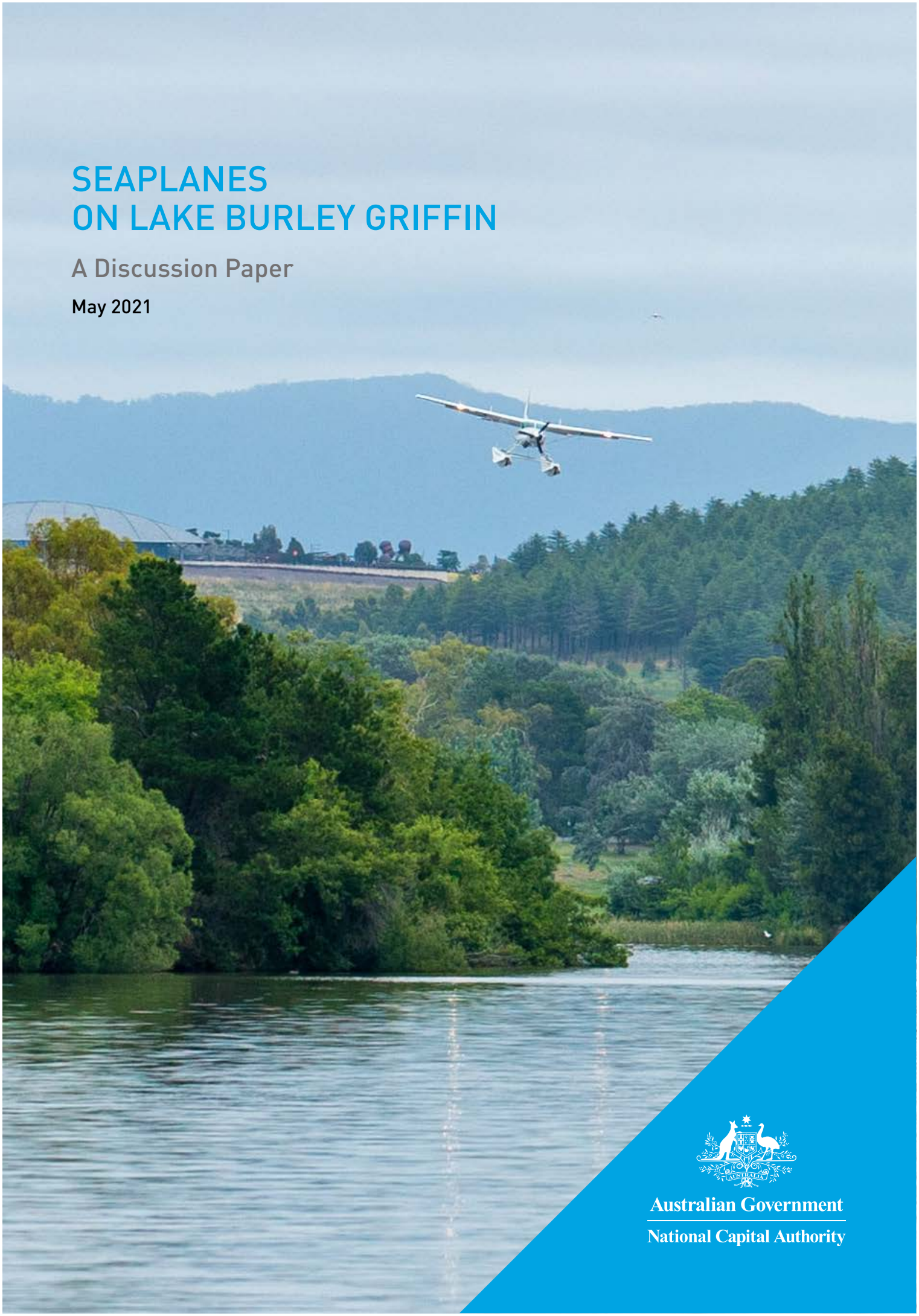
SEAPLANES ON LAKE BURLEY GRIFFIN

A Discussion Paper

May 2021



Australian Government

National Capital Authority

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1. INTRODUCTION

Lake Burley Griffin (the Lake) is an integral part of Canberra's design and a vital element of the plan for Australia's National Capital. The Lake is highly valued by many for its recreational uses and aesthetic qualities, for its landmark value, and for its association with the creation of the National Capital and subsequent phases of national development.

Lake Burley Griffin was conceived as the centrepiece of the city and provides the major landscape feature unifying the city's nationally significant central precincts. Central parts of the Lake were designed as the city's heart, while more informal parts of the Lake were intended more for active, vibrant uses.

Lake Burley Griffin is the setting for many water-based activities. Thousands of people every year use the Lake for peaceful recreation or active, competitive sporting events. The surrounding parklands and open spaces are also used for both passive and active recreation such as walking, cycling, bird watching, picnics and both public and private events. Many national institutions, parks and national public places are located on or near the shores of Lake Burley Griffin.

The National Capital Authority (NCA) is responsible for the management of Lake Burley Griffin. The agency promotes the use of the Lake, cleans and repairs lake infrastructure to ensure safe use and function, stocks the lake with fish, monitors and manages aquatic plant growth, administers the use of power boats, and works with the ACT Government and other stakeholders to protect water quality.

The NCA is also responsible for ensuring that the heritage values of Lake Burley Griffin and surrounds are upheld. The Australian Heritage Council is currently assessing the nomination of Lake Burley Griffin and its adjacent parklands to the Commonwealth Heritage List. This nomination recognises that the Lake possesses significant historical, rarity, research, representative, aesthetic, creative, social and associative values which meet the threshold for listing.

The Central Basin of Lake Burley Griffin forms part of the Parliament House Vista, and along with the National Carillon, is separately listed on the Commonwealth Heritage List. The NCA has prepared heritage management plans (HMPs) for all places to guide management and use of the Lake, its islands and surrounds.

Under the *Australian Capital Territory (Planning and Land Management) Act 1988*, the NCA is responsible for fostering an awareness of Canberra as the National Capital. Whilst the NCA is not a tourism agency, the NCA works with other stakeholders to encourage people to visit the National Capital, its national cultural institutions, and other attractions such as Lake Burley Griffin.

The NCA permits a number of commercial operators on the Lake, including boat cruises, self-skippered electric boats, and paddleboats. Proposals for new commercial opportunities on the Lake are assessed by the NCA to ensure consistency with relevant policies and plans.

The NCA has been in discussions with seaplane operators regarding the potential for seaplane services on Lake Burley Griffin. Operations would involve landing, take-off and taxiing on the Lake, as well as mooring to load and unload passengers. Two potential seaplane services are identified in this paper, however the issues requiring consideration are relevant to any seaplane service proposed for the Lake.

The NCA requires sufficient information to allow a full assessment of the activity, its impact on other users, and so that heritage values and environmental issues can be determined. In assessing seaplane operations, key issues such as safety, lake users, infrastructure and refuelling requirements, heritage, noise, visibility, and impacts on the natural environment will be considered.

This discussion paper is structured as follows:

- Section 2 – sets out the details of the consultation process and how to have your say
- Section 3 – details the NCA's roles and responsibilities, particularly in relation to Lake Burley Griffin
- Section 4 – summarises the outcomes of the demonstration flight undertaken in December 2020, and provides information concerning potential longer term seaplane operations, including the number of flights proposed and at what times of the day, mooring arrangements, aircraft to be used, safety, etc
- Section 5 – examines how seaplanes are licensed in other Australian jurisdictions
- Section 6 – explores the range of issues that require consideration as part of the NCA's decision-making process
- Section 7 – sets out the steps to be undertaken post-public consultation.

Community consultation will provide valuable feedback to ensure that the potential impacts of the activity on the Lake and other lake users, as well as the benefits that the seaplane activity may bring, are fully understood. The National Capital belongs to all Australians, and the NCA seeks to understand and reflect a broader, national perspective about activities in Canberra.

2. PUBLIC CONSULTATION

The purpose of this discussion paper is to encourage feedback concerning possible seaplane operations on Lake Burley Griffin. The NCA is seeking to understand the community's thoughts about the potential for seaplane operations on the Lake, impacts on various lake users, issues of concern, and benefits to Canberra as the National Capital. The National Capital is a significant place for all Australians, and the NCA will consider the views of both local communities, as well as people and stakeholders from further afield.

Individuals, community groups, organisations and government agencies are invited to respond to the Discussion Paper. The NCA welcomes comment on the issues explored in this paper, but also seeks feedback as to whether there are other matters that require consideration.

Comments in response to the proposal can be:

- emailed to seaplanes@nca.gov.au
- mailed to Mr Andrew Smith, Chief Planner, National Capital Authority, GPO Box 373, Canberra ACT 2601
- hand-delivered to National Capital Authority, Ground Floor, Treasury Building, King Edward Terrace, Parkes ACT 2600.

The NCA welcomes feedback by close of business Tuesday 22 June 2021.

The NCA seeks an open and transparent consultation process. The NCA intends to publish submissions, including the names of submitters, on the NCA website. Contact details such as physical address, email or phone number will not be published.

If you have a concern about having your name published on the internet you must make this clear when submitting your comments.

If you do not wish your submission, or parts of your submission, to be published on the internet as part of the Discussion Paper consultation process, please contact the NCA to discuss before making a submission.

NCA officers are available to discuss the paper or other matters identified by stakeholders by phoning 02 6271 2888. Further information is also available by emailing seaplanes@nca.gov.au.

In addition to written submissions, the NCA will also consider feedback received following the seaplane demonstration flight in December 2020, and information from other sources such as print media, social media, and other online platforms.

2.1 What we want you to tell us?

The following questions are posed as 'thought starters'. They are not intended to limit comments or submissions, nor are they required to be addressed in any submission. Those wishing to provide feedback to the NCA may find them useful in provoking ideas and structuring a submission.

- What is your initial response to the idea of seaplanes operating on Lake Burley Griffin?
- What are the top three things the NCA should consider in making a decision regarding seaplane operations on Lake Burley Griffin?
- Has the NCA appropriately covered the range of issues requiring consideration before making a decision concerning seaplane operations on Lake Burley Griffin?
- Could seaplane operations assist in raising awareness of Canberra as the National Capital and how could this benefit Australians?

3. THE NATIONAL CAPITAL AUTHORITY

The National Capital Authority (NCA) is established under the *Australian Capital Territory (Planning and Land Management) Act 1988* (the PALM Act). The agency manages the Australian Government's continuing interest in the planning, development and enhancement of Canberra as the National Capital. The NCA performs the role as trustee of the National Capital, and in this capacity, serves the interests of the Australian Government, the nation and its people.

3.1 Functions of the National Capital Authority

Under the PALM Act, the functions of the NCA are:

- prepare and administer the National Capital Plan (the Plan)
- to keep the Plan under constant review and propose amendments to it when necessary
- on behalf of the Australian Government, to commission works to be carried out in Designated Areas in accordance with the Plan, where neither a department of State of the Commonwealth nor any Commonwealth authority has the responsibility to commission those works
- recommend to the Minister the carrying out of works it considers desirable to maintain or enhance the character of the National Capital
- to foster an awareness of Canberra as the National Capital
- with the approval of the Minister, to perform planning services for any person or body, whether within Australia or overseas
- with the approval of the Minister, on behalf of the Commonwealth to manage National Land designated in writing by the Minister as land required for the special purposes of Canberra as the National Capital.

