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SUBMISSION ON APPLICATION CONCERNING RESOURCE CONSENT THAT IS SUBJECT TO PUBLIC NOTIFICATION OR LIMITED NOTIFICATION

BY CONSENT AUTHORITY

Sections 95A, 95B, 95C, 96, 127(3), 136(4), 137(5)(c) and 234(4) Resource Management Act 1991

TO:

Greater Wellington City Council And Wellington City Council

Attention: notifications@gw.govt.nz Environmental Regulation department Greater Wellington Regional Council PO Box 11646 Wellington 6142

cc: amanda.dewar@laneneave.co.nz

NAME OF SUBMITTER:

Surfbreak Protection Society Incorporated.

Submission on: Consent Application No's: WGN160274 & SR357837

The Surfbreak Protection Society Inc is **opposed** to the above consent applications.

The specific parts of the applications that this submission relates to are: the proposal in its entirety.

The Surfbreak Protection Society Inc wishes the Greater Wellington Regional Council and Wellington City Council to make the following decision: to **decline** resource consent.

The Surfbreak Protection Society Inc. wishes be heard in support of its submission.

Introduction

This is a submission by Surfbreak Protection Society Incorporated ("SPS") on the above listed consent applications and activities proposed by Wellington International Airport Limited (WIAL).

SPS is a representative group of surfers and friends dedicated to the conservation of the "treasures" of the New Zealand Surfing Community (and public generally) - our surfbreaks - through the preservation of their natural characteristics, water quality, marine ecosystems, amenity and recreational values and low impact access for all. We strive to be Aotearoa's "Guardians - Trustees" of our surfbreaks and the natural environments that complement them.

Since its establishment in 2006, SPS has successfully been involved with incorporating surf break preservation and sustainability into policy prepared under the Resource Management Act 1991 (RMA). SPS was a successful submitter on the New Zealand Coastal Policy Statement 2010¹ (NZCPS) containing national direction on surf break protection.

SPS has also been involved with a number of cases protecting the qualities and enjoyment of surf breaks from inappropriate subdivision, use and development in the coastal environment. This is in regard to issues such as maintaining water quality, access to breaks and wave quality of breaks. SPS is the leading surf break preservation and sustainability organisation in New Zealand and a key stakeholder/surfing interest group in the country's coastline; with its purpose of protecting surf breaks now mandated by national policy direction in the NZCPS (and by regional policy direction, for example, in the Taranaki Regional Policy Statement 2009).

Surf breaks are a natural characteristic, and part of the natural character and landscapes, of the New Zealand coastline/coastal environment, of which there are few when compared to the total length of the New Zealand coastline².

¹ The New Zealand Coastal Policy Statement 2010 was issued by notice in the New Zealand Gazette on 4 November 2010 and took effect on 3 December 2010.

² Scarfe (2008) states that there is only: "one surfing break every 39km to 58km. Many of these surfing breaks are only surfable a few days per month or year when the tide, wind and wave conditions are suitable."

Approximately 7% [310,000] of New Zealanders are estimated to "surf "on a regular basis³. Surfing makes a valuable contribution to the wellbeing of New Zealanders by promoting health and fitness, cross-cultural and intergenerational camaraderie and a sense of connection to, and respect for, New Zealand's coastal environment and resources. In terms of Part 2 of the RMA surf breaks, therefore, contribute to amenity values/recreational amenity and natural character of the coastal environment; surf breaks and surfing enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety.

Surf breaks under the Resource Management Act

The maintenance and protection of surf breaks is relevant to several aspects of the RMA, particularly the purpose and principles of the RMA (sections 5, 6, 7, and 8).

Section 5 Purpose

(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.

- (2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—
 - (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
 - (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
 - (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Surf breaks are a "natural and physical resource" to be sustainably managed under the RMA. Surf breaks contribute to the "social, economic and cultural wellbeing and the health" of people and communities by providing for the recreational activities of people; but also have wider social and economic benefits - in terms of, for example, the economic activity of the local area and region - and creation of a distinctive sense of place and identity for communities close to surf breaks. International research demonstrates that surf breaks provide for significant social and economic benefits for people and communities.

³ Figures sourced from SPARC

There are several places in the Wellington region where surfing is an important element of the character and culture of the local area. Surfing is an activity which draws people to live in the local area and attracts tourists and visitors. In total, the variety and scale of surf breaks around the Wellington region contribute to the character, attractiveness and amenity values of the region. The coast and beaches are consistently given as a key reason as to why people choose to live in coastal communities of the region. In some cases; the rationale to live on the regions coasts relates directly to the opportunities for surfing. However, it is clear that the accessibility of the coast and the range of different activities that are possible around the coast also contribute to the wellbeing of people and communities.

Globally, the numbers of people involved in surfing has increased significantly over recent decades and is expected to rise. At the same time, pressure for development along the coast is growing. Ensuring appropriate management of any potential conflict between such uses of limited coastal space is part of the council's responsibility to meet the reasonably foreseeable needs of future generations; and to avoid, remedy or mitigate any adverse effects of activities on the environment.

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Section 6 Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- (a) the protection of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:
 - (b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development: ...
 - (d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers: ...
 - (e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:...
 - (f) the protection of historic heritage from inappropriate subdivision, use and development.

The matters of national importance in section 6 RMA are relevant to the consideration of surf breaks in a number of ways; for example, because surf breaks are natural features and their use and enjoyment depends on public access to the coastal marine area. Surf breaks are, for example, an element of the natural character and landscape of the coastal environment.

Nationally and internationally, numerous surf breaks have been modified by coastal engineering activities, but they still contain a degree of natural character. The nature and amenity values of the surfing experience is also affected by the natural character of the surrounding area.

Public access to a surf break is fundamental to its use. Such access can be enhanced by works such as walkways and car parks, or can be diminished through activities, such as subdivisions or coastal reclamation which block informal access.

Section 7 Other matters

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to:

- (a) Kaitiakitanga:
- (aa) the ethic of stewardship:

(c) the maintenance and enhancement of amenity values⁴: ...

(f) maintenance and enhancement of the quality of the environment:

(g) any finite characteristics of natural and physical resources: ...

In places where surf breaks are located, they provide a major element contributing toward the amenity values of an area. This is because they provide for and contribute to people's appreciation of such areas pleasantness, aesthetic coherence, and cultural and recreational attributes – not only for those those people surfing - but also for the enjoyment of people in a community (as well as visitors to a community) generally who, for example, watch surfers and waves from the land. Lyall Bay and its surf is high in amenity values for all of these reasons.

Therefore, maintenance and enhancement of the quality of the finite Lyall Bay environment is important for retaining the significance of the surfing experience and the Lyall Bay community and amenity values generally.

Surf break attributes as sources of value

The Board of Inquiry Report and Recommendations Volume1: Findings, Recommendations and Recommended NZCPS (2009) stated that:

"The economic value of surfing to tourism and the social benefits should not be underestimated."

Studies have been conducted overseas regarding the economic benefits of surfing - a branch of research that has come to be known as Surfonomics.

One of the most well-known reports is: A Socioeconomic and Recreational Profile of Surfers in the United States: A report by Surf-First and the Surfrider Foundation prepared by G. Scott Wagner, Chad Nelsen, and Matt Walker 2011.

The study surveyed the demographics of surfers listing their income range and expenditure when travelling to a surf break, to quote from the report:

"Surfers in the U.S. are experienced and avid athletes who make expenditures in coastal communities each time they surf. Survey responses indicate that the average surfer has 16 years of experience and surfs early in the morning for 2.5 hours and average 108 times per year. On each visit, expenditures will average \$66 on items such as food, gas,

⁴ Amenity values means those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes: section 2, RMA.

rental equipment, lodging, and/or merchandise. The 3,916 respondents went surfing a total of

557,310 times in the past year and assuming a mean expenditure of \$66 during each visit, generated an economic impact of \$36,782,460. This represents a very small population of surfers relative to the total number of surfers in the U.S. (Wiley et al., 2006).

Based on Leeworthy and Wiley's (2001) estimate of about 76 million annual surf visits and using \$25 as a conservative value from Hanemann et al. (2004) and \$66 found in our survey, we estimate a range for the annual economic impact from U.S. surfers that could be from \$2 billion/year to \$5 billion/year."

While such studies are in their infancy in New Zealand, one study has been conducted on the value of surf breaks culturally, socially and economically, with case studies of both the Bay of Plenty and the Gisborne regions:⁵

"The objective of this study was to investigate the perspectives of coastal communities on surf breaks in two different regions in New Zealand in order to identify values for their effective management. In particular, the study sought information on the attributes of surf breaks that contribute to these values to identify potential implications for the management of these environments in the New Zealand policy context."

"Surf breaks are a finite natural resource contributing to the health and well-being of individuals and communities. The results from case studies conducted in two regions in New Zealand illustrate that a wide range of attributes contribute to the values of surfbreaks. These are typically site specific features that are often unique to the individual location."

And;

"Significant economic activity derived from tourism was also identified in both case study regions. One respondent noted that "Tourism alone... the economic potential is huge...Council or those running tourism don't quite realise how strong surfing is..."

⁵ Understanding the values associated with New Zealand surf breaks and implications for management by Preston Bailey Perryman and Shane Orchard (GIVE YEAR – agree – need to reference this – also need page or paragraph numbers relating to the quotes)

"In both case study regions, the experience of visiting or observing these parts of the coastal environment was also identified as a source of benefits. This is in addition to recreational activities such as riding waves, as one respondent stated, surfing is "...culturally, more than recreation". Another added there is "a connection to sealife and an affinity with those that surfers share the ocean with. It is not just about surfing the sea, surfers can make that connection... and are in harmony with the wairua (spirit), the buzz that Maori feel in a different way, but hearing the same tune".

Surfing nationally and internationally is a multibillion dollar industry, as various studies have established.

Some studies have been done in New Zealand concerning the economic potential to local economies of Opunake and Mount Maunganui with regard to proposed artificial surf reefs. Based on attracting 50 surfers per surfable day, the Mt Maunganui reef was estimated to generate \$500,000 of annual expenditure, locally.

The Opunake surf reef was estimated to have additional expenditures of \$288,120 by Year Five. With these sorts of figures estimated for artificial surf reefs, SPS believes that before any degradation of natural surf breaks take place, particularly those with a high amenity access in an urban environment a full economic assessment of that surf break's integration into the local economy should be undertaken.

New Zealand as a whole still needs a comprehensive study to be undertaken in the field of Surfonomics. While Lyall Bay has cafés situated opposite its most popular surf breaks, and surfing retail businesses reliant on the income and culture that surfing provides, it is the view of SPS that WIAL has not adequately assessed these values in its impacts on recreation report⁶.

Further concerns with WIAL's application:

SPS is opposed to the Wellington Airport Extension and proposed Submerged Wave Focussing Feature (SWFS) for, inter alia, the following reasons:

The proposed activity is contrary to, and inconsistent with, the RMA's purpose and principles.

SPS is opposed to the Wellington Airport Extension and proposed SWFS because it is contrary to, and inconsistent with, but not necessarily limited to, policies 1(f), 3(c), 6(1)i 13.(2)(c), 14(3)(iv), 15 of the NZCPS.

