and could be added to with further insight.

Each location and each value at each location is evaluated as to how likely and to what degree (the risk) of compromise to those values may be through the impacts of development. The same is done for the whole suite of features combined.

The evaluation methodology is to apply a risk assessment matrix to rank the level of risk of adverse impacts. This is a qualitative impact assessment presented as a three-digit ranking where the Impact Ranking (first digit in bold) = Effect (second digit) x Likelihood (third digit).

The results of the impact assessments are tabulated for the whole project. Whilst a measurable quantum of impact is not determined, the relative seriousness of each impact can be interpreted and the seriousness of consequences gauged.

The components of this assessment process, value/attribute sets, risk matrix, likely impacts, significance criteria and so forth have begun to be assembled. Although this cannot be properly completed until the project details and EMP content are fully known, it can be undertaken to provide a comprehensive geoheritage assessment dataset supporting a National Heritage Listing submission.

There may also be scope or need for comparative analysis of the assessment against other 'like' projects or geoheritage assessments. Equally, there would be a need in supporting a NHL submission for comparing similar sites (Australian or global) to provide more context and add strength to any submission.

Ultimately, the aim is to make the dataset universally functional for understanding the geoheritage values of the Stanley Peninsula and the geoconservation need, regardless of any future nearby development proposals that could cause an impact.

An example of the risk matrix used is given on the following page.

Qualitative Scale of Impacts

Risk/Impact Ranking Description

0 - Nil _____ No short- or long-term risk/impact to the feature's values.

1 - Low _____ Slight risk/impact to the feature's values: eg physical character or permanence; contribution to the landscape and natural processes; intrinsic educational or research value; cultural and historic value; socio-economic value such as tourism.

It is considered that impact rankings 0 and 1 are acceptable levels of risk and, if at all required, easily moderated by engineering or modified practices.

2 - Moderate _____ A pronounced risk/impact to the feature's values: eg noticeable physical change or altered permanence; reduced contribution to landscape or natural processes; diminished access or capacity for educational or research use; lessened cultural or historical value; diluted socio-economic value.

It is considered that impact ranking 2 is of sufficient risk to warrant mitigation through substantial engineering or modified practices where avoidance is not a viable measure of protection.

3 - High _____ A certainty of significant, long term or permanent impact, ie irreversible risk/impact to the feature's values: eg removal or destruction of the feature or much of it; altering the integrity of the feature such that it cannot provide meaningful educational or research value; disconnection with culture or history; elimination or wholesale reduction in socio-economic, eg tourism value.

It is considered that impact ranking 3 is an unacceptable level of risk where the feature has high values and or is rare or unique and where it may be difficult to avoid or mitigate the impact through engineering or modified practices, such that avoidance of nearby development may be the only viable measure of protection.

It needs to be remembered with such analysis, the scale of levels for both the effect and the likelihood are non-linear, ie a ranking of 3 does not imply simply three times the impact of a ranking of 1.

<div style="text-align: center;"> Likelihood (Probability) </div> <div style="text-align: center;"> Effect (Consequence) </div>	None or improbable 0	Possible 1	Probable or uncertain 2	Highly likely 3
No or imperceptible 0	0 00	0 01	0 02	0 03
Negligible or minor 1	0 10	1 11	2 12	3 13
Moderate 2	0 20	2 21	4 22	6 23
Major 3	0 30	3 31	6 32	9 33

The overall Impact Ranking (first digit in bold) = Effect (second digit) x Likelihood (third digit)

6.10 The Nut - need for National Heritage Listing

During the development of this report it has become evident to the writer that The Nut is worthy of further protections that would be derived from being entered on the NHL. It has the attributes that show its uniqueness and significance in the landscape, and if formally assessed, is likely to be appraised as being an 'outstanding' feature meeting at least the first three of the nine NHL criteria.

Furthermore, the Stanley Peninsula volcanics are intimately linked with the formation The Nut and provide a remarkable, accessible surface expression. They are unique in Australia and globally rare, of a rich sequence of volcanic features associated with marine and marginal marine eruptions. Consequently, they should also be entered for the NHL, either in association with The Nut as a complete suite of features or as a separate but related entry.

A number of things would need to be done to maximize the chance of the HCA nomination to the minister of the day. The work of this report and the detailed feature by feature assessments of the HIA, are an ideal platform to provide support for such an application - some further research may be required to reinforce the importance of this geoheritage.

The content of this report may need to be partly rewritten to suit the format of a submission and to address the specific criteria which are the basis for assessment of a HCA submission.