These functions can be separated into three key operational areas.

Plan the Capital

Australia's National Capital has a unique purpose, setting, character and symbolism, and it's important to make sure it continues to do so. Through the Plan, the NCA ensures that 'Canberra and the Territory are planned and developed in accordance with their national significance'. The NCA does this by assessing and approving applications to undertake works in Designated Areas, and by preparing development control plans, urban design guidelines, master plans and draft amendments to the Plan.

Promote the Capital

The NCA is responsible for raising awareness of the role of Canberra as the National Capital and developing an understanding and appreciation of its role and national significance. The NCA takes a strategic approach to fostering an awareness of the Capital through research; by encouraging people to visit Canberra, particularly for national events and celebrations; by providing information and education about the Capital; and by promoting the attributes of Canberra that are of national significance.

Maintain and enhance the Capital

The Australian Government has a direct interest in developing and maintaining the National Capital as an asset in which all Australians have a major investment.

The NCA manages and maintains assets on behalf of the Australian Government. Most assets are maintained under competitively tendered contracts and represent some of the Capital's most nationally and culturally significant landscapes and attractions.

The diversity of these assets reflects the breadth of the Australian Government's interests in the National Capital and provides the setting for ceremonies, activities and events that Australians expect to occur in their capital. In managing these assets, the NCA makes sure they are created, maintained and, if necessary, replaced to enhance

and protect the unique qualities of the Capital, and to support activities and events that spread an awareness of Canberra as the National Capital.

The NCA ensures that national assets continue to be created and maintained, are of an appropriate standard, meet the expectations of users, and support an appreciation and understanding of the role of the National Capital.

The NCA manages land declared as land required for the special purposes of Canberra as the National Capital. On this land, the NCA manages development and renewal projects, as well as regular maintenance, works to enhance or protect prior Australian Government investment in national assets (for example, refurbishment of monuments and fountains), construction of public infrastructure (such as roads, parking, pathways and lighting) and development of the landscape settings for new building sites, public parks and places, commemoration and celebration.

The NCA's role in maintaining and enhancing the National Capital includes responsibility for the management of Lake Burley Griffin.

3.2 Lake Burley Griffin management

Administration of Lake Burley Griffin is governed primarily by the *Lakes Ordinance 1976* (Lakes Ordinance).

In administering the Lakes Ordinance, the NCA undertakes measures to manage Lake Burley Griffin for a variety of functions. The Lakes Ordinance sets out provisions concerning the control of the Lake (including rights to the use and flow and to the control of the water in the Lake) and use of the Lake including provisions and restrictions relating to boats, moorings and other infrastructure, swimming and other lake activities.

In addition to the Lakes Ordinance, other policies relevant to the administration and management of the Lake include the National Capital Plan, Lake Burley Griffin Recreation Policy, Lake Burley Griffin and Adjacent Lands Heritage Management Plan (refer section 4.6 of this paper), Lake Burley Griffin Water Quality Management Plan 2011, and Lake Burley Griffin Mooring Guidelines. [1]

[1] National Capital Authority, Lake Burley Griffin Legislation and Policies, https://www.nca.gov.au/national-land/lake-burley-griffin/legislation-and-policies, accessed 19 January 2021

Water quality management

The environmental state of the Lake is monitored through physical, chemical, and biological testing of the Lake water. These parameters are measured across the Lake and analysed to identify any change and, if required, appropriate management responses are proposed. Bacterial and algal levels are monitored weekly during the Summer Recreational Season (the Season) which is mid-October to mid-April. The water is analysed and reported on in accordance with the ACT Guidelines for Recreational Water Quality (ACT Health, 2014).

General maintenance

The water body, jetties, and other lake infrastructure are routinely cleaned and repaired to ensure safe use and maintain functionality. A program of removal of floating and submerged objects and rubbish forms part of this work.

Boat and mooring permits

The NCA administers the use of powerboats on Lake Burley Griffin in accordance with the provisions of the Lakes Ordinance. These provisions also cover moorings, anchoring, the restrictions on the use of powerboats, lighting rules, rules of the water, and the navigation of a boat in a dangerous or careless manner or while intoxicated.

The NCA issues boat permits to powered boats used for private recreational use. Non-powered craft such as sailing boats and canoes do not require a permit to go onto the Lake.

The NCA also manages and administers moorings on Lake Burley Griffin. Moored boats (yachts, inboards, outboards and other vessels) add to the aesthetic values of the Lake.

All mooring permits are administered in accordance with the Lakes Ordinance, the Lake Burley Griffin Mooring Permit Guidelines and the Lake Burley Griffin Recreation Policy.

Fish management

The native fish population in Lake Burley Griffin is enhanced through the regular seeding of fingerlings. Species such as Murray Cod and Golden Perch are released on an alternate basis to maintain a mixed recreational fishery.

Aquatic plants control program

Part of the maintenance of Lake Burley Griffin includes monitoring the growth of submerged and emergent aquatic plants (macrophytes). Aquatic plants, though serving an important role in the Lake's ecology, can interfere with recreational activities. The NCA monitors and controls excessive plant growth in the Lake.

Commercial activity

Under section 33 of the Lakes Ordinance, subject to the NCA's approval, a person may undertake commercial activities within the Lake Burley Griffin area. The NCA currently permits a number of commercial operators on the Lake, including boat cruises, self-skippered electric boats, paddle boats and the Aqua Park.

4. POTENTIAL SEAPLANE OPERATIONS ON LAKE BURLEY GRIFFIN AND DEMONSTRATION FLIGHT

The NCA has held discussions with two separate operators regarding possible seaplane operations on Lake Burley Griffin. Sydney Seaplanes has presented a proposal for commuter services between Lake Burley Griffin and Rose Bay in Sydney, while South Coast Seaplanes has expressed interest in establishing tourism-focussed operations between the south coast of New South Wales (NSW) and Lake Burley Griffin.

As a result of the interest in commencing seaplane operations on the Lake, in December 2020 the NCA facilitated a demonstration with Sydney Seaplanes of a landing and take-off of a seaplane on the Lake. The demonstration flight provided quantifiable information regarding the impact of a seaplane operation on the Lake. The demonstration generated national interest and provided both local lake users and the broader community with first-hand experience of the concept.

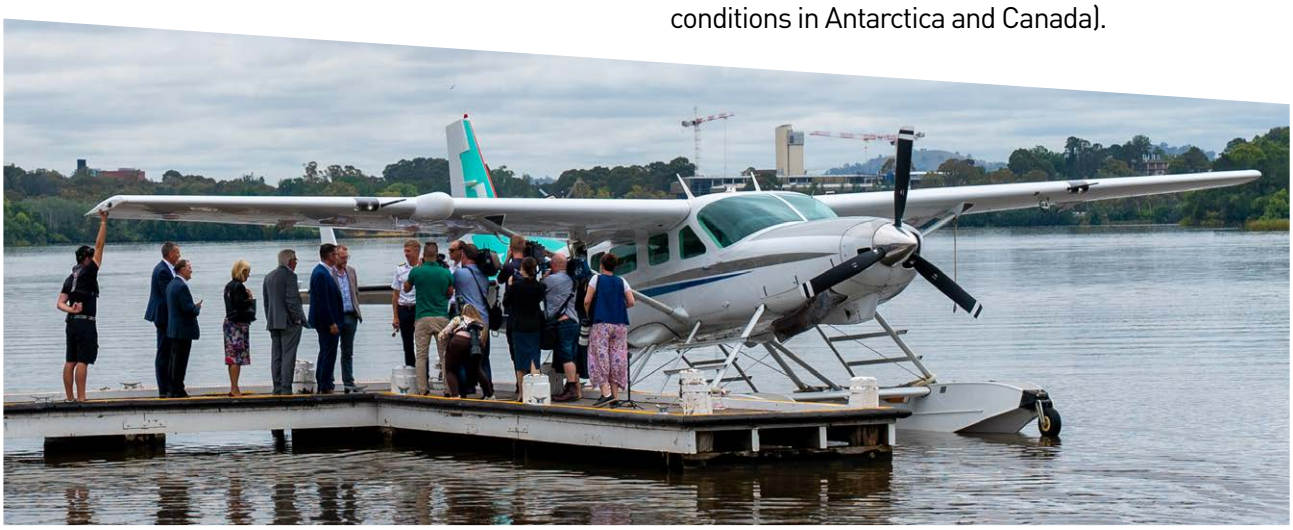
This section of the paper examines the outcomes of the seaplane demonstration flight and impacts on heritage, noise, and the grey-headed flying fox camp in Commonwealth Park.

4.1 Sydney Seaplanes operations

Sydney Seaplanes currently operate flights around Sydney Harbour and further afield to destinations along the Hawksbury River, Ku-ring-gai Chase National Park, Newcastle, Port Stephens and Jervis Bay. Sydney Seaplanes have advised that they wish to introduce seaplane commuter services from its Sydney Harbour base at Rose Bay to Lake Burley Griffin, approximately a one hour flight.

Sydney Seaplanes have compared the proposed commuter service to other examples around the world where seaplanes are used for transport, leveraging the ability to land on waterways close to the centre of cities. This proximity to city centres provides time saving and convenience for seaplane passengers who also benefit from avoiding crowded airports. Cities like Vancouver, Canada and Seattle, United States of America are good examples where seaplanes are a significant part of those cities' transport infrastructure.

The aircraft proposed to be used by Sydney Seaplanes is an amphibious Twin Otter (twin turbine), operated by two pilots. Maximum passenger capacity is 14 people. The aircraft is typically flown en-route using an autopilot, however a visual approach would be conducted when landing on the Lake. The aircraft has short landing and take-off capability and is able to take-off in choppy water (the type of aircraft proposed is used in icy conditions in Antarctica and Canada).



An amphibious aircraft will be based at Canberra Airport and operate three return flights per day. The first flight of the day will depart Canberra Airport, landing in Sydney Harbour. The last flight of the day will depart Sydney Harbour and land at Canberra Airport. The middle two return flights are proposed to land and take-off from the Lake.

The proposed schedule includes the first landing on the Lake at 10.00am, departing at 10.30am. The next landing is 3.30pm, departing at 4.00pm.

Each landing and take-off would involve the aircraft manoeuvring on the Lake for approximately 5 minutes, a total of 20 minutes per day.

Sydney Seaplanes services to Lake Burley Griffin propose to utilise the existing wharf facilities at the National Museum of Australia (NMA). Passengers would embark and disembark from this wharf with the NMA café providing a comfortable environment to wait for their flight. Modifications will be required to this jetty to provide safe mooring of the aircraft. Any modifications to this jetty would be at a cost to the operator and be for the benefit of all lake users.

Sydney Seaplanes have also indicated that their operations will be able to be packaged to facilitate tourism to ACT events such as museum exhibitions, art galleries, sports events, festivals, concerts etc. Sydney Seaplanes have advised that they would work closely with the NCA and Visit Canberra to promote these packages to Sydneysiders encouraging more visitation to Canberra.