⁶ Technical Report 6 TRC- Assessment of Effects on Recreation

SPS has been in consultation with WIAL since early 2015 regarding its concerns and proposed mitigation of a SWFS, many of our concerns are referred to in SPS's **Appendix 1**; <u>SPS submission Wgtn Airport Extension South Final</u> (SPS's own consultation with WIAL).

In respect of the sport of surfing in New Zealand: Lyall Bay is historically and culturally significant as Olympic gold medallist Duke Kahanamoku demonstrated his surfing skills to a crowd of thousands in 1915 at Lyall Bay; and is, in SPS's submission, part of this country's historic heritage in that context.

Wellington City Council is currently in the process of designing and placing a monument to the Duke in Lyall Bay, recognising the historic heritage value of Lyall Bay and the Duke's visit.

Duke Kahanamoku is considered to be the father of modern surfing. The issue is given more breadth within Appendix 1. Surfing has been accepted as an Olympic sport for the Tokyo Olympics in 2020. As an urban sports ground, Lyall Bay is of the highest amenity and historic heritage value, and adverse effects must be avoided with any construction, such as the proposed airport extension project.

The Proposed Airport Extension requires the destruction of the *Airport Rights* Surf break. *Airport Rights* is a reef break located at the southern end of the runway, off Moa Point road, and is listed in the Greater Wellington Regional Council Proposed Natural Resources Plan (PNRP) schedule of regionally significant surf breaks. *Airport Rights* is a big wave surfing venue, and is important to a surfers' progression in capability. *Airport Rights* is still in need of a clean-up due to building materials such as rock and iron rod debris left over from previous airport extensions in that surf break's impact zone.

SPS submits that the proposal will adversely affect the natural character of Lyall Bay and is contrary to and inconsistent with s. 6(a) RMA. The WIAL Boffa Miskell Natural Character Report⁷ is highly flawed in its conclusions of impacts on surf breaks. While SPS agrees with the report that impacts on surf breaks will be significant, SPS disagrees that the Submerged Wave Focus Structure (SWFS) "*will mitigate the effects of the runway extension on surfing conditions…*".

SPS submits that in order to establish a robust adaptive management plan for the avoidance of adverse effects on surf breaks, WIAL needs comprehensive baseline data.

SPS has a number of concerns regarding the proposed constructions such as, but not limited to:

⁷ Technical Report 25 Frank Boffa – Natural Character Assessment

- 1. The Proposed Airport Extension would have significant adverse effects on all of Lyall Bay's surf breaks. The DHI Surf Break Impact Assessment Report⁸ notes the reduction in wave peakiness caused by the proposed airport runway extension, DHI has predicted the reduction in surf rides is expected to be between 14-29% for Middle Beach and 18-27% at West Beach. The report predicts an expected reduction of total number of surf rides of 4 8% at *the Corner* Surf break; Wellington City's premier surf break which attracts dozens of surfers at a time when a good swell is generating;
- 2. Appendix 2 The Wellington Boardriders Club independent peer review⁹ on the DHI Surf break Impact Assessment Report raises a number of concerns; and questions the methodology and assessment by DHI including application of NIWA's results to the DHI work, with respect to changes in currents/sediment transport (i.e. no significant impacts), and the need for better representation of the wave-climate (i.e. rather than only three scenarios) and morphological impacts. SPS submits NIWA's conclusion of no significant impacts on currents and sediment transport are dubious due to the limited data that was collected and some unsubstantiated assumptions being used in their modelling. This is compounded when surfing amenity is not considered. These points and other concerns are discussed further in appendix 2.
- 3. The impacts on Lyall Bay's surf breaks and beach have not been adequately addressed in the DHI Preliminary Shoreline Assessment¹⁰ and the report itself in its discussion and recommendations section acknowledges that; "*There are a number of model parameters, which are unknown at this preliminary stage of the project and which can potentially alter the predicted response of the submerged focusing structure.*" SPS submits that the SWFS that WIAL and DHI are proposing is unproven, without a working example found anywhere in the world. DHI have also stated in their introduction that; "*An even more detailed shoreline design study will still be required as part of a concept design, which will include a more comprehensive shoreline assessment and requires additional input data.*" It is the view of SPS that what has been provided by DHI and WIAL does not meet the standards required for a robust Assessment of Environmental Effects.

WIAL has not yet provided a final SWFS design concept for what is an unproven technology. This calls into question how WIAL can submit a *Preliminary Shoreline*

⁸ Technical Report 11 DHI Water and Environment Limited (DHI) – Surf Break Impact Assessment.

⁹ Re: Potential Surfing Amenity Impacts Due to the Proposed Airport Extension – eCoast marine and consulting Ltd.

¹⁰ Technical Report 14 DHI – Preliminary Shoreline Assessment.

Impact Assessment for a Submerged Wave Focusing Structure report, when they have not yet provided a final SWFS design concept? A final design of the focus structure is required to determine impacts on the shoreline (which will be interactive with the quality/type of waves breaking in this location due to the SWFS). Many of SPS's further concerns regarding the DHI Preliminary Shoreline Assessment are raised in Appendix 3 - Preliminary Shoreline Impact Assessment for Submerged *Wave Focussing Structure – A Technical Review by eCoast Ltd.* (Appendix 3 is a peer review of the DHI Shoreline Impact Assessment report funded by WIAL for the benefit of the Wellington Boardriders Club).

SPS is opposed to the placement of 17,000 m³ of rock material into Lyall Bay that is dissimilar to the predominantly sandy beach, the placement of a yet unidentified rock material will be subject to future erosion and will adversely modify the bays sediment profile. In addition, neither the quality nor composition of the rock is known, nor the placement methodology. All of this could lead to serious health and safety issues for Lyall Bay users, plus potential contamination of the marine environment.

Sufficient particulars must be given with an application to enable those who might wish to make a submission to assess the effects on the environment, and on their own interests, of the proposed activity. The applicant must provide the details and information necessary to enable that to be done. It is submitted that the applicant has failed to do so; for example (but not limited to), the reasons above. Such effects could be significantly adverse on, for example (but not limited to), amenity values and the environment generally. The material prepared and given by the applicant does not allow those who might wish to make a submission (such as SPS) to adequately assess the effects on the environment, and on their own interests, of the proposed activity¹¹. Sufficient particulars have not been given with the application to enable those who might wish to make a submission to assess the effects on the environment in the above context, and on their own interests, of the proposed activity and the effects on the environment; this also leads to uncertainty. The applicant must provide the details and information necessary to enable that assessment to be properly made in the circumstances of this case; the application is deficient in this regard. The actual and potential adverse effects of the proposal (that can in fact be ascertained and assessed) cannot be adequately mitigated by the applicant, nor, it is submitted, have they been in the proposal.

¹¹ See: <u>AFFCO New Zealand Limited</u> v Far North District Council [1994] NZRMA 224

- 4. SPS is concerned with the a number of points raised in Appendix 3 attached to this submission, the Wellington Boardriders peer review¹² of the DHI Preliminary Shoreline Assessment report, including, but not limited to; the effect of wave-driven currents and their influence over sediment patterns on *the Corner* surf break, and the bay in general;
- 5. The proposed construction would enforce a public exclusion zone of perhaps 300 meters (yet the AEE is unclear on this point) from the construction sites for up to four years at the extension site, and in the centre of Lyall Bay obstructing access, for surfers, surf lifesaving clubs, and the general public. With regard to Lyall Bay beach and the SWFS in particular, this is contrary and inconsistent with principles and policies in the RMA and NZCPS regarding, inter alia, amenity values and public access. The SWFS construction zone itself is sited on top of an existing surf break, the bend. The SWFS itself, is in a surfing wave impact zone during swell events of just 2.5 meters or more in height.
- 6. SPS submits that WIAL have not duly considered policies (but not limited to) 3, 4, 5, 10, 13, 14, 15, 16, 18, 22, 23 of the NZCPS? And their reference to the use and enjoyment of surf breaks. Much of the background of how these policies interact with the specific policies that relate to surf break protection (policies 13, 15, and 16) are addressed in the *Proposed New Zealand Coastal Policy Statement (2008) Board of Inquiry Report and Recommendations,* and the guidance notes for policies 13, 15, and 16¹³, all of which indicate WIAL's consent applications as being in clear conflict with the objectives and policies of the NZCPS;
- 7. WIAL's Technical Report 25 Frank Boffa Natural Character Assessment notes in the executive summary: "Other mitigation measures include optimising public access opportunities along Moa Point Road and in the inner part of Lyall Bay."

WIAL's; Appendix-H-Consultation-Summary-Document also points to increasing the roadside margin of Moa Point Rd, alongside the Corner Surf

¹² Appendix 2 - Re: DHI – Wellington Airport Runway Extension; Preliminary Shoreline Impact Assessment for Submerged Wave Focussing Structure – A Technical Review.

¹³ <u>Vol 2</u> of the Board of Inquiry recommendations and <u>guidance notes</u> for the 2010 NZCPS can be downloaded from the DOC website.

break, and its swell corridor; "provision will be made for a new shared (walking and cycling) path of 3m width along the west side of the straight section of Moa Point to a new lookout point at the existing breakwater. The new path will extend from the lookout point to the corner of Lyall Bay Parade. "WIAL'S AEE has not provided clear and transparent detail to the extent of the proposed intrusion into the CMA beside *the Corner* Surf break.

WIAL's Appendix G Landscape and Urban report states on page 1 Introduction: "Moa Point Road Promenade Extension Provision will be made for a new shared (walking and cycling) path as a promenade (i.e. for slow moving cycling and walking). It is generous in width, with seats etc. along) on the west side of the straight section of Moa Point to a new lookout point at the existing breakwater. The new path will extend from the lookout point to the corner of Lyall Bay Parade." And on page 4:

"Materials such as rock rip rap/sheet piles/concrete forms/Accropodes, used in edge protection to the promenade be able to withstand the potential effects of wave action."

- 8. SPS submits that the proposed promenade on Moa Point Rd is in a coastal hazard zone and prone to periodic inundation by large swell events, and would pose a real health and safety risk to the public using such a facility. To combat this risk, building the promenade would necessitate extensive reclamation and extension westward of the current Moa Point Rd sea wall into the CMA of some several thousand cubic meters of material, which would impact on Lyall Bays currents, sediment transport, and surf breaks, particularly *the Corner* surf break. SPS has seen no evidence of any extension of the sea wall been mentioned or factored into equations for WIAL's *Potential Surfing Amenity* impacts; and; *Preliminary Shoreline Impacts* reports.
- 9. SPS submits that with very recent revelations, WIAL have been exercising consent No. WGN010112 [20920] granted non notified in 2001 for the maintenance and extension of the Moa Point Rd Sea Wall. This activity interferes with the swell corridor for *the Corner* surf break. WIAL may have a serious conflict of interest on this issue in that WIAL are also seeking the deletion of *the Corner* surf break in the GWRC PNRP Schedule of regionally

significant surf breaks. This issue was raised with Greg Thomas of WIAL at a meeting in May 2015.