7. References

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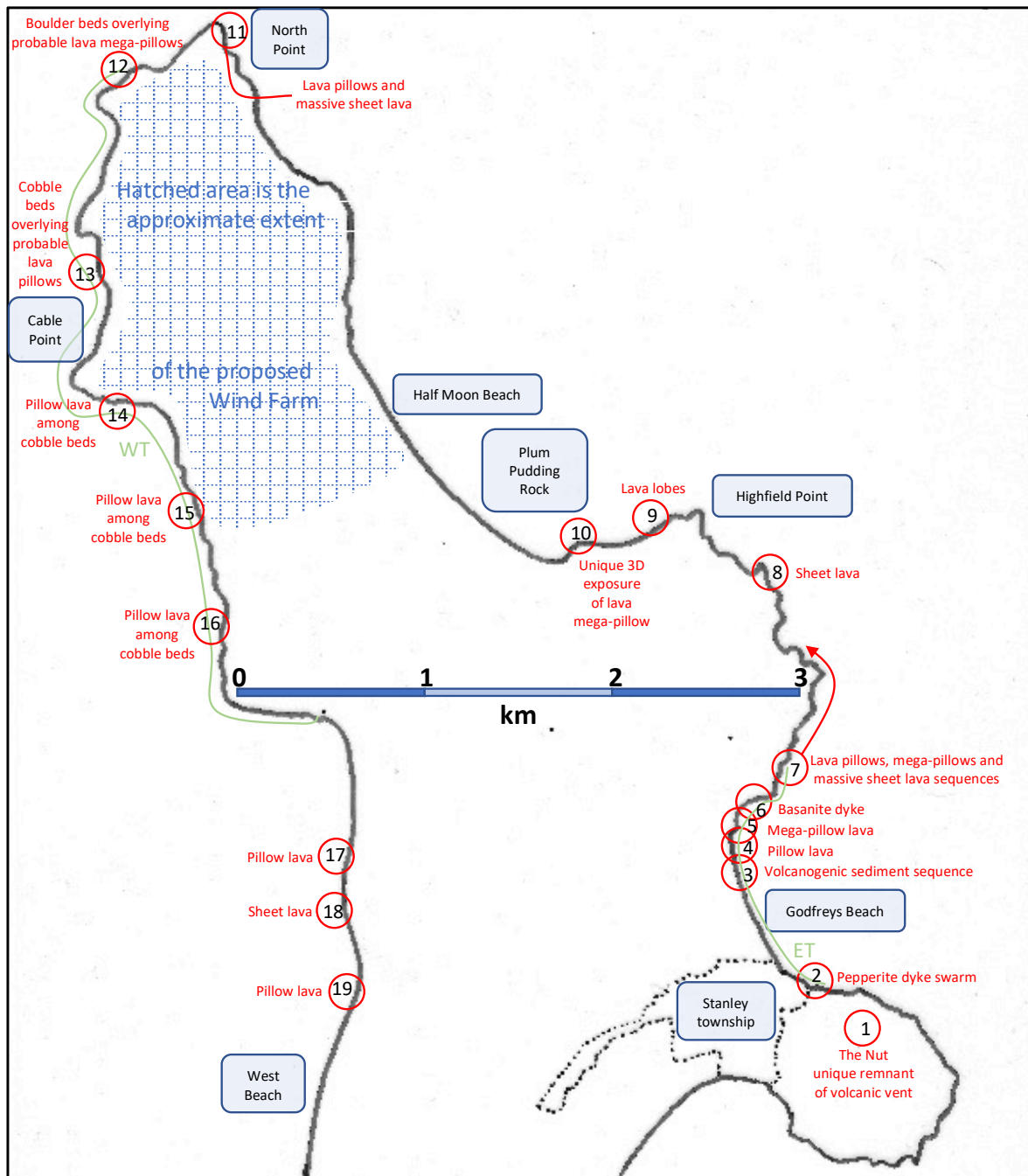
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APPENDIX A

Sketch map and site photos

APPENDIX A ITEM 1



Sketch of Stanley Peninsula distribution of geological and landscape elements
(north is approximately at the top of the page)
(inscribed sketch is approximately 5.45km E-W by 6.25km N-S)



Extensive cobbly zones between sandy beaches on the western flank of the Stanley Peninsula.



Pillow lava outcrop within cobbly zone showing classic features (along traverse WT).



Volcanogenic sediment exposures at the north end of Godfreys Beach.



Ash beds of volcanogenic sediment sequence showing stratification from multiple eruption events.



Mega-pillows just beyond the northern end of Godfreys Beach (along traverse ET).



Complex lava flow cooling structures from sub-vertical to sub-horizontal in close juxtaposition.



Multiple lava flow features; pillows, mega-pillows, sheet flows and lava lobes.



Unique geomorphology of The Nut with Stanley township visible on its western flank.



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APPENDIX B

Geological timescale (portion)

Years ago	Epoch	Period	Era
0			
12 kya	Holocene	Quaternary	Cainozoic
2.5 mya	Pleistocene		
5 mya	Pliocene	Neogene	
	Miocene		
25 mya			
	Oligocene	Paleogene	
35 mya			
	Eocene		
55 mya			
	Paleocene		
65 mya			