4.2 South Coast Seaplanes operations

South Coast Seaplanes currently operates scenic charter seaplane operations in the Eurobodalla and Shoalhaven Shires and is looking to expand its operations to the ACT. South Coast Seaplanes sees potential in tourism operations by boosting existing tourist offerings in the city and generating positive economic externalities, as has been the case on the NSW south coast.

South Coast Seaplanes has indicated that operations would initially focus on short scenic seaplane operations around Canberra, using Maule aircraft (a single-engine aircraft with short take-off and landing capability). Once these operations were established, South Coast Seaplanes would seek to broaden the offering to introduce package products particularly targeted at inbound (international) tourists. This could include direct connections with existing tourist attractions on the south coast where South Coast Seaplanes already operate, as well as attractions in the Snowy Mountains.

The timing and frequency of any flights would initially be limited, with flights occurring one or two days a week during the hours of 9.00am and 5.00pm in summer months, and reduced hours in the low, winter season. The growth in number of services would be determined by demand and only with the agreement of the NCA after consideration of the impact on other lake users.

4.3 The 2020 seaplane demonstration

On 15 December 2020, the NCA facilitated a demonstration with Sydney Seaplanes of a landing and take-off on Lake Burley Griffin. The demonstration was undertaken to help the NCA assess the impact of seaplane operations, and start to gauge the level of local and national interest in the proposition.

The aircraft operated in accordance with the procedures developed by the operator and as agreed by the NCA and other relevant regulators, docking at the old water police wharf in Yarralumla Bay. The demonstration flight was conducted as a private operation under the Visual Flight Rules (VFR), with the aircraft touching down on the Lake at the planned time. Associated taxiing and take-off were also reported by the operator as smooth. A risk assessment was conducted by Sydney Seaplanes prior to operating the demonstration flight that ensured the entire day proceeded without incident and as planned.

The demonstration utilised an amphibious single-engine Cessna Caravan aircraft. The demonstration flight provided a generalised understanding of the potential impact of a seaplane operation on the Lake. The NCA is aware that each different aircraft type will have different noise and flight profile that may cause different impacts on heritage, noise and impacts on fauna.

Figure 1: The amphibious single-engine Cessna Caravan docked at Yarralumla Bay

Noise monitoring

WSP Australia Pty Ltd (WSP), in conjunction with the ACT Government's Environment Protection Authority (EPA), undertook noise monitoring activities during the seaplane demonstration. WSP undertook measurements at one fixed position during the landing, taxi and take-off of the seaplane landing. The EPA undertook measurements at two further locations (refer Figure 2).

Figure 2: Noise monitoring locations at Yarralumla Bay, Lotus Bay and Acton Peninsula

WSP provided the NCA with a preliminary acoustic assessment based on the seaplane demonstration (refer Attachment A). It should be noted that the results have been extrapolated from measurements made during the single flight demonstration. All observations should be taken as preliminary only.

The following points are a summary of observations made in the full report at Attachment A:

- Typical daytime background noise levels at measurement locations were around 45 to 50 dB L_{A90}
- This concurs broadly with the ACT daytime zone noise standards of around 45 to 60 dB L_{A10} in these areas
- Specific individual noise events in suburban locations can have short term noise levels in the region of 50 to 70 dBA (for example, a leaf blower or lawn mower)
- The predicted maximum (very short term) seaplane noise levels at the closest potentially noise sensitive locations can be summarised as follows:
  - » Overflight maximum sound pressure levels in the region of 45 to 60 dB L_{AFmax}
  - » Where audible at all at locations in the vicinity of the landing areas, landing and take-off maximum sound pressure levels in the region of 50 to 60dB L_{AFmax}
  - » Where audible at all, at the closest locations only, maximum sound pressure levels from taxi and docking manoeuvres in the region of 60 to 75 dB L_{AFmax}
- Overflight noise from a seaplane is likely to be audible above background noise at most of the closest locations, but unlikely to be a specific cause of noise disturbance in the general context of neighbourhood activity
- Landing, taxi, docking, and take-off noise is likely to be audible above general background noise at locations that are closest to the parts of the Lake where these actions occur.

It should be noted that:

- The preliminary assessment undertaken assumes typical daytime background and neighbourhood noise sources
- All noise levels discussed are external to a building. Noise levels inside a building are likely to be:
  - » Around 25 to 30 dBA lower than presented inside a building with closed windows and no open ventilation paths
  - » Around 10 to 15 dBA lower than presented in a residential house with windows opened
- All seaplane noise levels will be lower at receiver locations that are further from landing areas on Lake Burley Griffin, and the flight paths.

Heritage impact

Lake Burley Griffin is nominated to the Commonwealth Heritage List and parts of the Lake are within the Parliament House Vista Commonwealth Heritage place.

The NCA engaged GML Heritage Pty Ltd (GML) to attend the seaplane landing, taxi and take-off, and provide heritage impact advice. The aim of GML attending the demonstration was to gauge the noise 'acceptability level' for a lay person, taking into consideration the heritage values of the Lake and surrounding context.

The NCA has received written advice from GML (Attachment B). The advice was informed by two previous Heritage Impact Assessments (HIAs) prepared by GML for the general proposed action involving commercial, recreational seaplane use of the Lake. Previous heritage advice recommended further investigation of the proposed action through trial flights. The December 2020 demonstration allowed for a greater understanding of the noise level generated by seaplanes, and the visual and physical impacts of the action on Lake Burley Griffin.

In summary, GLM concluded that the noise and general disturbance to the Lake during the demonstration did have a minor adverse impact on the heritage values of the Lake, specifically the 'quiet and still' qualities of the water in the Lake. However, the infrequency of operations and temporary nature of these operations ensured the degree of impact was minimal.

Monitoring of grey-headed flying fox camp

An NCA staff member was stationed in the Rhododendron Garden in Commonwealth Park to gauge the reaction of the grey-headed flying fox camp to the departure of the seaplane over Lake Burley Griffin. Filming was undertaken and several observations were made:

1. Baseline scenario: Some small amount of construction noise was evident in the background but the camp was behaving normally (some vocalisation and fanning, a few flying but most at rest).
2. Mower going past: The NCA's open space contractor drove past on a mower (not operating). The bats did not react to this noise.
3. The seaplane moving past over Regatta Point, from east to west: The bats showed no signs of distress.

The NCA's observations were forwarded to ACT Wildlife Carers who concurred with the assertion that the flying foxes remained relaxed. ACT Wildlife Carers have advised that a key consideration in mitigating impacts on the flying fox camp is the timing of departures and arrivals. The camp fly out at dusk (at last light), typically in a south-easterly direction towards the National Library of Australia, and across potential flight paths. Depending on the time of year, this would be between approximately 6.30pm and 8.30pm.

The Sydney Seaplanes proposal involves the last arrival and departure of the day occurring at 3.30pm and 4.00pm respectively. The last arrival of the day in Canberra will be at the airport. This would likely avoid conflict between seaplanes and flying foxes. South Coast Seaplanes have provided a general indication of flight times only, however licences issued to any operator have the capacity to stipulate flight times, or times to be avoided to manage potential conflicts with flying foxes.

Feedback from the community and stakeholders

The seaplane demonstration in December 2020 resulted in a range of views expressed within the community. These views were expressed via social media, in response to articles in print media, and directly to the NCA.

Many stakeholders saw the benefits of introducing a seaplane service in central Canberra. Examples of these positive aspects of seaplane operations included not having to contend with airports and time-consuming procedures, time savings, alternative travel options between Canberra and Sydney, the potential to promote tourism to the National Capital and engage businesses such as accommodation providers, restaurants and attractions in partnerships with seaplane operators.

Perceived negative impacts of seaplane operations included safety impacts and inconvenience to other lake users for the direct benefit of only a few, noise, potential precedence that might be set in allowing more motorised craft on the Lake, and impacts on the existing peaceful nature of the Lake. A number of lake users have directly expressed their concerns to the NCA (refer section 6.2 of this report).

5. USE OF SEAPLANES IN OTHER JURISDICTIONS

Seaplanes are operated in a few other jurisdictions in Australia, and many internationally. This section examines examples of seaplane operations in other Australian jurisdictions including the Great Barrier Reef Marine Park and locations within NSW, including licensing and permit requirements and considerations taken by authorities.

The NCA recognises that there are differences in location context, such as the type and form of waterbodies, infrastructure, and other users, however there are similarities such as heritage or environmental sensitivities. The types of considerations and assessment of these issues will be explored by the NCA as part of its decision-making.

Section 6.1 of this paper also describes the regulatory environment from the perspective of when a seaplane is in the air.

5.1 Great Barrier Reef Marine Park Authority

The Australian Government's Great Barrier Reef Marine Park Authority (GBRMPA) is the lead management agency for the Great Barrier Reef, one of the world's most iconic natural areas. The Great Barrier Reef is listed on both the World Heritage List and the National Heritage List.

The *Great Barrier Reef Marine Park Act 1975* (GBRMP Act) guides the agency's management and the best practice science to protect values, reduce threats, and improve the current and long-term outlook for the reef and the communities that depend on it.

The GBRMP Act provides a framework for planning and management of the Marine Park, including through zoning plans, plans of management and a system of permissions. It should be noted that the GBRMPA and Queensland Department of Environment and Science through Queensland Parks and Wildlife Service (QPWS) jointly manage the Marine Park and this close collaboration is critically important for effectively managing such a large, diverse and complex marine area.

The *Great Barrier Reef Marine Park Zoning Plan 2003* and *Queensland Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004* (the Zoning Plans) are the primary planning instruments for the conservation and management of the Marine Park. These Zoning Plans takes into account the world heritage values of the Marine Park and the principles of ecologically sustainable development. The Zoning Plans, in conjunction with other management mechanisms, aim to protect and conserve the biodiversity of the Great Barrier Reef ecosystem while providing opportunities for the ecologically sustainable use of, and access to, the Great Barrier Reef Region by current and future generations.

The Marine Park is managed as a multiple use area, meaning that while enhancing the conservation of the Marine Park, the Zoning Plans also provide for a range of recreational, commercial and research opportunities, and for the continuation of traditional activities.

The Zoning Plans set out what particular zones or areas of the Marine Park can be used for or entered without permission, as well as the purposes for which each zone may be used or entered only with the written permission of GBRMPA and QPWS. A number of zones permit uses associated with vessel and aircraft operations, including navigating a vessel or aircraft, conducting a vessel or aircraft charter operation, constructing or operating mooring facilities for a vessel or aircraft, and operating a landing area or facility for aircraft.

Permission to operate a vessel or aircraft within the area managed by the agencies require a permit, jointly issued by the GBRMPA and QPWS. Applications for permits are assessed against published guidelines that provide guidance to decision-makers about how to apply relevant legislation and policies, and explain the agencies general approach and expectations about assessing proposals and making decisions within the permit system.

Applications for permits are assessed against a series of guidelines addressing potential impacts on traditional owner heritage, social value (including aesthetics, access, human health, etc), seagrass value, and historic heritage. Risk assessment is also undertaken, with further guidelines available

concerning the identification of risks and their associated avoidance, mitigation or offset measures.

5.2 New South Wales

In many areas of NSW, seaplanes operate on areas of water which are also used by other vessels. Often seaplanes operate in high use areas, particularly in the Sydney region for example around Rose Bay, Pittwater, Newcastle, the Hawkesbury River, Lake Macquarie, and Port Stephens.