10. SPS submits that the WIAL Promenade proposal is in conflict with WCC's plans for the retreat from the CMA in the vicinity of the proposed Promenade area opposite the Spruce Goose Café, known as *the Corner Car Park*. WIAL plans to develop this area further, while it has already suffered numerous breaches of its coastal defences in recent years. SPS submits that the Promenade offered in WIAL's *AEE* is unacceptable in that the promenade would have major impacts on the quality of the Corner Surf break. SPS opposes these proposed landscape/amenity modifications.

SPS has raised issue with WIAL seeking the deletion of *the Corner* surf break in the GWRC Proposed Natural Resources Plan, *Schedule K*. Both the Wellington Boardriders Club (WBC) and SPS have asserted that adverse effects at the Corner surf break should be avoided.

WIAL spokesperson Greg Thomas has stated publically¹⁴ that; *"the airport has submitted on the proposal that the Regional Council does not need an additional layer of protection."*

SPS is aware that without the level of protection given by schedule K of GWRC *PNRP*, further modification and extension of the rock wall into the CMA along Moa Point Rd to Lyall Parade, would logistically be potentially easier to accomplish for the proposal put forward in WIAL's consultation summary document, Mitchell Partners' *Assessment of Environmental Effects*, and Boffa Miskell's TR25 *Natural Character Assessment Report*.

11. Local surfers¹⁵ and SPS (Appendix 1, page 8) have been making our concerns known to the Wellington City Council for many years that depositing of rubble into the sea down the Moa Point Road rock armoured edge is having an adverse impact on surfing wave quality at *the Corner*, yet our protests have gone unanswered, with no consultation on rock placement down the wall as

¹⁴ http://stabmag.com/news/spokesman-for-wellington-airport-responds/

¹⁵ <u>www.stuff.co.nz</u> "The original steel sea wall beside the Wellington Airport runway had created a good break which was worsened when a rock wall was installed."

recent as 2015.

- 12. The Background report to schedule K of the GWRC *PNRP*¹⁶ recognises that Lyall Bay as a whole is a Surf Break Area, with multiple peaks, not all of which are listed in the *PNRP* (or the Wavetrack NZ surfing guide) and notes that: "there are at least ten distinguishable surfable waves breaking left or right, though not all will break well at once." Figure 9 of Appendix 1 to this submission illustrates the locations of these peaks.
- 13. The WIAL TRC Assessment of Effects on Recreation report states on page 4 that: "Water sports such as surfing, swimming and windsurfing, although visually prominent, represented a much smaller proportion of total recreational use in and around Lyall Bay." And that the majority of people visiting Lyall Bay did so for the purpose of visiting a café or scenic drive/sightseeing. SPS points out that the two major cafes Maranui and Spruce Goose are situated directly opposite the two major surf break areas of Lyall Bay, and it is predominantly the visual spectacle of surfing activity that attracts the custom to these businesses. Surfing is a point of difference for customers to visit these cafes, and visit Lyall Bay for the sightseeing opportunities that encourage economic activity in the area.
- 14. The TRC Assessment of Effects on Recreation Report is incorrect where it states on page 10: "Lyall Bay surf break is considered to be important by surfers living mostly in Wellington, Hutt and Porirua cities. It has very limited appeal nationally because of the inconsistency of surf, general lack of long, peeling rides and is well known amongst surfers for being very crowded in good or very good conditions." SPS objects to, and strongly disagrees with, this assessment by TRC consultants and questions their expertise in surfing or knowledge of Lyall Bay's reverence to New Zealand's surfing community.

A number of surfers known to SPS have remarked on travelling from around the region and further afield to visit Lyall Bay for surfing. The well-respected Officer of New Plymouth Surfriders Club retired Fire Chief of New Plymouth, and long-time surfer Allen Pidwell QSM, has recounted to SPS on this point

¹⁶ <u>Regionally Significant Surf breaks in the Greater Wellington Region</u> Ed Atkin HND, MSc (Hons) Michael Gunson Shaw Mead BSc, MSc (Hons), PhD

that: Historical data on 'outsiders surfing the corner': "My mates and I regularly travelled to the corner from Wanganui when there were northerlies and a southerly swell. I surfed there on my wedding day as my future wife was from wellington. Jan has never forgiven me for surfing The Corner on a good 4-5 foot day two hours prior to the service." Also this account from www.motorhome-rental-new-zealand.com¹⁷ highlights the value of Lyall Bay and surfing as an attraction and cultural asset to the Wellington Region:

"Tyler's fiancé Royston Langdon (lead singer and bassist for Spacehog) visited her while she was down under and the pair became engaged on Valentine's Day this year. When the daughter of Aerosmith's Steve Tyler wasn't bolted up in the house during Langdon's visits, she spent any spare time surfing in Wellington's nippy southern beach waters, at the surfie hang-out of Lyall Bay. Others in the cast to take to the waters included Elijah Wood, Sean Bean (Boromir), Dominic Monaghan (Meriadoc 'Merry' Brandybuck), Billy Boyd (Peregrin 'Pippin' Took) and Orlando Bloom (Legolas)."They became surfing fanatics in Wellington,' laughs Peter Jackson. 'I don't think any of them had surfed in their lives before this.'

15. SPS submits that the inevitable risk and effects, including cumulative effects, from, for example, plumes and discharges due to the construction of both the extension and SWFS on the use and enjoyment of Lyall Bay's surf breaks is unacceptable and contrary to the above mentioned principles of the RMA and NZCPS. SPS also questions the accuracy of the exclusion zones depicted in WIAL's 01 Assessment of Environmental Effects - Figures 1-5 and 1-6, preliminary reviews of these exclusion zones by SPS demonstrate that the AEE has significantly underestimated the scale of these zones being approximately 300 meters, and question how WIAL intend to police these zones for public safety in a dynamic marine environment where swimmers and surfers move along the beach under the influence of tides and currents.

SPS also objects to the massive reduction in stakeholder input into the process. The revised draft *Surf Mitigation Management Plan* is not acceptable and not at all in the spirit of what has been discussed and (SPS considered) agreed to by WIAL in the earlier meetings between WIAL, the Wellington Boardriders Club, SPS and its independent expert. It is our view that WIAL is attempting to nullify

¹⁷ http://www.motorhome-rental-new-zealand.com/articles/peter-jackson-hobbit.html

the value and importance of surfing in Lyall Bay. These modified conditions suggest that WIAL is not taking a robust precautionary approach to the negative impacts that the extension will cause to surfing conditions at Lyall Bay as required in policies 13 and 15 of the NZCPS. WIAL grossly underestimates the significance of Lyall Bay and its surf to people and communities' social, economic, and cultural wellbeing and their appreciation of it.

SPS objects to WIAL's lack of consideration of the plans and policies that require due care and precaution regarding the proposed extension. SPS is of the view that WIAL has demonstrated a lack of sincerity in its consultation with the surfing community, and on the above grounds SPS reject; the proposed extension and SWFS outright.

In conclusion, the proposal is contrary to and inconsistent with the purpose, principles and provisions of the RMA; the proposal is contrary to and inconsistent with the provisions of the NZCPS; the proposal is contrary to and inconsistent with the provisions of the Wellington Regional Policy Statement 2013, this proposal is contrary to and inconsistent with the provisions of the Greater Wellington Regional Council Proposed Natural Resources Plan. And this proposal is also inconsistent with the provisions of the existing Wellington Regional Coastal Plan 2000.

The proposal fails to achieve the purpose of the RMA: the sustainable management of natural and physical resources and does not promote the sustainable management of natural and physical resources under section 5 of the RMA and is inconsistent with Part 2 of the RMA; and, will not ensure adverse effects on the environment are adequately, and appropriately, avoided, remedied or mitigated (or capable of being adequately and appropriately avoided, remedied or mitigated) including but not limited to:

- (a) Adverse effects on the Lyall Bay Surf breaks of regional and national significance for surfing, and their wave quality and use and enjoyment of them;
- (b) Adverse amenity effects;
- (c) Adverse effects on the quality of the environment;
- (d) Adverse effects on the natural character of the coastal environment; and
- (e) Adverse cumulative effect.

The following decision is sought from the consent authority: that the consent authority refuses to grant consent for the application in its entirety.

SPS wishes to be heard in support of its submission. If others make a similar submission, SPS will consider presenting a joint case with them at the hearing.

Signed

Paul Shanks President

Surfbreak Protection Society Incorporated.

Names of persons to be served

Greater Wellington Regional Council PO Box 11646 Wellington 6142

notifications@gw.govt.nz

Wellington International Airport Limited

C/- Lane Neave PO Box 2331

Christchurch 8140

Attention: Amanda Dewar / Joshua Leckie....

amanda.dewar@laneneave.co.nz

APPENDIX 1



P.O. Box 58846 Botany Auckland 2163

Wellington International Airport Ltd PO Box 14175 Wellington

Submission to: Proposed Wellington Airport Extension South.

SPS are **opposed** to the project however, if the conditions recommended by our experts are written into the consent in full, potentially our concerns would be addressed.



Fig 1.¹ The Corner Surf Break Lyall Bay. Photo courtesy Silas Hansen

¹ "The Corner" surf break is Lyall Bay's premier surf break, and one of seven or more individual peaks in Lyall Bay that will be adversely effected by the proposed airport extension.

Introduction

The Surfbreak Protection Society (SPS) is a nationally representative group of surfers and friends dedicated to the conservation of the "treasures" of the New Zealand Surfing Community (and public generally) - our surfbreaks - through the preservation of their natural characteristics, water quality, marine eco systems and low impact access for all. We strive to be Aotearoa's "Guardians - Trustees" of our surfbreaks and the natural environments that complement them.

Since its establishment in 2006, SPS has successfully been involved with incorporating surf break preservation and sustainability into policy prepared under the Resource Management Act 1991 (RMA). SPS was a successful submitter on the New Zealand Coastal Policy Statement 2010² (NZCPS) containing national direction on surf break Protection.

SPS has also been involved with a number of cases protecting the qualities and enjoyment of surf breaks from inappropriate subdivision, use and development in the coastal environment. This is in regard to issues such as maintaining water guality, access to breaks and wave quality of breaks. SPS is the leading surf break preservation and sustainability organisation in New Zealand and a key 'stakeholder' / surfing interest group in the coastline, with our purpose of protecting surf breaks now mandated by national policy direction in the NZCPS (and by regional policy direction, for example, in the Taranaki Regional Policy Statement 2009).

Surf breaks are a natural characteristic, and part of the natural character and landscapes, of the New Zealand coastline/coastal environment, of which there are few when compared to the total length of the New Zealand coastline³.

Approximately 7% [310,000] of New Zealanders are estimated to "surf "on a regular basis⁴. Surfing makes a valuable contribution to the wellbeing of New Zealanders by promoting health and fitness, cross cultural and intergenerational camaraderie and a sense of connection to, and respect for, New Zealand's coastal environment and resources. In terms of Part 2 RMA surf breaks, therefore, contribute to amenity values/recreational amenity and natural character of the coastal environment; surf breaks and surfing, enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety.