Seaplanes frequently operate in marine parks, of which there are six in NSW (Lord Howe Island, Port Stephens Great Lake, Jervis Bay, Batemans, Solitary Islands, and Cape Byron). Marine parks provide for multiple use of the marine environment including recreational and commercial activities, such as fishing, tourism, diving, boating, swimming, surfing, kayaking and beach walking.

Similarly to the GBRMP, a framework of regulations and permit requirements exists for NSW marine parks. The two seaplane operators who have approached the NCA, Sydney Seaplanes and South Coast Seaplanes, both hold relevant permits to operate within NSW marine parks.

Zoning plans are regulations that establish the types of activities that can be undertaken in different areas of a marine park having regard to the degree of potential impact they may have on species of plants and animals, as well as habitats. Consent may be granted by permit to carry out certain activities, including commercial activities such as seaplane operations. The circumstances in which consent may be granted are set out in the *Marine Estate Management (Management Rules) Regulation 1999* and the process of applying for consent is included in the *Marine Estate Management (Management Rules) Regulation 1999*.

The NSW Marine Parks Permit Policy clarifies administrative arrangements, processes and consent parameters for the issuing of permits. Consistent with the policy, specific conditions can be applied to permitted activities to ensure they are ecologically sustainable and do not unduly impact on the enjoyment of other park users. Marine Park permits are issued free of charge, are non-transferable and do not grant exclusive access to a marine park or rights of access over other marine park users. Being non-transferable, permits do not have any commercial value or bestow any value upon the permit holder.

Applications for permits are considered by the NSW Department of Primary Industries against a range of assessment criteria set out in the *Marine Estate Management (Management Rules) Regulation 1999*, which include:

- Permissibility of use within relevant marine park zone
- any threatened species or other protected flora or fauna
- the natural resources of the marine park
- the type of equipment to be used in connection with the proposed activity
- any cultural aspects of the marine park.

Cultural aspects are more closely examined through referral of permit applications to Native Title holders or the appointed legal representatives of registered Native Title claimants.

Seaplane operators may also require additional approvals from state and local government entities. For example, South Coast Seaplanes was required to obtain:

- Development approval from Eurobodalla Shire Council to ensure that operations are not inconsistent with the Local Environmental Plan. This approval provides for temporary use of land for boarding and refuelling, and to temporarily use water. The development application was referred to state government agencies who were required to support the activity, including from NSW Crown Lands, NSW Maritime, Department of Primary Industries, and National Parks and Wildlife Service.
- Development approval from the NSW Department of Primary Industries (in addition to a marine park permit).
- An aquatic licence from NSW Crown Lands to rent Crown Land to enable the meet and greet and boarding of passengers.

6. KEY CONSIDERATIONS

This section outlines a range of issues that the NCA must be cognisant of or consider in its decision-making. The NCA welcomes comment on any or all of these issues, or comment on issues that may not have been identified.

6.1 Seaplane operations and safety

Regulatory framework

The NCA has engaged with other government bodies concerning operations and safety, including any approvals or permits required to be issued by those other than the NCA. This section outlines the regulatory framework applicable to seaplane operations on Lake Burley Griffin.

The Australian Government's Civil Aviation Safety Authority (CASA) is the body that regulates Australian aviation safety. CASA licences pilots, register aircraft, oversee and promote safety. CASA operates within a legislative framework that includes the Civil Aviation Act 1988, the *Civil Aviation Regulations 1988* (CAR), the *Civil Aviation Safety Regulations 1998* (CASR) and associated guidance material.

A commercial seaplane operator is required to hold an Air Operator's Certificate (AOC), which is an authorisation granted by CASA issued under the *Civil Aviation Act 1988* to conduct commercial operations.

AOCs issued after 16 November 2009 are a single page certificate, containing basic details about the operator. When applying for an AOC, the operator must submit an operations manual to CASA for approval. The operations manual outlines the nature of the operations proposed to be conducted, including location, aircraft type, and details how operations will be managed safely and in accordance with the applicable regulations.

Airservices Australia is responsible for Australia's air traffic management, aviation rescue fire fighting services, aeronautical information, aviation communications and radio navigation aids. The functions of Airservices Australia are outlined in the *Air Services Act 1995*.

Section 5 of this paper also includes information concerning permitting of seaplanes by other government authorities.

General seaplane operations

The operation of seaplanes is regulated by CASA when in the air (as with any other certified aircraft) and by the relevant Maritime Authority when on the water. That is, seaplanes are considered to be an aircraft in the air, and a vessel on the water.

The following paragraphs describe generally how seaplanes take-off, land, taxi, and dock.

Take-off

Take-off is the most critical phase of seaplane flight. A typical take-off proceeds as follows:

a. The pilot taxis to an approved area which provides a clear take-off run, ideally directly into the wind. The pilot is responsible for ensuring no conflicting traffic hazards are present.
b. Water rudders are retracted, full up elevator (pitch up) is applied, and power is smoothly advanced to full throttle.
c. As the aircraft accelerates it pitches nose high as it begins to climb onto a hydrodynamic plane on the step. As it settles on the step the nose lowers again to a level position, and the aircraft accelerates due to the greatly reduced water drag.
d. On reaching a speed of around 50 knots the pilot will 'rotate' the aircraft – slightly increasing the pitch, which causes the wings to generate sufficient lift so that the aircraft leaves the water. A typical take-off may take around 15-20 seconds from application of full power to lift-off.
e. While the distance required for take-off varies considerably depending on payload, wind and water conditions, pilot technique, and aircraft type, 250 – 600m is a typical distance range.

At all times during the take-off the pilot is required to maintain a lookout for obstacles or potential collision threats. Throughout the take-off the pilot can alter the direction of the aircraft with the rudder,

and he/she can also easily abort a take-off by cutting power and applying full up elevator. This control input uses the pressure of the airflow on the tailplane to dig the rear of the pontoons into the water: thus, unlike most powerboats, seaplanes have some braking ability, and can reduce speed in the water quite quickly if required. Figure 3 (supplied by Sydney Seaplanes) shows the shortest take-off distance, being winter, 11 degrees Celsius, wind of 30 knots and the longest take-off distance, being summer 31 degrees Celsius, nil wind, in an amphibious Twin Otter.

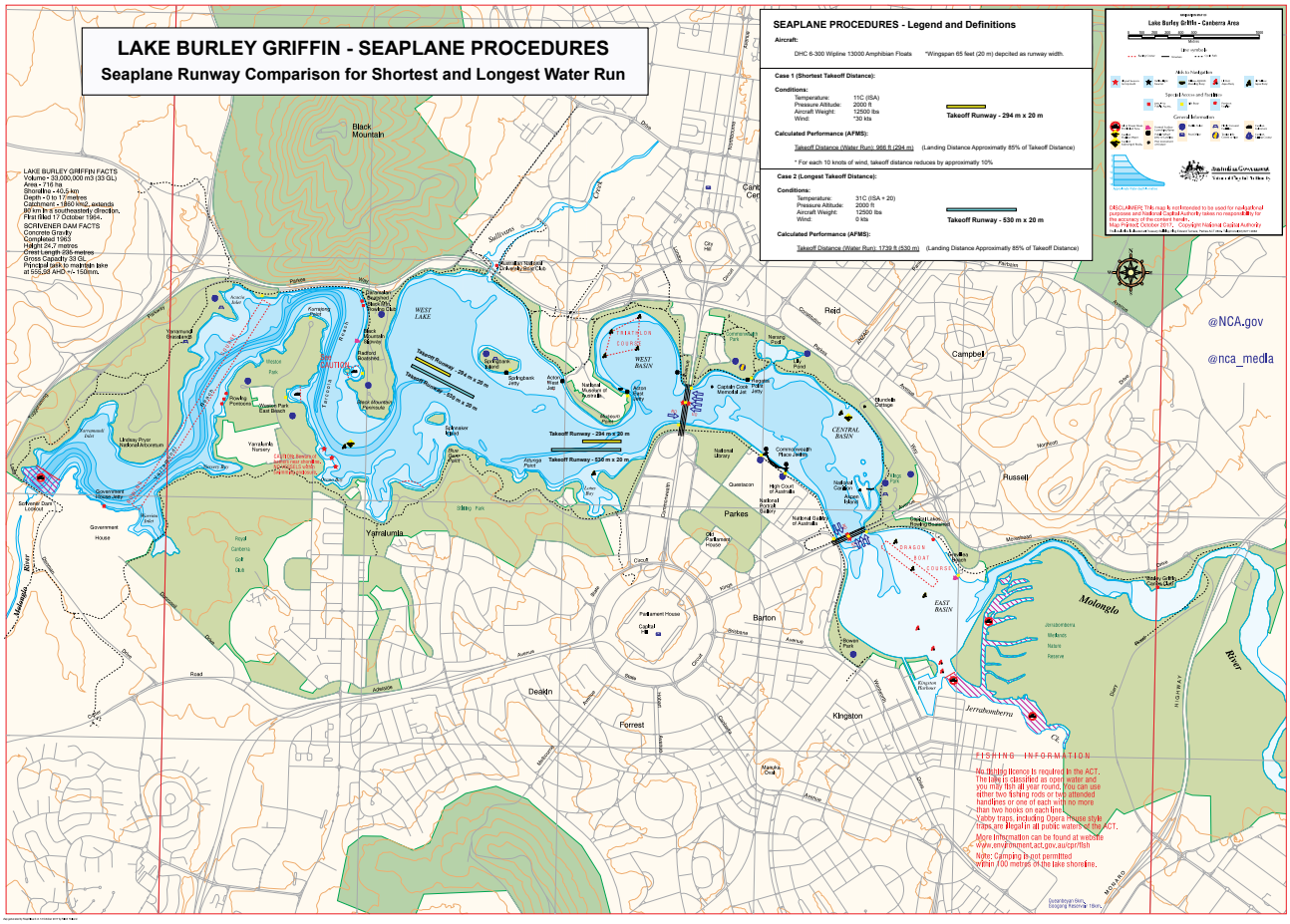


Figure 3: Shortest take-off distance required (supplied by Sydney Seaplanes)

Landing

Seaplane landings are not markedly different from landings in a regular wheeled aircraft.

The landing phase of the flight presents minimal collision risk. On approach the pilot has an excellent view of the landing area: water users such as swimmers and kayaks that can be very difficult to see from a boat are usually very visible from the air. The pilot must select a landing area well away from conflicting traffic, and always has the option of 'going around' if sudden threats emerge. As the seaplane can decelerate quickly, landing runs are short.

Taxiing

Seaplane pilots are trained to avoid water spray from hitting the propeller (which causes substantial propeller wear), and thus seaplanes generally taxi very slowly (<5 knots), with the engine at idle power. Directional control is achieved via retractable water rudders fitted to the rear of the pontoons that are lowered when in the water at low speed and allow the pilot to steer using the air rudder pedals. In this configuration seaplanes are about as manoeuvrable as other power boats, and are docked in much the same way.

Docking

A seaplane docks in much the same manner as a boat. However, as seaplane floats are generally of much more fragile construction than boats, it is imperative that heavy contact with a dock is avoided whilst docking, as significant damage can result.