² The New Zealand Coastal Policy Statement 2010 was issued by notice in the New Zealand Gazette on 4 November 2010 and took effect on 3 December 2010.

³ Scarfe (2008) states that there is only: "one surfing break every 39km to 58km. Many of these surfing breaks are only surfable a few days per month or year when the tide, wind and wave conditions are suitable." ⁴ Figures sourced from SPARC

Surf breaks under the Resource Management Act

The maintenance and protection of surf breaks is relevant to several aspects of the RMA, particularly the purpose and principles of the RMA (sections 5, 6, 7) and the purpose of Regional Policy Statements' (RPS) (section 59). To that end, SPS was a major contributor for identification of the Wellington region's surfbreaks for the Wellington Plan Review.

Background –Lyall Bay

As far as amenity value goes, Lyall Bay is Wellington City's most utilised surfing venue. It is Wellington City's premier surfing beach. At its widest point (Sutherland Road to the Corner car park) Lyall Bay is a little over 1100 meters as the Gull flies, and there are at least ten distinguishable surfable waves breaking left or right, though not all will fire off at once. Mitigation regarding Lyall Bay's surfbreaks centers around effects the extension will have on surfable waves in Lyall Bay, their frequency, and quality.

The quality of a surfable wave relies on a formula with variables such as peel angle and break intensity, which both rely on the shape of the sea floor. If the peel angle (or curl speed) is too high, then the wave will close out, leaving the surfer in whitewater as opposed to a peeling wave face. If the peel angle is too low the wave will go slow or fat, which may well be ok to a degree for those seeking fun on long boards, or more crucially, learner surfers. The Western end of Lyall Bay provides particularly well for learners, as well as longboarders and often, short board surfers.



<u>Heritage</u>

Lyall Bay Is nationally, culturally significant. In that it was surfed by Duke Kahanamoko, the Father of modern surfing in February 1915, 101 years ago. The Duke was a swimming and surfing superstar of his time, and his visit to Australia, New Zealand and Mainland U.S.A. generated a popular wave of interest in the sport that extends out to this day.



Lyall Bay was one of the four places that Hawaiian Duke Paoa Kahanamoku publically exhibited the sport of kings in New Zealand to the General Public. The Duke was invited to Wellington as a guest of The Lyall Bay Surf Life Saving Club in 1915, and popularised the sport of Kings with his historic public demonstrations here and abroad.

A significant meeting

An extract from the Lyall Bay SLSC centenary book

'THE 'HUMAN FISH AT LYALL BAY'

"A welcome distraction from the worries of war was the visit by the famous Hawaiian surfer Duke Paoa Kahinu Mokoe Hulikohola Kahanamoku (1890-1968). Most histories of surfing credit the charismatic

⁵ It is widely recognised that World champion Swimmer Duke Paoa Kahanamoku popularised the sport of surfing in the modern era. This photo of the Duke was not taken at Lyall Bay, but Waikiki, Hawaii.

⁶ Paramount chief Tureiti Te Heuheu Tukino V of Ngati Tuwharetoa(left) gifted Duke Kahanamoku (center) a traditional Maori feather cloak - known as a Kahu huruhuru during the Duke's 1915 visit to Wellington – photo courtesy of Lyall Bay SLSC.

Hawaiian with publicising the sport in the western world. Although popularly associated with Hawaii, surfing or wave riding was practised by most Polynesian people, including Maori. Nineteenth century European visitors to New Zealand saw Maori surfing (whakahekeheke) on boards (kopapa), logs, canoes or sometimes bags of kelp. According to Tea Ara, the pastime apparently declined when Christian missionaries promoted modest dress and behaviour.[i]

Duke Kahanamoku won gold medals for swimming at the 1912 and 1920 Olympics. But he is best remembered for popularising the sport of surfing, previously known only in Hawaii, by incorporating surfing exhibitions into his Australasian and mainland swimming tours. Many regard his surfing exhibition at Sydney's Freshwater Beach on 23 December 1914 as the most significant day in the development of surfing in Australia.

Wellington was almost left off Kahanamoku's itinerary, owing to internal squabbling between the swimming associations, and to inertia. At the last moment, however, Gibby Hill and others brokered a deal with the WCC and with tour organisers. Two thousand people crammed into the Te Aro baths to see an off-form Kahanamoku perform in the chilly waters.

The Lyall Bay Club hosted his performance at its beach. On 7 March 1915 'a record Sunday crowd' travelled to Lyall Bay to watch the Hawaiian put on a demonstration. 'The visitor entertained them with a truly wonderful display of shooting the breakers, which after the spell of southerly weather were fairly large. His renowned standing shoot on the surf board was the particular feature', the Evening Post reported. 'He stood right up on the board, while the latter shot along at a great speed. By careful steering he prolonged the shoot for a distance of 150 to 200 yards.'[ii]

Although surfing really only took off in New Zealand after two Americans imported Malibu boards in 1958, Duke Kahonamoku's surfing demonstrations at Muriwai Beach, Lyall Bay and New Brighton inspired small numbers of New Zealanders to surf with wooden boards."

Lyall Bay is culturally, and regionally significant, as well as a heritage site, for the sport of surfing in Aotearoa. It is the view of SPS that, Lyall Bay also deserves recognition under policies 2 and 17 of the New Zealand Coastal Policy Statement in this regard.

Nursery Surf breaks

Lyall Bay Wellington, along with Fitzroy Beach, New Plymouth, Mount Maunganui - Main beach and Coast, Wainui and Waikanae Beach- Gisborne, and St Clair Beach, Dunedin, were accepted as examples by the Board of Inquiry to the 2010 NZCPS as Nationally significant nursery surf breaks⁷.

Lyall Bay Surfbreaks as noted in Fig 9. We have listed the surfbable peaks in Iyall Bay for the benefit of the reader. The demarcation line in red across the bay from approximately just North of Hungerford Rd over the bay to a point some two thirds from the corner car park to the breakwater is a general indication of the extent of the surf zone during extreme swell events . Drawn in green are the approximate beach break peaks that indicate the extreme outer locations of where these peaks may break in bigger swells that can be surfed.

Outer Bombara- Lyall Bay

Off the eastern side of Te Raekaihau Point the Outer Bombora reef breaks left and right during mega swells, starting at 3 meters to 11 meters+.

Some 15 to 20 years ago a promoter was offering a prize of \$10,000 for the largest wave ride at this location, the prize is yet to be claimed. The outer Bombora is a large wave surfing venue.

Inner Bombora- Lyall Bay

Located east of Arthurs Nose, this peak starts working on a low tide in swells of 2m(low tide) up to 3 meters, bigger than this it is generally either a reform off the outer Bombora or breaking right through.

The green peak that breaks out from Dorrie Leslie Park only does so in swell exceeding 3meters, the wave face is about 2.5 meters, and breaks right, across towards the Lyall Bay club rooms. There is an inner right hander in from this peak that works in lesser swell that is quite soft and crumbly, the angle of approach makes it hard to keep up with the lip. Effects to

⁷ PROPOSED NEW ZEALAND COASTAL POLICY STATEMENT (2008) BOARD OF INQUIRY REPORT AND RECOMMENDATIONS VOLUME 2: WORKING PAPERS JULY 2009 page 128:

Surfing interests recommend that the policy should cover 'nursery breaks' where young people learn to surf before progressing to 'advanced' breaks. The Surfbreak Protection Society recommends adding a new policy that requires regional councils to identify and protect surf breaks of regional significance, including 'nursery' breaks. The New Plymouth Surfrider's Club submits that 'nursery breaks' should be regarded as surf breaks of national importance and given protection from inappropriate development, including the preservation of swell corridors. The club suggests including the following breaks: Mount Maunganui, Wainui, Fitzroy, Lyall Bay, Sumner, Castlecliff, Mangawhai Heads, Takou Bay etc.

the outer break in large swells are expected to be moderately, adversely diminished –or extinguished?

The Right hander that breaks East away from the Lyall Bay surf lifesaving clubrooms – is an A frame peak which is predominately a long right hander. A sucky fast left hander can often be produced off this peak that breaks into the patrolled flagged swimming area towards the Maranui clubrooms. In the past the Lyall Bay surf lifesaving club put the eastern swimming flag directly out front of the clubrooms. This particular right hander is the most predominant surfing wave in a south easterly swell, a pattern which prevails during the latter summer months, it is one of the two Lyall Bay peaks named in the Wavetrack New Zealand Surfing Guide, the book referred to by the Board of Inquiry to 2010 NZCPS.

The next peak marked in green in the centre of the bay is named the bend, approximately out front of the Real Surf Shop in Lyall Bay, and breaks right towards a point between Tirangi Rd and Cochrane St. It also breaks Left to a point close to the eastern end of the playground at the bottom of Onepu Rd. Sometimes the peak is non -existent and just a large closeout, on rare occasions this peak can break further out near to the entrance of Lyall Bay, producing rides up to 400 meters. The Bend use to do so, several times a year previously in the early 70's, but now probably just once every three or four years.

The next peak breaks in front of Cochrane St, some refer to it as the toilet bowl, the toilet bowl Shape has not been evident much since the construction of the Corner car park in the 1990's it is predominantly a left hander, though it does produce a short right hander.

The Corner Surf break.

The Corner Left hand peak also known as the Wall, breaks along the airport wall from a point just south of the orange and White steel frame communication tower. The corner Break is very popular and can get very crowded.

When it's good it has the potential to produce high quality barrels. The wave quality has been adversely affected by the construction of the corner car park in the early 90's, and in the early 80's from the placement of boulders along what was then a vertical steel plate wall bracing Moa Point Rd from the sea alongside the existing airport (see fig 6). Any future modification to the near shore environment in this area must properly assess potential adverse effects.

It is the view of SPS that mitigation for the corner surfbreak is separate to the mitigation offered for the nursery surfbreaks toward the western end of the bay, i.e. the focus reef proposed by WIAL.

The Corner is of extremely high amenity value, for surfers to find waves this good, they would generally have to travel up to two hours or more to the Wairarapa⁸. The Corner delivers quality surf for surfers of all levels depending on wave size and swell height. It is the view of our experts that at this stage not enough baseline data has been gathered to properly assess possible impacts of the proposed extension. One years' worth (or less) of baseline data is not enough to properly understand the dynamics of a surfbreak, for this purpose 3 to 5 years is needed. Yet realistically no hearings panel would request that of a developer after consents are granted, and before construction begins.an ironic catch 22, as AEE's are required to be robust.

In absence of 3 to 5 years' worth of baseline data, a robust surfbreak management plan that provides responsive adaptive management methodology as proposed in our conditions sought in appendix 1 is required, and must be implemented to satisfy the needs of the local community.



⁸ Surfers may be able to surf several high performance reef breaks (e.g. Breaker Bay, Island Bay etc., but these surfbreaks are severely limited by the numbers of surfers they can accommodate in any one session, unlike the corner, which can hold up to 70 in a good session.



Fig 8. The roaside sea wall opposite the corner surf break has been, and continues to be used for parking, and as a launching point into the waves by surfers. Will this access area still be available during the estimated 2 year construction? If not, what mitigation or remedy will WIAL provide? Photo courtesy Mike Mc Glynn.