Public safety

Seaplanes have an ability to slow rapidly, and high capacity to visually identify risks on landing. Australian examples of where this occurs includes the many landings and take-offs completed in high traffic areas of Sydney Harbour, the Whitsundays, and Port Phillip Bay in Melbourne.

Normal rules of the air and operational procedures would apply for flights in controlled airspace and for operations at a controlled airport. Any issues relating to commercial arrangements for the use of Canberra Airport by an operator are a matter for the operator and the airport.

Normal rules of the air and local procedures for an airport will apply to any aircraft flying over certain areas. Under civil aviation regulations, an aeroplane is not permitted to operate at an altitude below 500 feet except in the course of take-off or landing.

A risk and safety policy surrounding seaplane operations on Lake Burley Griffin would be required from any operator by the NCA. The policy should include all aspects of the seaplane operation along with any public safety requirements for access to a jetty during take-off and landing, guidelines for other lake users concerning the safety zones around moving aircraft on the water and the process for safe refuelling of the aircraft.

CASA would also undertake normal surveillance and audit of seaplane operations. CASA undertakes this for any licensed aircraft operator to ensure safety standards are being met.

Australia was one of the first countries in the world to have a State Safety Programme (SSP)[2] consistent with International Civil Aviation Organisation (ICAO) requirements. The SSP sets out Australia's key safety principles and how aviation safety in Australia is managed, with a focus on safety systems. Australia's aviation agencies and the aviation industry have significant roles to play in delivering quality safety outcomes.

The SSP is supported by the establishment of an Australian Air Traffic Management (ATM) Plan[3]. The ATM is defined by the ICAO as the *'dynamic, integrated management of air traffic and air space – safely, economically and efficiently'*. The Australian Government expects that Airservices regard the safety of air navigation as the most important consideration in performing its functions.

The SSP is the result of work by a range of Australian Government agencies including the Department of Infrastructure, Transport, Regional Development and Communications, Airservices Australia, Australian Transport Safety Bureau, Department of Defence, Bureau of Meteorology, Australian Maritime Safety Authority and Civil Aviation Safety Authority.

[2] Australian Government, Australia's Aviation State Safety Programme, https://www.infrastructure.gov.au/aviation/safety/ssp/index.aspx, accessed 24 March 2021

[3] Australian Government, Australia's Air Traffic Management Plan, https://www.infrastructure.gov.au/aviation/atmpolicy/air_traffic_management_plan/index.aspx, accessed 24 March 2021

Weather implications

Implications of adverse weather conditions will vary depending on the type of seaplane operation (for example, regularly scheduled passenger commuter transport or charter operations) and the type of aircraft.

For scheduled passenger services, the identification of a suitable 'alternate' aerodrome is required. CASA is not involved in the specific assessment of these activities.

Sydney Seaplanes have advised that if weather conditions involve wind over 30 knots or visibility less than 5 kilometres (due to rain/mist/fog) seaplanes (depending on aircraft) will land at Canberra Airport, not Lake Burley Griffin. Passengers would be made aware of this possibility when purchasing their tickets.

Under Visual Flight Rules (in the charter category) there are no alternative requirements, as there is an overarching requirement for flights to be conducted in Visual Meteorological Conditions (at least 5 kilometres visibility and a 1000 foot ceiling).

6.2 Interaction with other lake users

Lake Burley Griffin is a key asset in the National Capital, and is used extensively by a range of users. This ranges from individuals utilising the Lake waters for peaceful recreation such as swimming, kayaking and stand-up paddle boarding, to active, competitive sporting events. Prominent users include organisations such as the Canberra Yacht Club, rowing groups, dragon boating clubs, and triathlon clubs.

Many organisations provide sporting opportunities primarily at the local level, however Rowing Australia utilise the world-class training opportunity offered by Lake Burley Griffin. Rowing Australia is the national governing body for the sport of rowing, and use of the Lake is critical for Australia's top athletes in the sport.

The NCA is conscious that any new activities and interactions between different activities must be safely managed. A number of lake users have submitted to the NCA initial advice outlining their current operations and concerns in relation to how seaplanes landing, taking-off and taxiing on the Lake may impact their operations. Concerns include:

- safety risks, for example risk of collision between seaplanes and water craft
- significant disruption to competitive events such as sailing regattas
- disruption to school holiday programs
- a reduction in the number of people utilising lake-based programs due to safety concerns or inability of clubs and organisations to undertake normal programming, with subsequent impacts on financial viability of organisations or clubs
- seaplane services may not have long term viability, however by the time seaplane operations cease, lake-based clubs and organisations may have ceased operating.

Although the Lake is a different water body with different characteristics to Rose Bay or locations on the south coast, the NCA has considered how seaplanes interact with other users in these locations.

Like Lake Burley Griffin, Rose Bay hosts a wide range of aquatic users. Woollahra Sailing Club conducts competitive and non-competitive sailing programs, including adult learn to sail programs, windsurfing lessons, and school holiday programs. Paddle boards and kayaks are available to hire from commercial operators and private individuals may also access the bay. Ferry services operate to and from the bay, and a range of watercraft are moored in its waters.

Similarly, South Coast Seaplanes share the confined waters of the Moruya River frequently with dragon boats, kayaks, and have also coordinated water use with hundreds of other vessels during fishing competitions, annual boat parades in Narooma, and stand up paddle board races.

To help manage shared use and safe operation in Rose Bay, NSW Roads and Maritime Services have prepared the 'Best practice guide for the use of Rose Bay: Safety Guidelines for seaplanes and vessels'. The best practice guide was developed in consultation with CASA and seaplane operators in the Rose Bay area, and sets out operating areas and procedures for certain activities.

The best practice guide is intended to be followed by everyone using the waterway in Rose Bay, including pilots and boaters, and it includes advice concerning staying clear of and safety zones around seaplanes, manoeuvring, rights of way, take-off and landing. Maps are included in the guide that set out seaplane operating areas, and general take-off and landing areas based on different wind directions.

Prior to a decision being made to allow seaplane operations on the Lake, the NCA would explore the preparation of a similar guide to manage user expectations and guide lake use in the vicinity of areas where seaplanes are permitted to land, take-off and taxi.

The NCA has in the past, been approached from operators of different activities. This discussion paper may also reignite the question about what are and aren't suitable activities on the Lake. Any changes to the permitted uses will need to be approved by the Minister and amended in the *Lakes Ordinance 1976*.

6.3 Heritage

The NCA has statutory obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to prepare Heritage Management Plans for places it owns or manages that have heritage values.

The NCA is responsible for 20 listed heritage places, 18 are on the Commonwealth Heritage List and two are on the National Heritage List. There are also four places that the NCA is responsible for that have been assessed to have heritage values but are not listed. These places are managed in accordance with heritage management principles set out under the EPBC Act.

'Lake Burley Griffin and Adjacent Lands' is one place that has been nominated to the Commonwealth Heritage Listing, however a decision has not yet been made. The NCA has prepared a Heritage Management Plan (HMP) for 'Lake Burley Griffin and Adjacent Lands' to help conserve and protect the values of the place, and the NCA manages the nominated area as if it has formal heritage status.

In January 2021, the Department of Agriculture, Water and the Environment invited public comment on the proposal to list 'Lake Burley Griffin and Adjacent Lands', with consultation concluding in late February 2021. The Australian Heritage Council is responsible for assessing the nominated place and has committed to doing so in 2021. A recommendation will then be made to the Minister for the Environment. The final decision on listing is made by the Minister.

The nominated area covers approximately 6640 hectares including:

- Lake Burley Griffin bounded by the entrances of the Molonglo River, Jerrabomberra Creek and Sullivans Creek, and Scrivener Dam
- Springbank and Spinnaker Islands (the Carillon is listed separately on the Commonwealth Heritage List)
- Scrivener Dam
- Commonwealth and Kings Avenue Bridges
- Stirling Ridge, Stirling Park, Attunga Point, Yarramundi Grasslands, Roman Cypress Hill and the Lindsay Pryor Arboretum.

The significance of the Lake Burley Griffin area is summarised as follows:

> *The Lake Burley Griffin area possesses significant historical, rarity, research, representative, aesthetic, creative, social and associative heritage values. The lake is valued highly by communities for its landmark value, as a symbol of Canberra and as an iconic cultural landscape, which for many is a symbol of local identity. Completed in 1964, Lake*

Burley Griffin is an essential part of what defines Canberra, and an essential component of the Griffin plan for a lake to link and unify the axis and vistas of the plan to the underlying landform of the place.

The lake is a unique and creative aspect of Australia's most successful urban plan, which is highly valued by communities for its recreational uses and aesthetic qualities. The lake is an outstanding successful engineering and technical achievement which underpins the success of its creative and aesthetic qualities.

The Lake Burley Griffin and adjacent lands is important for its association with the creation of the national capital and subsequent phases of national development. It reflects two key periods of urban design: the City Beautiful / Garden City discourses (associated with the design of the lake); and the later discourses of International Modernism, associated with its construction, its edge treatments and features, including the fish-belly flap gates of Scrivener Dam and the bridges. The lake also has links to Canberra's history including the workers of the temporary Westlake settlement and the construction of the first sewer infrastructure for the capital.

The lake is associated with important individuals involved in the creative and technical aspects of the design and construction of the lake, such as Walter Burley Griffin, Marion Mahony Griffin, Charles Scrivener, John Sulman, Charles Weston, Lindsay Pryor, Sir William Holford, Dame Sylvia Crowe, Richard Clough, Peter Harrison, Trevor Gibson and John Overall. Roman Cypress Hill and the Lindsay Pryor Arboretum are sites within the nominated area which are associated with the work of Griffin and Pryor. It possesses research potential relating to the study of the history and development of urban design and key practitioners in this area.

The nominated area supports natural areas valued as remnants of the pre-settlement environment and an aquatic ecosystem which is valued by the community. This includes habitats for threatened ecological communities and species: yellow box-Blakely's red gum grassy woodland, temperate natural grasslands, the Button wrinklewort, striped legless lizard, Perunga grasshopper and the Murray Cod. The occurrence of threatened ecological communities and species also provide some opportunities for scientific research.

The Indigenous archaeological sites in the nominated area are valued highly by Indigenous communities as evidence of their traditional occupation of this area. These sites also possess research potential for contributing to an understanding of past Indigenous lifeways in the area. It possesses significant scientific research value and values as part of Indigenous tradition, which also meet the threshold for Commonwealth Heritage Listing.

The Central Basin of Lake Burley Griffin is also part of the 'Parliament House Vista' Commonwealth Heritage place.

In 2020, the NCA commissioned a heritage impact statement to assess the potential impacts on the heritage values of Lake Burley Griffin and the Parliament House Vista. The outcomes of this commission are summarised in section 4.3 of this paper and will be considered as part of the NCA's decision-making process.

6.4 Noise

All civil aircraft operating in Australia are required to comply with the *Air Navigation (Aircraft Noise) Regulations 2018* (the Regulations) regardless of size, purpose or ownership.

Responsibility for regulatory compliance rests with the aircraft operator/owner to ensure their aircraft meets the Regulations. Airservices works with partners in the aviation industry to minimise the impacts of aircraft noise on communities around airports [4].

The Regulations require all aircraft operating in Australian airspace to comply with noise standards and recommended practices introduced under the

[4] http://aircraftnoise.com.au/

Convention on Civil Aviation. These standards are set out in the International Civil Aviation Organization's (ICAO) document Annex 16, Environmental Protection - Volume I. Aircraft verified as complying with the ICAO standards are issued with a Noise Certificate. Under the Regulations aircraft without a noise certificate and those that have been noise certificated at Annex 16 Chapter 2 noise standards, are not permitted to operate in Australia. The Regulations carry strict penalties for operating an aircraft without a noise certificate.

6.5 Infrastructure and refuelling

Some additional infrastructure will be required for seaplane operations on Lake Burley Griffin. Infrastructure requirements include access to a dock or jetty, mooring, passenger facilities (for example, National Museum of Australia café if mooring occurred at Acton Peninsula), stairs, support vessels and emergency support.

A floating pontoon and walkway designed to accommodate a variety of aircraft types would need to be added to the end of the existing jetty. Unlike a boat pulling alongside a pontoon, a seaplane has wings which overhang the pontoon's surface. Therefore the floating pontoon would ideally be 10m x 10m. The pontoon would be fendered above and half below the waterline and with cleats for tying the seaplane up to. The surface of the pontoon needs to be flat. Any pilings to secure the pontoon should be next to the bottom of the walkway. Nearby signage for other lake users alerting them to the presence of seaplanes operating in the area would be required. Access to the pontoon would be restricted during seaplane operation periods.

Both Sydney Seaplanes and South Coast Seaplanes have advised that should refuelling be required it will be by mobile certified refuelling trailer (refer Figure 4 for an example fuel trailer). The safe refuelling procedures and possible risks associated would need to be incorporated in the risk and safety policy surrounding seaplane operations on the Lake.

No maintenance of seaplanes shall occur on the Lake, except those works that are unavoidable and essential for safe operation of the seaplane.

Figure 4: Example of a fuel trailer

6.6 Visibility

Seaplanes will be visible in the air over and around Lake Burley Griffin in the lead-up to landing and following take-off. An aircraft's time on the water for take-off and landing depends on four factors:

1. Wind (variable) - stronger = shorter take-off.
2. Aircraft weight (variable) – heavier = longer take-off.
3. Temperature (variable) – hotter = longer take-off.
4. Height above sea level of the Lake (fixed) – higher = longer take-off.

The type of aircraft used in operations will also impact how long a seaplane may be visible, particularly at lower altitudes. Smaller aircraft require shorter take-off and landing distances. Figures 5 and 6 were prepared by Sydney Seaplanes and show the heights in the yellow boxes being the heights above the ground when departing. The heights in the green boxes are heights above the ground when arriving (approach). These figures are specific for the aircraft proposed to be used and are provided here as examples only.

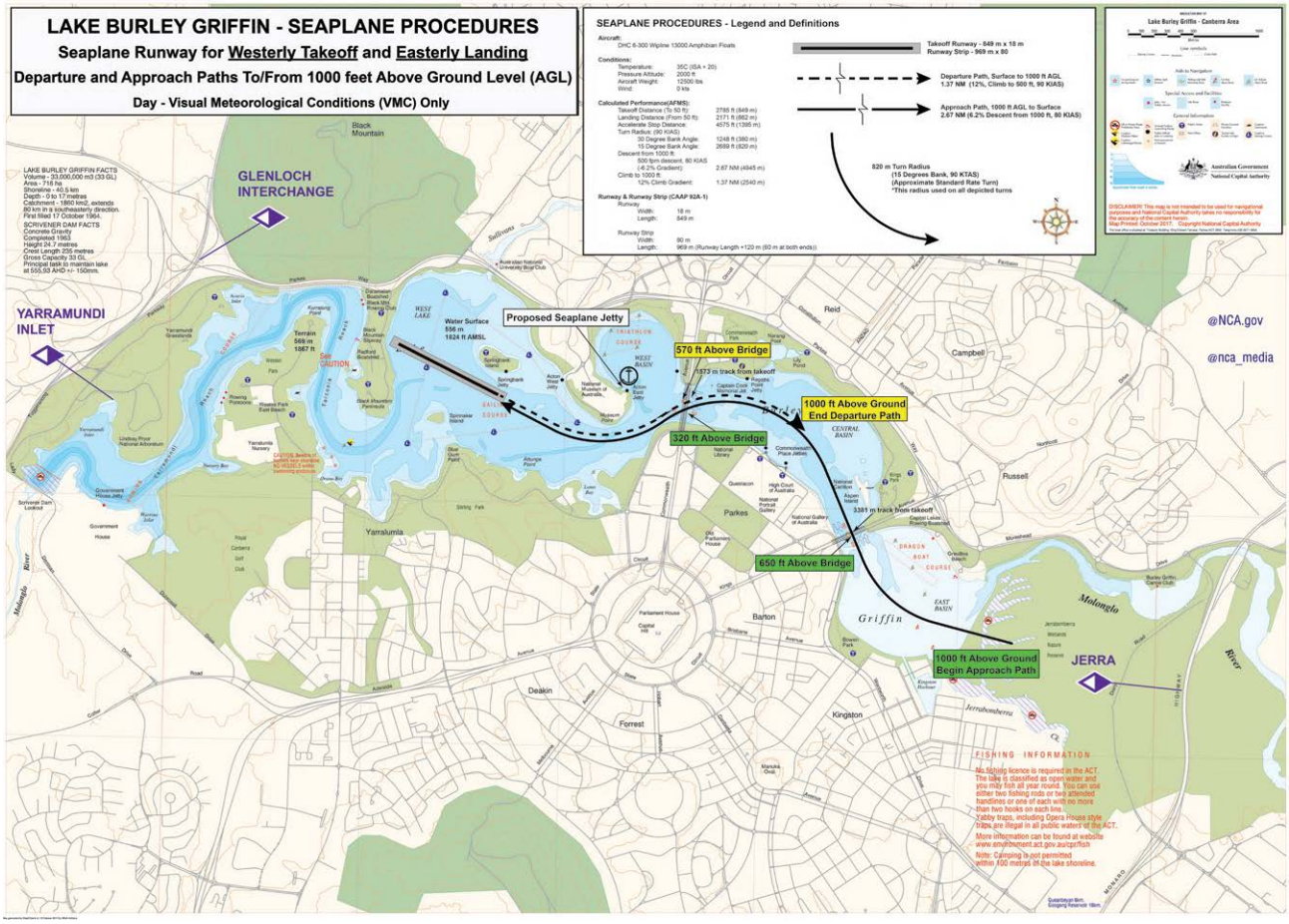


Figure 5: Seaplane runway for westerly landing and easterly take-off

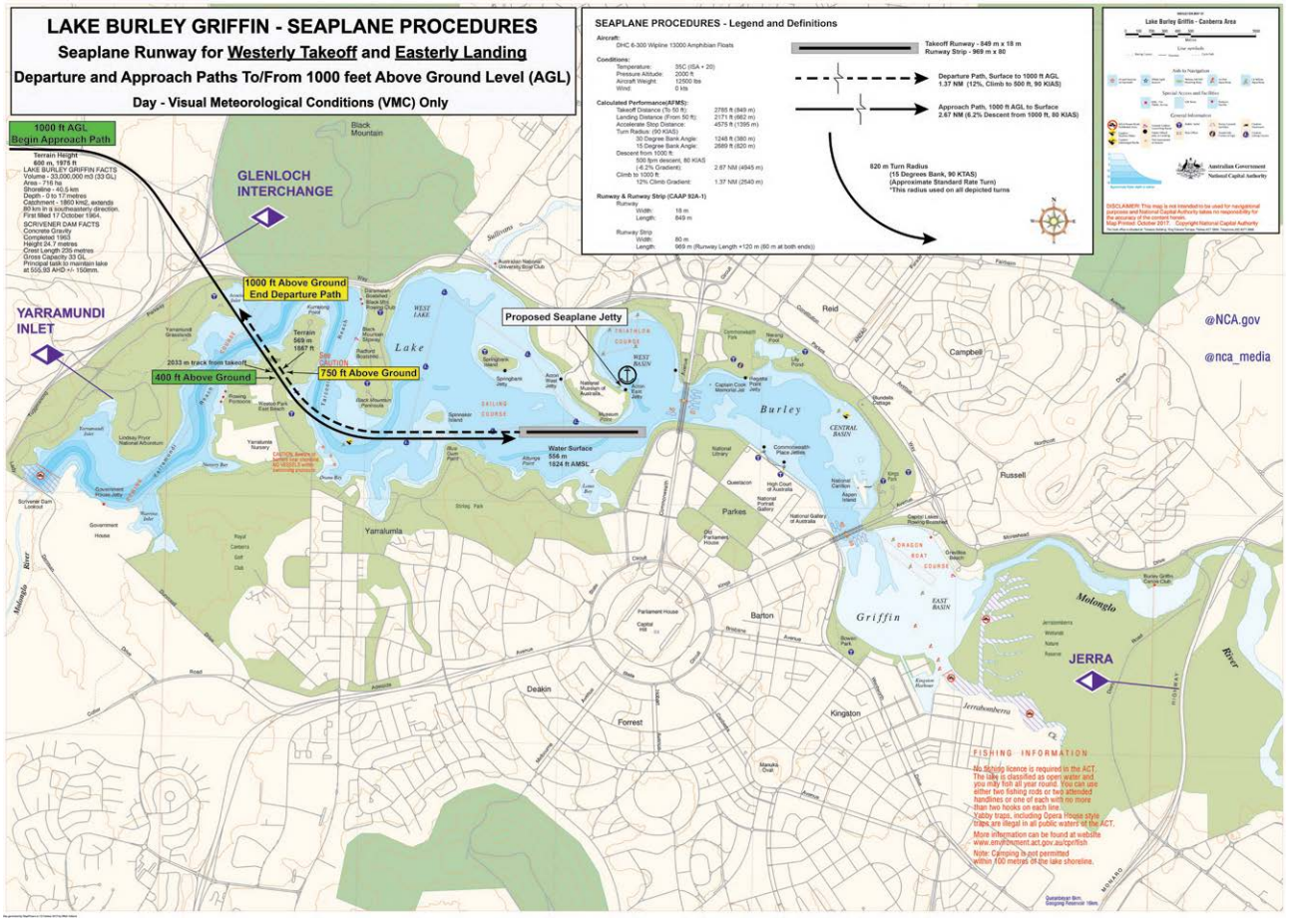


Figure 6: Seaplane runway for westerly take-off and easterly landing

6.7 Natural Environment

Seaplanes generally have a minimal impact on the aquatic environment. Characteristics of seaplanes include:

- A seaplane's propeller is entirely above the water and thus does not disturb sediments or aquatic life
- The exhaust from seaplane engines discharges well above the water surface and dissipates in the air, unlike most boat exhausts which discharge directly into the water
- Due to their shallow draft, particularly at speed, seaplanes typically generate no more than a 7-10cm wake. This does not contribute significantly to shoreline erosion or disturb other water users
- Seaplanes do not store or discharge oily bilge water or sewage
- Seaplanes do not discharge fuel and oil into the water as many other powered watercraft do
- Seaplanes are not treated with toxic anti-fouling paints.

Because of these characteristics, seaplanes are often used extensively in sensitive environments, for example for wildlife monitoring purposes and water quality sampling in remote wilderness.