⁹ A representation of Lyall Bay's surf break locations, the polygons are a guide only as peaks shift due to current and swell event/directions. The corner surfbreak, along with that out front of Lyall Bay SLSC are outlined in red, as these surfbreaks are mentioned in the Wavetrack NZ Surfing Guide.

KEY POINTS TO OUR SUBMISSION

Wellington International Airport Limited (WIAL) had decided to consult primarily with Wellington Boardriders Club regarding our common concerns with impacts that the construction will have on Lyall Bay's surfing breaks and wave quality. Wellington Boardriders club, in turn, sought expert advice from SPS.

The advice our experts gave is reflected in the consent conditions sought, and also submitted by Wellington Boardriders Club Inc. Those same conditions sought are appended to this submission, **Appendix 1.**

The conditions sought will offer trigger points to identify any adverse effects that may arise due to a lessening of surfing wave quality in Lyall Bay due to the extension project.

- The focus reef is not mitigation for the Corner surfbreak

SPS accepts that the focus reef proposed by WIAL may mitigate the anticipated significant adverse effects for the middle and western end of Lyall Bay, and begrudgingly, the loss of Airport Rights on Moa Point Road during large swell events. However in the pre - consultation phase with WIAL our expert has not adequately resolved the effects that wave induced currents will have on the Corner surfbreak.

In meetings with the surfing community, and in the draft conditions sent to Wgtn Boardriders and SPS by WIAL, The company have already indicated that they are committed to mitigating any impacts (or even improving surfing amenity in Lyall Bay, following on from this, it is only logical then, that a precautionary approach is taken with regard to including the Corner surfbreak in the Surf Mitigation Adaptive Management Plan, as signalled in the conditions sought.

Outcomes for the Corner surfbreak are **unknown** with the extension in place, given the Corner's stature as a regionally significant and important surfbreak, this asset is deserving of a singular remedy under this project – if needed (see fig1 first page).

The Corner is included due to the unknowns of the effects that that extension will have on it. The loss of peakiness leads to a significant loss of surfable waves in the middle and western parts of Lyall Bay. Loss in surfable waves has been predicted to be less significant at the Corner. However, the predictions have not taken into account the effects of the changed wave-driven currents, which are largest off of the breakwater, i.e. in the immediate swell corridor for the Corner, which will have a consequent impact on sediment transport and seabed morphology in this area. 7 weeks of uncalibrated morphological modelling is

insufficient to base any conclusions on impacts on the Corner (or indeed other parts of the bay). Of concern to SPS is that WIAL is reluctant to undertake further modelling investigations into the Corner surfbreak, this may well be due to the uncertainty of whether WIAL will get the required resource consents, and are therefore relying on their own unsupported conclusion that there will be little or no significant impacts to seabed morphology at the corner surf break.

.-The need for conditions sought in Appendix 1

What is really needed is 3 to 5 years of data to capture a wide range of environmental behaviours and conditions that make a surfbreak work. Yet no developer wants to put money down to collect this sort of robust baseline data, over such a long time frame before a consent is granted, despite the obligation under the RMA to provide a robust Assessment Of Environmental Effects (AEE) along with their consent application. Hence the need for a strong Surf Mitigation Adaptive management Plan built around our conditions sought in appendix 1, and the associated triggers and feedback systems in place. The adaptive management procedures suggested will enable WIAL to begin construction while still being able to apply due care to Lyall Bay's surfing assets.

- Port Otago an example of a successful adaptive management plan for surfbreaks

In 2013 SPS appealed the dredging consents for Port Otago Limited (POL), as there was not enough flexibility in their method to avoid adverse effects on two nationally significant surfbreaks by placing dredge deposits in areas that are in the surfbreaks swell corridor (the path the swell takes to get to the surfbreaks). During Environment Court mediation we were able to explain the relatively new discipline of surf science to POL and how a more responsive surf management plan was needed to avoid adverse effects on Aramoana and Whareakeake surfbreaks. To that end, POL have come to realise what a valuable asset to the Otago Region these surf breaks are, and are actively embracing the adaptive management techniques SPS sought to protect these breaks.

-Quality of Life/Standard of Living:

The fact is the only other option in the Wellington Region for a quality surf when a swell is in from the South (other than the Corner which is highly threatened with the project from start to unknown finish) is to head east to the Wairarapa. Utilisation of this option is deemed unpractical when exiting work at 5pm on a week day. The people of the community (tradesmen, lawyers, businessmen, store clerks, doctors, bus drivers, students, etc.) who currently value Wellington's surf amenities find the commute of spending 5 hours in a car for a 1 hour surf session unfeasible while maintaining fresh to get up and effectively contribute

to Wellington society the following day. It is irresponsible to expect this from the taxpayers who collectively make Wellington a great city.

-Historical Impacts:

Additional alterations of the surf infrastructure in Lyall Bay will abuse the commemoration of Duke Kahanamoku's visit to New Zealand. He was a talented athlete of honour, integrity, and high morals with a great passion for the environment. He demonstrated those values on his visit through his surfing as he built relationships with local residents as well as with the ocean in Lyall Bay. We will lose a portion of the Duke's social and environmental initiatives in the event the runway extension project proceeds.

In March 2015 celebrations took place in Lyall Bay to commemorate Duke Kahanamoku's visit to Lyall Bay, and the significance it for New Zealand surfing.

Section 6 of the RMA; Matters of National Importance recognises that consideration must be given to heritage sites when considering development

Section 6 (f) the protection of historic heritage from inappropriate subdivision, use, and development.

While this does not mean the airport extension cannot take place, it can be interpreted by way of The Supreme Court in *EDS v King Salmon* that agreed that section 6 does not give "primacy" to preservation or protection however "*provision must be made for preservation and protection as part of the concept of sustainable management*"

The fact that these matters are described as being of national importance indicates that they are to have relatively greater weight accorded to them than regional or district goals.

SPS asserts that it must follow on from this that the surfing heritage values recognised within Lyall Bay would best be reflected in the conditions sought in appendix 1 by the local and national surfing community.

Cultural/Economical Impacts:

Surfing acts as a unity tool within the Lyall Bay/Wellington community. It is a widespread activity that not only the residents value but also draws visitors in from around New Zealand and beyond. Lyall Bay's current surf framework initiates and maintains relationships that local businesses rely on to stay afloat and profitable. Businesses such as the Spruce

Goose, the Realsurf Shop, the Elements Cafe, Queen Sally's Diamond Deli, Maranui Cafe, amongst countless outdoor retail stores in Wellington that would all suffer through the adverse surf impacts on the bay consequently from the extension project. Many residents have also stated that if the project were to move forward, they would relocate out of the Wellington region as a result of a quality of life plummet.

For example, since 2005 a number of proposals for the development of a cruise ship terminal have threatened the iconic beach break, The Other Side (TOS), and surrounding coastal environment at South Stradbroke Island on Queensland's Gold Coast.

In 2005 the value of surfing at TOS was estimated at \$18 to 30 million per year to the local economy, while the massive dredging and facilities for the proposed cruise liner terminal would only at best bring in 5 - 6 million per year¹⁰.

When these figures were recognised, the Cruise ship terminal proposal was declined, and in 2015 The City of Gold Coast implemented the Surf Management Plan¹¹, recognising the socio economic value of surfbreaks to the local tourism economy, ensuring that development does not harm the regions surfing assets.

To date, the council and WIAL have generated questionable reporting, regarding cost / benefit analysis, if the project is to proceed, then the socio economic value of surfing at Lyall Bay needs to be fully appreciated and balanced in regard to the project.

Why skimp on the Bay's heritage surfing and amenity value?

If the proposed airport extension potentially saves many hundreds of millions of dollars by not going north, then the focus should be on enhancing The Bay's high surfing amenity value. The Goal should be to Secure, enhance, and create a reason for people wanting to visit Wellington. The Corner surfbreak, as well as the whole bay, is an incredible asset to the city.

Access to the Corner during Construction

There is also concern around access during construction. While it is noted that WIAL plan to do major earthworks during the hours of 12 pm and 6 am, we also seek assurance that for

¹⁰A Critical Analysis of the AEC group's Business Case – Final Report Summary for a Gold Coast Cruise Ship Terminal. Dr Steven Gration BEd (Melb) PhD (Griffith) May 2013

¹¹ <u>http://www.goldcoast.qld.gov.au/thegoldcoast/surf-management-plan-23579.html</u>

this two year period of construction access to parking along the Moa Point Rd airport Rd is not restricted.

Conclusion

Often, surf breaks have been viewed as a liability to developments in the Coastal marine area, when in fact they are an asset socially, and economically. Yet these considerations are hardly ever taken into account, or researched properly.

A commitment not only to mitigate, but to enhance Lyall Bay's surfing potential is the vision WIAL must follow, if the objective is to increase tourism numbers to Wellington. Tourism is now New Zealand's top export earner.

The City of Gold Coast have already done this with initiating a proactive Surf Management Plan, the objectives of which are to define surf amenity and how it relates to Gold Coast beaches, and recognising the value surfing adds to the local tourism industry. As a responsible council, Wellington City should undertake a similar exercise. All surfer submitters on this extension proposal would agree on this point.

To date, there have been several unconvincing attempts to justify the airport extension economically, yet nothing noting Lyall Bay's local reliance on the locality's surfing economy, which points to a less than robust AEE on behalf of WIAL. There is too much risk for the community burden surrounding the extension, WIAL's approach to the project so far neglects critical social and environmental qualities that define Lyall Bay's unique character, where is the economic impact report on surfing?.

As stated above, surfing has complimented Wellington's community with a standard of living that is highly appreciated by its residents and visitors, which is why the current surfing amenities were recognised in the initial New Zealand Coastal Policy Statement Board of inquiry.

In order to honour the bay's surfing heritage and tradition, the potential consent holder must ensure impacts on surfing are at least positive, preferably enhanced, rather than negative, in the event that consents are granted.

Thank you for your consideration.

The Committee Surfbreak Protection Society.

APPENDIX 2



eCoast Marine Consulting and Research PO Box 151 Raglan, New Zealand. Ph. +64 21 423 224 <u>www.ecoast.co.nz</u> info@ecoast.co.nz

11 October 2015

James Whitaker Wellington Boardriders Club

Dear James,

Re: Potential Surfing Amenity Impacts Due to the Proposed Airport Extension

I have now had the opportunity to review the surfing impact study by DHI and the NIWA AEE and background documents in reference to hydrodynamic and sediment transport impacts. The following is an objective view of my findings. It is noted that these reports do not address most of the queries made by the Boardriders and I on 24th and 25th of May (these emails are appended below). However, they do provide a lot of detailed information that increases the understanding of what has been undertaken to date with respect to considering impacts on surfing amenity in Lyall Bay.

Having now gone through in detail, it is my opinion that the DHI assessment is comprehensive in the majority of areas (e.g. there was good communication with the Boardriders to determine the wave events, and percentage occurrences, joint probability of wind/wave events, etc., have been assessed). As expressed initially, 3 scenarios could be considered only a small set of surfing conditions at Lyall Bay. However, given the types of events modelled DHI consider that "Based on the reoccurrence analysis of the reported surf events it was decided to select three historic events that represented a sufficient spreading in both reoccurrence frequency and offshore wave conditions". Further understanding would come to light with the detailed investigations proposed by DHI to consider mitigation methods.

The main concerns I have with the DHI report is with the application of NIWA's results to the DHI work with respect to changes in currents/sediment transport (i.e. no significant impacts), and the need for better representation of the wave-climate (i.e. rather than only three scenarios) and morphological impacts. NIWA's conclusion of no significant impacts on currents and sediment transport are likely valid if surfing amenity was not being considered, although that is not the case. I discuss these issues further below.

The work of DHI (and NIWA) has indicated that there will be change to wave patterns in Lyall Bay due to the airport extension. If these changes are accepted by the Boardriders, and that mitigation can be applied to compensate for these changes, then as was previously discussed at the initial meeting with WIAL, the development of a concise set of conditions that ensures that mitigation is sufficient is required. That is, there is uncertainty surrounding the extent and magnitudes of the changes to waves and sediment transport within the bay, and so conditions such as compensation through the development of a focussing reef need to be able to adapt to these unknowns (i.e. an adaptive management approach). This will require further investigations into mitigation options, as you have requested. There will always be uncertainty about the actual impacts, which is why the conditions need to have the capacity to adapt to the actual impacts versus those predicted for the resource consent applications.

As is the case with many beaches worldwide that have been largely influenced by human activities (e.g. the Corner is a completely manmade surfing break, the beach is artificially constrained by seawalls, there has been a major reclamation for the existing airport, etc.), the beach requires management and an adaptive management plan needs to be developed. Monitoring to provide the foundations of this have been recommended by DHI, which I support and which can also be made more robust with the additional work about to commence for the MBIE project to develop monitoring guidelines for New Zealand's nationally and regionally significant surfing breaks; Lyall Bay is one of the top 7 breaks being set up for long-term monitoring.

DHI Surfing Break Impacts

DHI's assessment concludes that the presence of the proposed airport extension will reduce the 'peakiness' within Lyall Bay, which will have a consequent reduction on the number of surfable waves. The process of refraction tends to align wave crests to the seabed contours, resulting in waves that break simultaneously along the crest, or close-out, which is not conducive to good surfing – good surfing waves break in a peeling motion. Peakiness, or variable height along the wave crest helps to ensure that waves do not close-out – wave breaking is depth-limited, so when a wave crest has differential heights the highest part of the wave crest (the peak) will break before the other parts of the wave and result in peeling. If the peakiness is reduced then the number of peeling waves conducive to surfing is reduced within the bay.

The results of model simulations with and without the airport extension for 3 representative wave events conducive to surfable waves within Lyall Bay (which were considered with input from the Boardriders), show that the western and middle bay are the most effected by the airport extension (a reduction in surf rides is expected to be between 18-27% and 14-29%, respectively). The reduction in surf rides at the Corners is estimated to be lower at 4-8%. In addition, Airport Rights will be lost due to being covered by the airport extension.

As mitigation/compensation for this impact on surfing amenity, DHI considered 4 alternatives. The focus reef is considered the best option. Of note is the option for the reinstatement of Airport Rights off the end of the airport runway. This option is considered unfeasible due to the large volume of material required and its stability and safety issues. I believe that the safety issue is the main concern, since it is a large wave break the rock required will need to be large, although the rock will be deep (see Figure 1 below). In terms of safety, there is a difference between surfing in a treacherous location on a natural break compared to building an artificial one; liability issues with the builders (i.e. WIAL) and attraction of surfers that may not normally have paddled out at such a spot. I believe that it is important to consider the loss of Airport Rights, which has not really been addressed by the focus reef. However, there is potential to mitigate this also, as discussed below.

Considering the focus reef option, it is already close the optimum location based on previous studies considering impacts on the Corner and other users through hydrodynamic and sediment transport modelling, spatial planning and stakeholder consultation (Mead et al.,

2003). A focus reef does also allow for the relaxation of building tolerances, i.e. small waves will not break on it, so it does not have to be finely sculptured to ensure there are no detrimental impacts to the wave face. As described by DHI, focus breaks occur naturally worldwide (Matakana Island, Gizzy Pipe and Aramoana are some New Zealand examples). In some cases, the focus itself is also a big wave spot. For example, Parcel in Santa Catarina, Brazil, focusses waves on the beach during small surf and the reef itself (the focus) is a big wave spot during large swells (Figures 2-4). This duel function should also consider for the possible Lyall Bay Focus reef – being able to surf on it during the infrequent large swells provides compensation for the loss of Airport Rights. It is noted that detailed investigations and design have not yet been undertaken for the focus reef. As with the responses to the initial presentation, other mitigation options should also be considered (e.g. supplementing the existing reef on the western side of the bay to create a right hander, incorporation of a left on the western side of the new reclamation, etc.), which could be incorporated into the further detailed investigations.

DHI recommend further detailed investigations using state-of-the-art methods need to be undertaken to ensure that wave breaking patterns are in line with project performance objectives and without causing adverse shoreline impacts. This is with respect to the focus reef, which will likely cause a subtle salient (i.e. widening of the beach in its lee). This impact can be seen in Figures 2-4 in Santa Catarina, and is conducive to increasing the beach resilience at Lyall Bay, which is a current concern of the WCC following this winter's storms. I strongly support these further investigations, since they will also address the concerns with respect to sediment transport/morphological change and how this may affect the other breaks in Lyall Bay (discussed below) – long-term morphological modelling is required in order to determine impacts, which DHI are capable of undertaking, as you may recall from the background studies at the initial presentation. While there can never be certainty on impacts through numerical modelling, these further investigations would provide more confidence moving forwards for decision making.

DHI recommends that a field monitoring campaign is carried out, that can measure and confirm the findings of their study or future investigations – it will also provide baseline information with which to assess the actual impacts (as opposed to those predicted in the DHI and NIWA reports). DHI recommend that the monitoring campaign methodology should be consistent for the approaches used to assess conditions pre- and post-construction and should document changes in local wave field, nearshore bathymetry and surfing amenity. eCoast could also work with and support DHI and WIAL on this – we are shortly beginning the MBIE project that will include bathymetries, tracking rides (Ripcurl watches) and hourly remote video (note, this is not a surf-cam that anyone can dial-up and check the surf, the images are archived and analysed and then made publicly through an online portal). I strongly agree with DHI's recommendation that WIAL consider moving forward with this type of data collection quickly to insure a good dataset for the existing conditions is obtained.

NIWA AEE and Sediment Transport Modelling

At present, there is insufficient information to determine the extent of seabed change inside Lyall Bay (i.e. in the surfing areas), since only a short (~7 week) period was considered to

assess the impacts on waves, currents and consequent sediment transport and morphological change. Pritchard et al (2015) state:

"Sediment-transport and associated morphological models require intensive field measurements of seabed changes and bed shear stress thresholds for erosion and deposition under a wide range of wave and current combinations, to calibrate the various model parameters to best match the time-varying sea-bed changes. The required fieldwork would have been a costly and extensive undertaking and in our opinion is unwarranted when comparing the before and after construction situation, where widely-used sediment transport formulae can suffice for determining relative change. We have therefore not undertaken an exact sediment-transport calibration, but have used an uncalibrated sand-transport model to approximate the relative morphological change both with and without the proposed runway extension."

I agree that it is difficult to calibrate sediment transport and associated morphological models. However, there are relatively simple methods that can be used to validate them and provide some calibration to provide confidence in the outputs. In the present case, repeat bathymetric surveys with coincident wave/current meter deployments could have been used (e.g. Black et al., 2001; Mead et al., 2011) i.e., it could have been achieved during the 7 week deployments that were undertaken. More importantly, while it is plausible to assess changes in tidal and wind-induced currents by using a short modelling period, the same is not the case with sediment transport and morphological modelling. What has been undertaken is a consideration of 7 weeks of seabed change, i.e., if it was possible to instantly add the extension, 7 weeks later this amount of change could have occurred. However, the extension will be a permanent feature, it will not be removed after 7 weeks and seabed changes will continue to occur which will likely influence surfing conditions (either positively or negatively).

Long-term morphological modelling is undertaken by schematizing the long-term wave climate (which was developed by both NIWA and DHI) to a set on probability-weighted events (Benedet et al., 2010). The model is run through this cycle until a dynamic equilibrium is reached. This provides a better indication of the likely changes to the morphology of a bay due to changes to the bathymetry (e.g. an airport extension). Simulating only 7 weeks does not incorporate the type of feedback that leads to long term change. There is nowadays an increasing awareness that small changes (such as those that occurred during the 7 week simulation presented by NIWA) have the potential to cause significant change due to the process of feedback, as described in my initial response appended below (e.g. (Ashton et al 2001; Murray and Ashton, 2003; Vinther, 2006; Ashton and Murray 2006; Coco and Murray, 2007; Castelle et al., 2007; Park and Wells, 2007; Blacka, et al., 2008; Scarfe, 2008; Weppe et al., 2009; Castelle et al. 2010; Mead, 2010; Hoan et al., 2011).

Similarly, changes in wind and tidally driven currents also have the potential to modify the seabed within Lyall Bay, no matter how small these changes to currents may be. NIWA describe the mechanism that drives this well:

"To provide some context in the Lyall Bay situation, the fine sand largely present on the seabed of median diameter of 0.15 mm, would require a current of ~0.16 m/s acting alone to mobilise these sediments. Based on the currents measured at Site 1 (Figure 2-4), only the two highest southerly events would have been capable of mobilising sediments in the absence of waves. On the other hand, wave orbital velocities are more efficient at mobilising these fine sands, and increases dramatically as the wave height and wave period increases. Taking the example of a 1 m wave height, sands in Lyall Bay would be mobilised in water depths up to 24, 31 and 35 m for wave periods of 8, 10 and 12 seconds. Sediment transport from one location to another only occurs when mobilised sand, usually by waves, is carried along by a current – often in a series of short steps or hops, before it resettles on the seabed."

Similarly, there are significant changes in wave-driven currents (as presented by both NIWA and DHI), mostly inshore of the spur and in the vicinity of the Corner (e.g. Figures 5-14, 5-17 and 5-20 in the DHI report). These currents will impact on seabed morphology, and consequently on surfing waves as they propagate shoreward – whether negative or positive is currently unknown since this has not yet been investigated adequately.

In summary, I do not agree that the changes to currents and seabed morphology will have an insignificant impact *with respect to surfing waves*, mostly because there is not enough information/investigation to determine this. The results of NIWA's morphological change modelling indicate a very large area of deposition off the end and adjacent to the new reclamation – this may have some similarity with the large changes caused following the initial reclamation as shown in Figure 4.6 of the NIWA report (i.e. seabed changes of up to 6 m). Such a feature has the potential to impact on surfing waves within the bay in much the same way as a focus reef would, although possibly in a more subtle way.