Seaplanes are often licensed for operation in Australian aquatic environments. Sydney Seaplanes has been issued with a NSW Office of Environment and Heritage licence for operations into the Ku-Ring-Gai Chase National Park for the last eight years. South Coast Seaplanes has operated in the Batemans Marine Park under permit since 2014. As noted in section 5 of this paper, seaplanes are also permitted to operate on the Great Barrier Reef, with various permits for these activities issued by the Great Barrier Reef Marine Park Authority.

6.8 Drones

The Civil Aviation Safety Authority (CASA) has implemented new policy and procedures to improve drone safety[5] and produced a user guide for the operation of commercial drone operations which summarises the regulatory environments for drone operations contained with Part 101 of the *Civil Aviation Safety Regulations 1998* (CASR) and the associated Part 101 *Manual of Standards* (MOS).

The National Triangle including Central Basin of Lake Burley Griffin falls within a distance of 3 nautical miles (NM) of the Canberra Airport and is within an area in which drones normally must not be flown.

Recreational drone users should have regard to and meet any applicable regulations concerning recreational drone use[6].

Sydney Harbour and surrounding areas are also a no drone zone due to the helicopters and seaplanes that have permission to fly there. These areas are restricted airspace under Commonwealth Law. If seaplanes are approved to land on Lake Burley Griffin the NCA will need to determine whether no fly zones extend into areas potentially utilised for seaplane flight paths.

[5] https://www.casa.gov.au/drones/rules/drone-safety-rules

[6] https://www.casa.gov.au/knowyourdrone

7. NEXT STEPS

The NCA is interested in hearing from the local community and national stakeholders, consistent with the NCA's role and responsibility to consider the proposal in the long term interest of the National Capital.

The NCA will consider the feedback received from the community and stakeholders and develop a response to public commentary. The NCA Board will consider the nature of comments, and options for managing issues, before making a decision concerning the future of seaplane operations on the Lake. Further engagement with key stakeholders may also be required.

The NCA will advise those who provide a submission in response to this discussion paper of the decision. The NCA will also post information regarding any decision on the agency's website and on social media.

If a decision is taken to further explore the operation of seaplanes on the Lake, further community engagement describing how the NCA intends to respect issues raised in response to this paper will be undertaken.

Seaplane operators will be required to obtain all necessary approvals before commencing operations. This includes NCA approvals such as a licence to operate on Lake Burley Griffin, Works Approval for any works that may be required (for example, mooring infrastructure or signage) and any other government-required permits.

8. APPENDICES

The following documents are provided as appendices to this paper:

1. Lake Burley Griffin Seaplane Trial: Preliminary Acoustic Assessment
2. Sydney Seaplanes Trial: Preliminary Heritage Impact Advice

NATIONAL CAPITAL AUTHORITY

LAKE BURLEY GRIFFIN SEAPLANE TRIAL

PRELIMINARY ACOUSTIC ASSESSMENT

APRIL 2021

Lake Burley Griffin Seaplane Trial
Preliminary Acoustic Assessment

National Capital Authority

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REV	DATE	DETAILS
1	23/04/2021	Revision after client feedback
0	01/04/2021	Issue

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

This technical report gives a preliminary noise assessment of a seaplane trial with landing, docking and takeoff at Lake Barley Griffin performed on 15 December 2020. WSP undertook measurements at one fixed position during the trial. The ACT Environment Protection Authority undertook measurements at two further locations. This report:

- Summarises the regulatory context of aircraft noise in the ACT
- Summarises the noise survey and measured data
- Presents a review of potentially noise-sensitive receivers nearby the typical flight paths, landing strips and docking locations
- Uses the relatively limited noise measurement data to extrapolate typical seaplane noise levels at these receivers
- Discusses this typical aircraft noise in the context of other neighbourhood noise sources

The following observations were made:

- Typical daytime background noise levels at the measurement locations were around 45 to 50 dBA $L_{F\,90}$ (Table 3).
- This concurs broadly with ACT daytime zone noise standards around 45 to 60 dBA $L_{F\,10}$ in these areas (Table 1).
- From Figure 4.1 it can be noted that specific individual noise events in suburban locations can have short term noise levels in the region of 50 to 70 dBA.
- The predicted maximum (very short term) seaplane noise levels at the closest potentially noise-sensitive locations can be summarised as follows:
  - Overflight maximum sound pressure levels in the region of 45 to 60 dBA $L_{F\,max}$
  - Where audible at all at locations in the vicinity of the landing areas, landing and takeoff maximum sound pressure levels in the region of 50 to 60 dBA $L_{F\,max}$
  - Where audible at all, at the closest locations only, maximum sound pressure levels from taxi and docking manoeuvres in the region 60 to 75 dBA $L_{F\,max}$
- Overflight noise from the seaplane is likely to be audible above background noise at most of the closest locations, but unlikely to be a specific cause of noise disturbance in the general context of neighbourhood activity. This can be noted by overlaying worst-case locations R1 and R7 with typical neighbourhood noise sources in Figure 4.1.
- Landing, taxi, docking, and takeoff noise is likely to be audible above general background noise at locations that closest to these parts of the lake.

It should be noted that:

- The preliminary assessment above assumes typical daytime background and neighbourhood noise sources. Seaplane noise would be more prominent if flights occurred at night.
- All noise levels discussed are **external** to a building. Noise levels inside a building are likely to be:
  - Around 25 to 30 dBA lower than presented inside building with closed windows and no open ventilation paths
  - Around 10 to 15 dBA lower than presented in a residential house with windows opened
- Of course, all seaplane noise levels will be lower at receiver locations that are further from the areas on Lake Burley Griffin where the planes are active.

It should be noted that this entire assessment has been extrapolated from measurements made during a single seaplane flight. This introduces a great deal of uncertainty to the assessment and all findings or observations should be taken as preliminary only.

1 INTRODUCTION

This technical report gives a preliminary noise assessment of a seaplane trial at Lake Barley Griffin performed on 15 December 2020. This is support of a white paper being prepared on this topic by the National Capital Authority (NCA).

WSP undertook measurements at one fixed position during the landing, taxi, docking and takeoff of a seaplane during the 15 December 2020 trial. The ACT Environment Protection Authority undertook measurements at two further locations.

This report:

- Summarises the regulatory context of aircraft noise in the ACT
- Summarises the noise survey and measured data
- Presents a review of potentially noise-sensitive receivers nearby uses near to the typical flight paths
- Uses the relatively limited noise measurement data to extrapolate typical seaplane noise levels at these receivers
- Discusses this typical aircraft noise in the context of other neighbourhood noise sources.

1.1 NOISE REGULATION CONTEXT

Note 1 to Part 3 of the ACT Environment Protection Regulation 2005 (the Regulation) states that "*The Act does not apply to noise made by— {…} a Commonwealth jurisdiction aircraft"*.

A Commonwealth jurisdiction aircraft refers to an aeroplane, helicopter, or other machine capable of flight that is in the possession or control of the Commonwealth or an authority of the Commonwealth, with the exception of defence aircrafts.

As such, noise generated by the seaplane aircraft is not assessed as a cause of environmental harm in the ACT. It is an unregulated noise source.

However, the NCA acknowledges that noise from these vehicles has the potential to cause disturbance, and has requested a preliminary noise assessment, intended to support the overall seaplane trial study.

2 NOISE-SENSITIVE RECEIVERS

The majority of the land areas below and surrounding the seaplane flight path are nature reserves and parks. The flights are unlikely to have a significant impact on areas of this type due to the transient nature of the noise source, and of its human occupants. Noise impact to fauna has not been assessed in this review, similar to road and rail assessments.

In identifying potentially noise-sensitive receivers, areas with permanent occupants, and more specifically, with residential receivers are the focus of this review. Identified sensitive receivers are summarised in Two docking locations have been assessed; the dock used during trial which was the former police jetty located at Yarralumla next to the Canberra Rowing Club and the potential future docking location at the Acton Peninsula. Both docking locations are presented on Figure 2.1 and Figure 2.2.

Table 1.

Residential receivers are generally located within ACT/NCA noise zone B, C and G (see the Regulation). It is acknowledged that the noise zone limits are not applicable for seaplane noise in accordance with ACT legislation but are presented together with the receivers for reference.

Potentially noise-sensitive receivers in relation to the flight path are presented on Figure 2.1 and Figure 2.2 labelled 'R', with noise monitoring locations labelled 'NM'.

Two docking locations have been assessed; the dock used during trial which was the former police jetty located at Yarralumla next to the Canberra Rowing Club and the potential future docking location at the Acton Peninsula. Both docking locations are presented on Figure 2.1 and Figure 2.2.

Table 1 Identified sensitive receivers along the seaplane flight path

NOISE-SENSITIVE RECEIVER	DESCRIPTION	LOCATION	NOISE ZONE	NOISE ZONE LIMIT(2)	
				DAY(3)	NIGHT(4)
R1	Residential suburb	Yarralumla Block 2 Section 9 (1)	G	45	35
R2	Residential suburb	Yarralumla Block 2 Section 24 (1)	G	45	35
R3	Embassy	Yarralumla Block 24 Section 44 (1)	C	55	45
R4	Hotel	Yarralumla Block 1 Section 40	C	55	45
R5	Residential and art precinct	City Block 6 Section 106 (1)	B2	60	50
R6	Residential suburb	Barton Block 6 Section 19 (1)	G	45	35
R7	Mixed use zone	Kingston Block 1 Section 51 (1)	F	55	45
R8	Apartment building	Reid Block 1 Section 33	C	55	45
R9	Residential suburb	Campbell Block 27 Section 19 (1)	G	45	35

(1) Location selected deemed representative for all residential receivers in area

(2) Environmental Protection Policy, ACT (NEPP) states that the limits are to be measured as $L_{A10\,T}$, where 'T' is not less than 5 minutes or greater than 15 minutes.