It is noted that there are differences between impacts on waves within the bay when the ARTEMIS model and the Mike 21 BW model outputs are compared; they show opposite impacts on wave heights due to the extension. Also, winds are 2.7% calm in the NIWA report, although 42% calm in the DHI report, and both from the airport.

In summary:

- 1. Both reports indicate that there will be impacts on surfing amenity in Lyall Bay due to changes in wave patterns.
- 2. There is a likelihood that changes to seabed morphology will also impact on surfing amenity within Lyall Bay, although the is insufficient information to provide an understanding of these impacts (which could be both negative and positive with respect to surfing on different parts of the beach).
- 3. There will always be some uncertainty, however, the detailed investigation into mitigation/compensation measures described by DHI could potentially provide a greatly improved understanding of the effects on surfing waves. Lyall Bay is a highly modified beach, with man-made structures influencing many of the coastal and beach processes within the bay.

- 4. Due to the uncertainty, even following detailed investigations, a range of mitigation/compensation options should be considered along with an adaptive management approach (that includes long-term commitment from WIAL, which WIAL has expressed it will undertake). For example, the initial choice of mitigation, the focus reef, should also be designed to allow for large wave surfing to compensate for the loss of Airport Rights (this modification does not represent more cost, the rock weight/size would be the same, as would the volume, just the configuration would need to be considered), potential for supplementing the western fringing reef to incorporate a righthander, the potential for a lefthander down the western side of the extension, etc. No doubt some will not be feasible.
- 5. I agree with the recommendations to initiate a comprehensive monitoring programme as soon as possible to collect 'before' baseline data in order to measure change, which would then be linked to mitigation through resource consent conditions.

Please let me know if you require further details.

Yours sincerely

Thins Ment

Dr Shaw Mead

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Figure 1. Left) The blue arrow indicates the assumed path of the surfer during large wave conditions (i.e. 4-5 m swell breaking in 6-7 m of water and rather than following a depth contour, the wave breaks in increasingly shallower water due to the wave height gradient caused by refraction into the bay). Right) If reinstatement of Airports Right was considered, the depth in the area of the footprint for this strcture is 12-14 m.



Figure 2. Balneário Camboriú, Santa Catarina, Brazil - Parcel reef is the upper left.



Figure 3. Large salient in the lee of a nearshore island.



Figure 4. Subtle salient in the lee of a submerged reef

Initial Responses to Surf Break Impact Presentation

From: Shaw Mead

Sent: Friday, 29 May 2015 7:09 p.m.

To: Greg Thomas <greg.thomas@wlg.aero>; Wellington Boardriders Club

<wellington.boardriders@gmail.com>

Cc: GeoffSalmond <geoffsalmond@yahoo.com>; Dan Eves <dan@etch.net.nz>; michael petherick <michaelpetherick@gmail.com>; Michael Gunson <michael.gunson@gmail.com>;

tony.lines@kensingtonswan.co.nz; Russell Millar <russell.millar@thonet.co.nz>; Richard Lane

<ktcook@clear.net.nz>; Ilan Fisher <Ilanf@mckeefehl.co.nz>; Sloan McPhee

<sloan@homeloanshop.co.nz>; Mike Brown <Mike.Brown@wellingtonairport.co.nz> Subject: RE: Surfing Impacts

Kia ora Greg

I have added some more detailed comments below with respect to potential surfing impacts. As discussed earlier in the week, I was hoping to have a look through the sediment transport modelling undertaken to date, but I understand that you would rather take these issues and have them addressed in the draft reports before releasing them. So to supplement the information provided by James, I've put together the following – the main concern is that as yet, there is only little understanding as to how the surfing amenity in Lyall Bay will be impacted, getting a clearer understanding of this, as well as the impacts of any mitigation will be critical for decision making.

- 1. Subtle changes in currents lead to subtle changes in seabed morphology, which can potentially lead to very large changes in seabed morphology - there is a whole body of emerging science over the past decade considering these kind of feedback effects, as well as some recent case law in NZ. Considering the magnitude of these changes will be important to provide a better understanding of the potential impacts on the Corner and morphology of the bay, as well as for the development of any mitigation measures. A good example of how very small changes in currents impacted on the nationally significant surfing break of Whangamata Bar. Modelling of the harbour with and without a new marina showed very small changes to currents on the bar (a great deal smaller than we have seen for the 3 scenarios considered by DHI without morphological modelling (i.e. the seabed could not respond to the changes in currents, it was fixed). They were considered insignificant, and a peer-review agreed. However, the areas where these changes in currents occurred (note, they did not do morpho modelling), the terminal lobe and the flood tidal channel, changed significantly and greatly impacted (negatively) on the quality of the wave – the terminal lobe was shaved flat and a large hole appeared where the flood channel was pushed offshore significantly reducing the length of the ride. These negative impacts were due to feedback.
- 2. With respect to overall impacts both of changes to surf (reductions or enhancements in each area), these have only been considered for 3 scenarios so how will the morpho changes be considered? The seabed morphology is in a dynamic equilibrium, changing constantly within a certain range of extremes (you would all be aware how the banks change, and may also have a fair idea of how some conditions can lead to the formation of good banks in the Corner (or elsewhere) and others not. So long-term and event-based changes need to be considered; these can be considered "press" and "pulse" impacts, respectively. So basically, a comprehensive methodology is required in order to address these concern, which would incorporate the NIWA work and DHI's long-term and event based impacts. The work presented by DHI only provides an indication that surfing amenity in Lyall Bay will be changed in each of the 3 types of surf conditions considered, although these with and without extension scenarios did not consider morphological changes to the seabed.
- 3. I believe that it will be very difficult to assess the tidal changes impacting on the surf. It is likely that the changes in surfing conditions observed with different tides are being driven by the tidal currents in the Cook Strait (running parallel to the beach), rather than changes to tidal circulation in the bay, at least this will be likely be a component of it this kind of phenomenon has been observed and reported world-wide (e.g. the mid-tide push on the incoming tide on many open coast beaches), but is not yet understood in terms of surfing (although we are well aware of wave/current interactions). Even so, modelling tides within the bay with and without the extension could be undertaken to determine if there will be localised impacts on currents, which should also be coupled with wave-driven sediment transport. It would help here with a detailed description of how the tides effect the waves/currents of the Corner/Bay during their different phases from the Boardriders if these observations can't first be matched by the modelling (i.e. validation), then it can't be assessed with the model, which will indicate the likelihood of offshore tidal current control, and so only the local changes would require consideration.

4. As below, coming up with a wider range of mitigation and compensation measures, and their potential impacts, in addition to those considered would also be useful, you never know what will fall out in the wash.

I hope these and the comments below will help to guide NIWA and DHI to complete their work – I am happy to be contacted directly to discuss any aspects.

Kind regards | Ngā mihi

Dr Shaw Mead eCoast Marine Consulting and Research PO Box 151 Raglan New Zealand Ph: +64 21 423 224 Skype: shaw.mead www.ecoast.co.nz

From: Shaw Mead
Sent: Monday, 25 May 2015 9:16 a.m.
To: 'Greg Thomas'; Wellington Boardriders Club
Cc: GeoffSalmond; Dan Eves; michael petherick; Michael Gunson; tony.lines@kensingtonswan.co.nz; Russell Millar; Richard Lane; Ilan Fisher; Sloan McPhee; Mike Brown
Subject: RE:

Hi Greg

Can you please send me through the NIWA sediment transport modelling report?

Kind regards | Ngā mihi

Dr Shaw Mead eCoast Marine Consulting and Research PO Box 151 Raglan New Zealand Ph: +64 21 423 224 Skype: shaw.mead www.ecoast.co.nz

From: Greg Thomas [mailto:greg.thomas@wlg.aero]
Sent: Monday, 25 May 2015 9:15 a.m.
To: Wellington Boardriders Club
Cc: GeoffSalmond; Dan Eves; Shaw Mead; michael petherick; Michael Gunson; tony.lines@kensingtonswan.co.nz; Russell Millar; Richard Lane; Ilan Fisher; Sloan McPhee; Mike Brown
Subject: RE:

Hi James

Thank you for the timely response.

We will go back to DHI and then come back with a response on the points below. Simon is overseas for the next few weeks, so we may not be able to get back to you straight away.

Best regards Greg

Greg Thomas GM Communications

T +64 4 385 5148 M +64 21 430 435 greg.thomas@wellingtonairport.co.nz wellingtonairport.co.nz





From: Wellington Boardriders Club [mailto:wellington.boardriders@gmail.com]
Sent: Sunday, 24 May 2015 9:34 p.m.
To: Greg Thomas; Mike Brown
Cc: GeoffSalmond; Dan Eves; Shaw Mead; michael petherick; Michael Gunson; tony.lines@kensingtonswan.co.nz; Russell Millar; Richard Lane; Ilan Fisher; Sloan McPhee
Subject:

Hi guys

Thanks for hosting us a couple of weeks ago. I'm sorry our response has taken so long - it's a by product of the core crew being busy with our day jobs and Shaw taking a much needed overseas break (when isn't he overseas??).

The Wellington Boardriders Club has discussed the initial findings you presented and have the following feedback:

- 1. DHI admitted that they think a morphological study should be undertaken and Shaw agrees. This should thoroughly study the impact changes in morphology could have on the corner, mid beach and western end. We would like DHI to do this and to report back on it to all stakeholders.
- 2. DHI admitted that they didn't study the impact on tides (or caused by changes in tidal movements). The tides play a huge role in making the corner work (and stop working) and we think this is an oversight. We'd like DHI to carry out an assessment on tidal impact and to report back on it to all stakeholders.
- 3. The drop off in current movement at the corner was significant. DHI admitted that they didn't examine the impact that change in current would have on the corner. We're concerned about it and believe it needs to be examined (and reported on).
- 4. DHI haven't studied the impact the structure (wave focuser) in the middle of the beach would have on the corner. We'd like DHI to examine that and to work closely with Shaw to identify the most appropriate place for it to be positioned. Shaw carried out lots of relevant analysis when he worked on the reef project and we're sure he'd be very helpful.

- 5. Can you please confirm that if you were to install the wave focuser, WIAL would continue to monitor its performance/impact, make ongoing tweaks if wave quality doesn't improve and would maintain it indefinitely as a core part of it's BAU maintenance plan?
- 6. The concrete focuser could help to make up for the drop off in rideable waves in the mid section but wouldn't address the western end. We would like you to explore and suggest an option that would ensure that waves at the western end are equal to or better than they are now. One simple option could be to infill the rocky area at the western end in front of the houses that back on to the sea. This could create a rideable wave at that end and also help to prevent erosion.
- 7. We all know that Airport Rights would disappear if the extension goes ahead. Although not all surfers choose to surf this wave they still greatly value it and it's an important recreational asset for them. We'd like you to factor a wave into the extension that replaces this asset. The runway will go into an area that cops a lot of swell and we believe this presents an opportunity for a great wave, particularly down the Eastern side.
- 8. We'd like Shaw to be able to review the engineering plans and all the data that DHI has reviewed to date (all NIWA's info etc).
- 9. We liked your suggestion of wearing tracer bands before and after any alterations have been made. We believe this hard data would play an important role in assessing the impact and that steps would need to be taken if things were proven to be worse post extension etc. We'd happily be your guinea pigs and collect wave data for you we'd need between 5-10 to do it justice.

I think that covers everything. Shaw will be in contact soon with some much more detailed questions and suggestions. I know Tony Lines also had some specific concerns about the potential for the large tetrapods/rocks to move around in large swells and I'll let him contact you directly about that.

Once again, thanks for sharing the info with us and for factoring Wellington surfers into your planned extension. We appreciate your openness and sincere commitment to ensuring the project won't have any negative effects on the surf in the area at all.

James

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APPENDIX 3



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12 May 2016

James Whitaker Wellington Boardriders Club

Dear James,

Re: DHI – Wellington Airport Runway Extension; Preliminary Shoreline Impact Assessment for Submerged Wave Focussing Structure – A Technical Review.

The following brief review considers the preliminary shoreline impact report by DHI. In summary, this report is fundamentally flawed; the model applied is inappropriate, and as a consequence the results do not conform to the large body of existing literature on shoreline impacts to offshore submerged structures. We have considered:

- Predefined coastal profile assumption?
- Offshore bars not included? Nearshore bathymetry? Closure depth?
- Sediment grain size?
- Wind generated currents?
- Circulation patterns? Model calibration? Model Validity!?

Constant coastal profile -

The first and most obvious pitfall of the MIKE 21 FM Sand Transport Module, and indeed most oneline models, is that they assume a constant predefined coastal profile, i.e. cross-shore transport is ignored. In some scenarios this is a valid assumption and a good representation of shoreline change can be derived, such as a case on an open stretch of coastline dominated by strong longshore transport. In other cases however, complex shorelines resulting from offshore breakwaters, groins, Submerged Wave Focussing Structure's (SWFS's) etc., wind and wave driven cross-shore sediment mobility can greatly contribute to, or even dominate the processes governing the shoreline position (Dabees and Kamphius, 1998). In an environment like Lyall Bay which has a history of problems with sand blasting during southerly wind events (27 km/h average wind speed, Wellington Airport windstation) and is shown to have a naturally dynamic shoreline in response to the seasonal wave climate (approx. 20 m/yr - Figure 4.2 below), a better approach would be to incorporate these cross-shore effects into the model. The author has stated that "predicted shoreline changes would occur on top of the natural variability", in other words, modelled shoreline changes resulting from the SWFS would be a simple linear addition upon natural shoreline changes to achieve the final shoreline position. In reality there would be a complex interplay between the SWFS and natural processes that would be best represented by a model that accounts for cross-shore effects. Bailard's (1982) method for crossshore wave driven transport, for example, could be used.



Figure 4-2: Average horizontal movement of contour lines on the beach, from Pickrill (1979). Negative movement means the depth contours are retreating landward.

Offshore bars and nearshore bathymetry -

Pickrill's (1979) beach profile dataset of Lyall Bay shows that most of the seabed elevation variability occurs out to 600 m from the shoreline. This encompasses the offshore bar/bars set up in winter during storm events which play an important role in breaking and dissipating wave energy during large swells. In addition, the size and location of the offshore bar/bars has a bearing on the magnitude and cross shore position of the longshore drift. The modelling undertaken in this report is run on a bathymetry that doesn't capture any longshore bars. This is because a reasonable gap exists between the 25 m gridded NIWA bathymetry dataset and the shoreline data in the nearshore meaning that the surf-zone bathymetry had to be interpolated. As explained in the report, a detailed surf-zone bathymetry dataset is necessary to better simulate the coastal impact of the SWFS.

Closure depth -

The depth of closure is an important concept in one-line models and defines the offshore depth to which sediment can travel alongshore. Pelnard-Considere (1956) derived the one-line equation:

$$\frac{dy}{dt} = -\frac{1}{D_{cld}}\frac{dq}{dx}$$

Where y is the shoreline position, t is time, q is the longshore sediment transport, x is the longshore coordinate and D_{cld} is the closure depth. It can be seen that the amount of shoreline change with respect to time is inversely dependent on the closure depth and nowhere is this discussed in the report. Figure 5.6 below presents three coastal profiles taken from the interpolated bathymetry dataset at the East, Centre and West of the beach. From these, a linearly interpolated 'representative' beach profile was input into the MIKE 21 FM Sand Transport Module for shoreline position analysis. Since 5 m is the limiting depth on Figure 5.6, one can assume that this is the depth of closure used to calculate the shoreline positions in this study, however, given that Pickrill (1979) showed sediment mobility out to 600 m from the shoreline, a closure depth of at least 7 m would be pertinent.



Sediment grain size -

As addressed in Section 7 of the report, knowledge of the sediment grain size in the surf zone is imperative for this type of modelling work. This controls the amount of sand entrained and saltated by the littoral flow (parameter q in Pelnard-Considere's (1956) equation) and thus the shoreline evolution. The sediment samples summarised in Section 2 are almost exclusively taken from locations outside the surf zone (Figure 3.1 below) where grain sizes are expected to be finer than those inside it. Although the author never states the exact sediment grain size passed to the MIKE 21 FM Sand Transport Module, a median value (D₅₀) of approximately 0.15 mm is given from the sampling data which is assumed to be the value for model input. A recommendation for improved sediment sampling within the surf zone is discussed in Section 7, namely between the +2 m and -5 m depth contours at one meter intervals for three transects along the beach. However, following on from the depth of closure discussion above, we recommend that the offshore limit of this should be extended to a minimum of -7 m.



Figure 3-1: Locations for the sediment sampling, from NIWA (2015).

Wind generated currents -

Wind is omitted from the model which underpins this study. With regard to wind generated currents the author states that "the currents are not very dependent on wind speed" when referring to Figure 3.4 below. This is true for the most part but it can be seen that in the absence of a significant wave event, winds control the currents observed, i.e. September 11^{th} and October 2^{nd} . Although these current speeds are only in the order of 0.1 m/s, the Hjulstrom curve shows that grains of up to 2 mm in diameter are able to be transported under these conditions. Keeping in mind that the D₅₀ for this analysis is set to 0.15 mm, it can be said that wind should be incorporated into this model for improved accuracy, especially since a good wind record in close proximity to Lyall Bay is available (Wellington International Airport wind station).



Figure 3-4: Depth averaged current speed and direction measured at the Site 1 shown in Figure 3-2.

Circulation patterns -

Hydrodynamics in this study are dealt with by the MIKE 21 FM Hydrodynamic Module which is forced by the wave field derived from the MIKE 21 FM Spectral Wave Module, both of which are computed on the same flexible mesh (Figure 5.2 below). The resolution of this in the surf zone is approximately 6 m dropping to about 20 m offshore.





Model calibration -

Measured vs. modelled significant wave heights, current speeds and directions are presented in Figure 5.8 below for a location labelled "Site 2" in Figure 5.9. Note that a location 50 m to the east is presented also, labelled "Close 2". Waves calibrated well, however currents are overrepresented in magnitude between wave events and misrepresented in direction throughout. The author has stated

that these discrepancies are due to the formation of large and small eddies (that may or may not be resolved in the model) in the vicinity of Site 2. Should the position and size of any simulated eddies be different to those in reality, a poor calibration will result. While this may explain some of the observed differences between measured and modelled current directions, it doesn't explain the large predicted current speeds relative to those measured during periods of low wave activity. These circulation patterns are important for the beach and shoreline response during all wave conditions, especially when complex flows in the lee of a SWFS are introduced (e.g. Ranasinghe *et al.*, 2006).



Figure 5-8: Comparison between measured and modelled current speed (top), current direction (middle) and significant wave height (bottom) at Site 2. The locations are shown in Figure 5-9.



Figure 5-9: Current speed and vectors around the measurement location. Top: During a wave event.

Model Validity -

The author provides reference to two publications for further details on the MIKE 21 FM Shoreline Model; Kaergaard and Fredsoe (2013) and Kristensen *et al.* (2012). The first paper does a good job of describing the model in more detail, as expected, but fails to validate the model against any real spatial shoreline migration observational data. Two scenarios are instead presented which both involve a coastline subjected to non-varying very oblique incident waves. The first is a theoretical benchmark test and is essentially a numerical comparison between the MIKE 21 FM Shoreline Model and that of Peterson *et al.* (2008). The test involved an initial shoreline that bends 90° (Figure 8 below) in order to allow the growth of a spit.



Fig. 8. The initial shoreline and the hypothetical migrating spit.

The second scenario was aimed at reproducing the littoral drift rate, spit width and spit growth rate of the Skaw Spit in northern Denmark. The Danish Coastal Authority provided wave climate data for model input, namely, Hs = 1.3 m, Tp = 5 s and an estimated littoral drift rate of 1.5 M m³/year. Initial model testing with these wave parameters returned a littoral drift rate "much smaller" than what was realistic and so Hs and Tp were increased to 2.5 m and 6 s respectively to achieve a value of "around" 1.5 M m³/year. This is noted as a compensation for the cross-shore gradient smoothing effect (and

the associated underestimated longshore sediment transport rate) that a time and space averaged constant coastal profile yields. The resulting modelled spit width was between 3.5 and 4 km and the spit growth rate was around 6 m/year. The observed spit width (in Google Earth) at the locality of Skagen is in the order of 3.2 km, not 3.5 km as stated in the paper, and the dated progradation of the spit is around 5 m/year. Kaergaard and Fredsoe (2013) state that "the biggest limitation in this approach is that the actual evolution of the shoreline is not described by the model, therefore the model is not very flexible as it cannot be used for other purposes".

The second paper (Kristensen *et al.* (2012)) aims to validate the MIKE 21 FM Shoreline Model simulations against observed shoreline responses to detached breakwaters, both offshore (outside surf zone) and coastal (inside surf zone). The study is split into two parts: Firstly, the model is applied to a case in Cape Town South Africa where a grounded ship in 2009 has created a salient in its lee, effectively acting as an offshore breakwater. Secondly, a new version of the model is presented which allows for cross-shore sediment redistribution via a diffusion algorithm designed to represent non-resolved cross-shore processes. This model version is applied to a straight shoreline coastal breakwater scenario in order to establish an evolving shoreline morphology in agreement with existing rules i.e. does the model simulate sensible shoreline responses to varying breakwater configurations (ratio of breakwater length to its distance from shore), varying wave incidence angles and varying distances to the shoreline relative to the surf zone width? While this work may present interesting results regarding breakwaters, nowhere does it consider SWFS's. In addition, the second part of the study almost completely disregards constraint to any real field data. Only the modelled salient advance is compared to a 1982 laboratory study and a 1976 field study, showing just a reasonable agreement to both.

Another paper (Kaergaard and Fredsoe (2013) Part 2) aims to compare MIKE 21 FM Shoreline Model output to two naturally occurring shorelines, and again, similar to Kaergaard and Fredsoe (2013), only deals with oblique to very oblique incident waves, however, a varying wave climate is introduced in both cases.

Based on the supporting literature provided by DHI, the MIKE 21 FM Sand Transport Module has not been validated for shoreline evolution in response to a SWFS, and certainly not for an environment comparable to Lyall Bay where oblique incident waves do not exist.

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