(3) Noise standard Monday to Friday: 7am - 10pm; Sunday and public holidays: 8am - 10pm

(4) Noise standard Monday to Friday: 10pm – 7am; Sunday and public holidays: 10pm – 8am

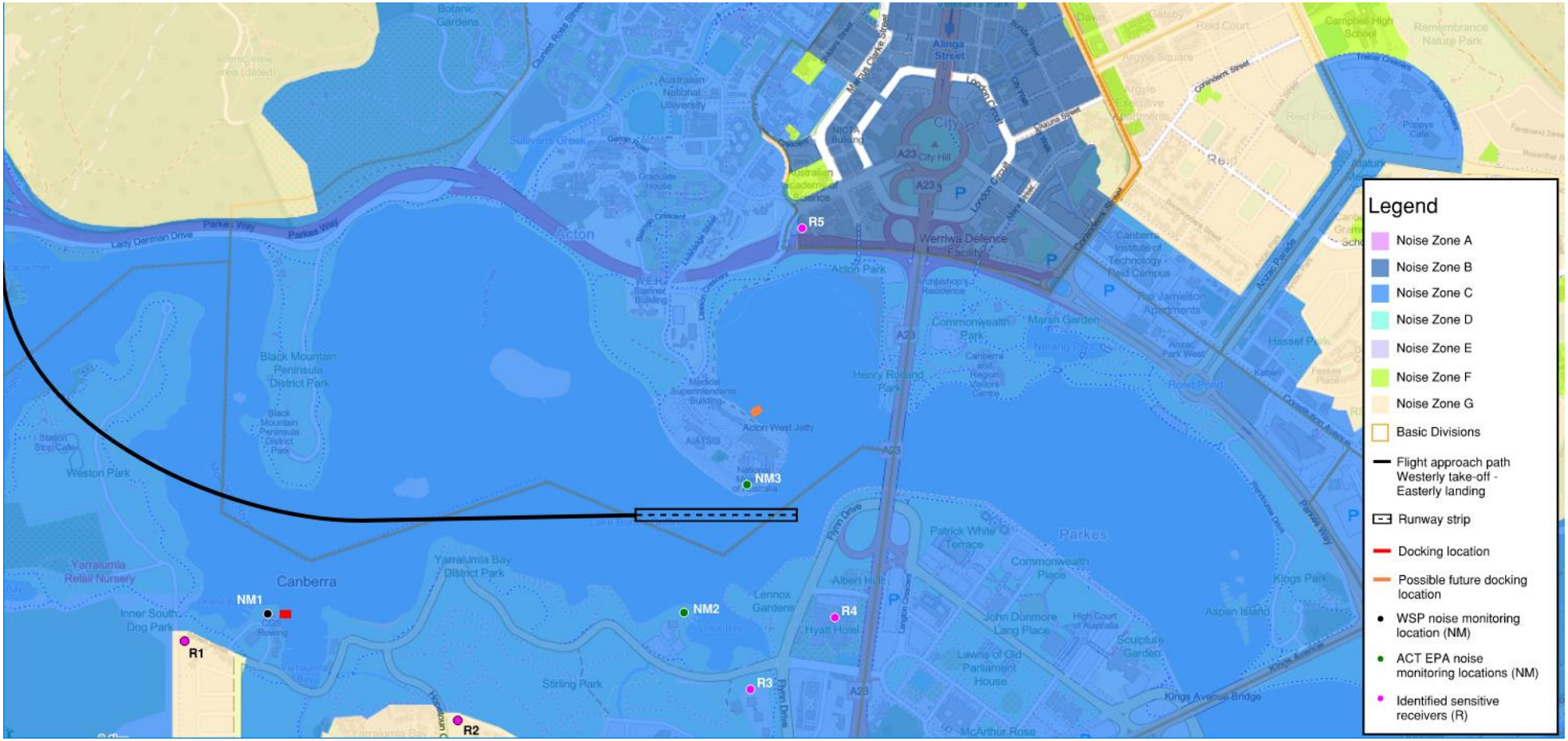


Figure 2.1 Potentially noise-sensitive receivers nearest to seaplane flight path – Westerly takeoff and landing. ACT noise zones shown in coloured overlays.

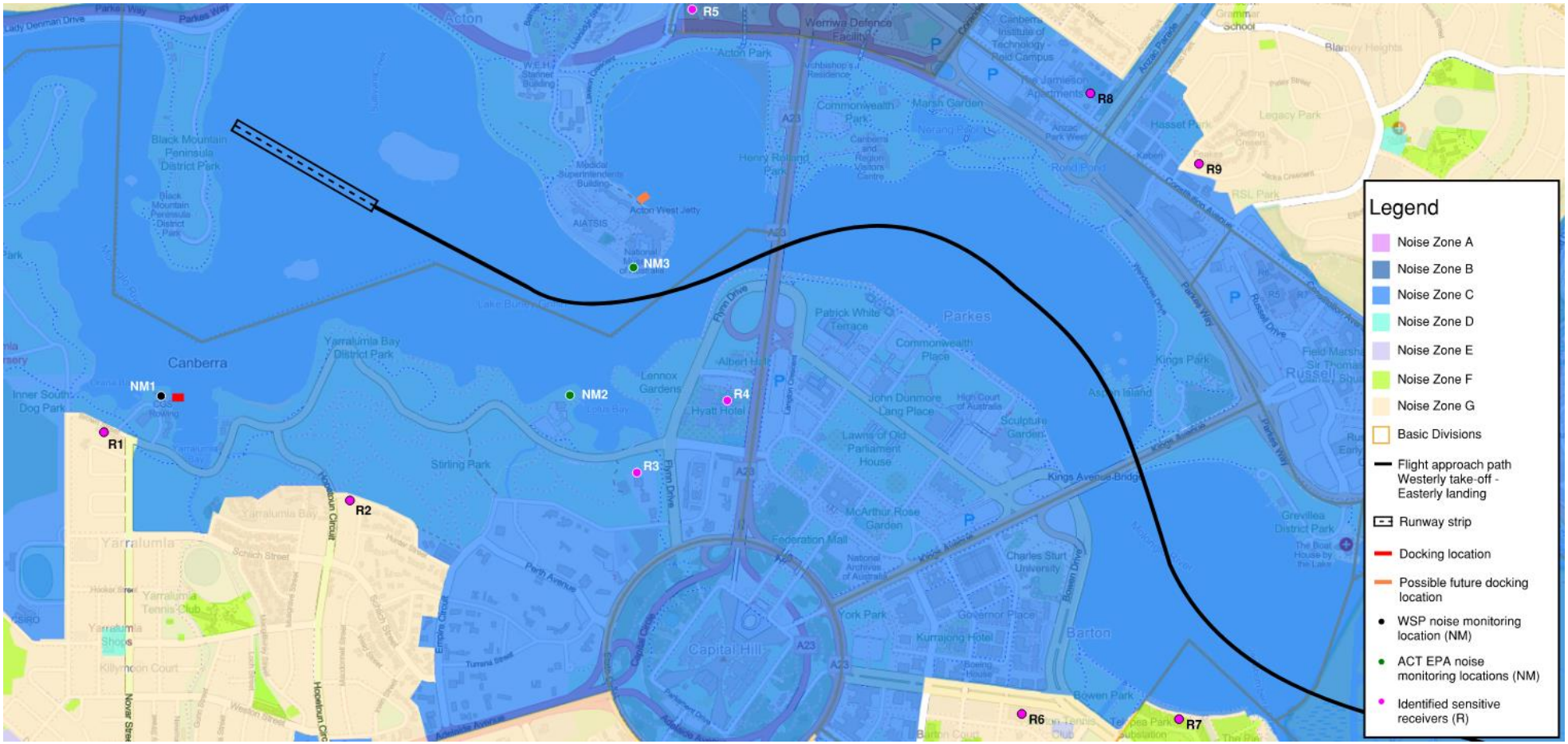


Figure 2.2 Potentially noise-sensitive receivers nearest to seaplane flight path – Easterly takeoff and landing. ACT noise zones shown in coloured overlays.

3 NOISE SURVEY

3.1 PERSONNEL AND LOCATIONS

Measurements were made by WSP at one location, and by the ACT Environment Protection Authority (EPA) at two further locations. These are shown indicatively on Figure 3.1 and can be summarised as follows:

1 Yarralumla Bay, near cenotaph 50 m north of old water police jetty – WSP

2 Lotus Bay, shoreline in front of Canberra Yacht club, 20 m west of Regatta Control centre – ACT EPA

3 Acton Peninsula, southern shoreline, adjacent to temporary compound housing the Canadian Flagpole – ACT EPA

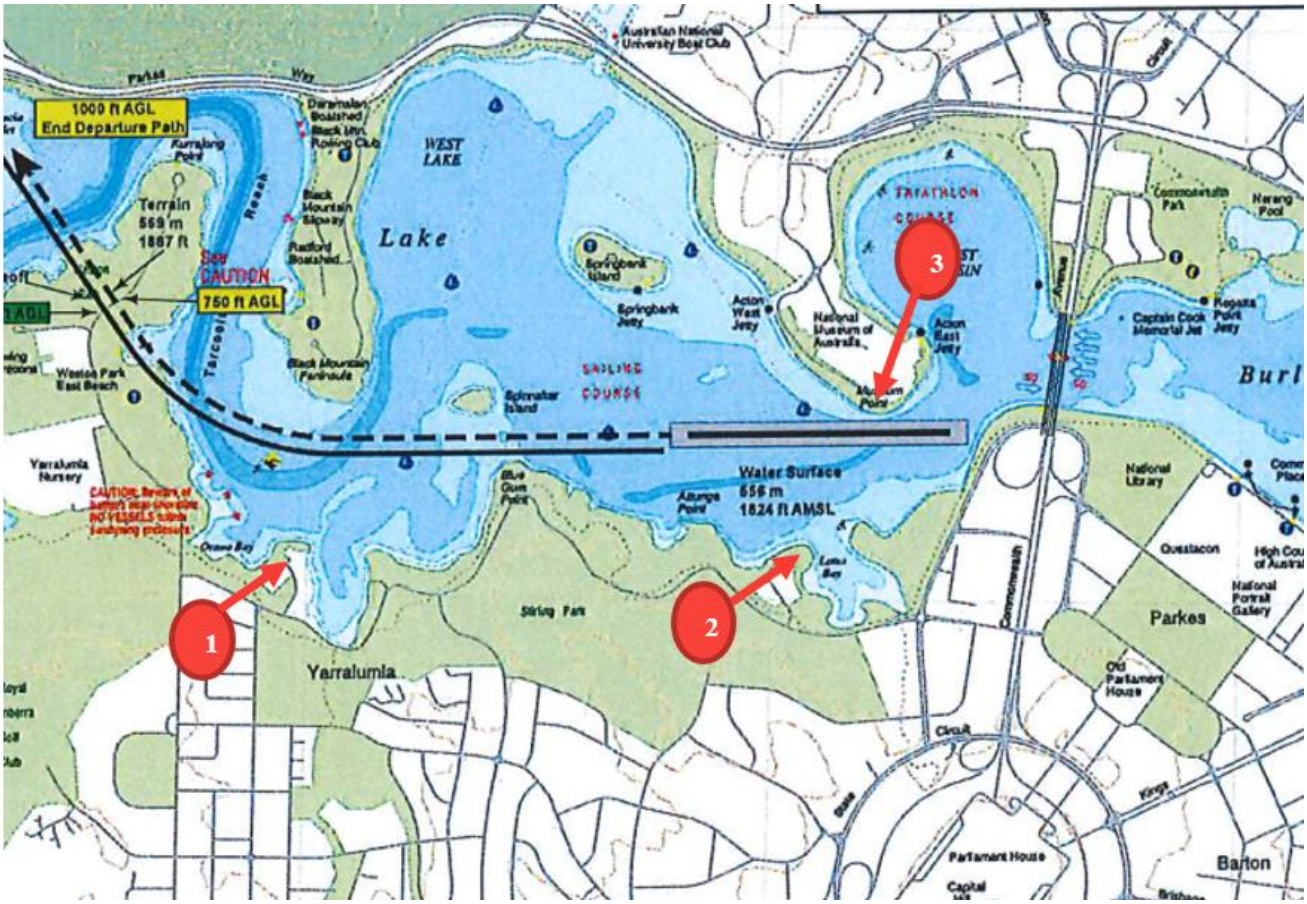


Figure 3.1 Schematic approach path (westerly takeoff easterly landing) diagram indicating approximate noise measurement locations

3.2 EQUIPMENT AND METHODOLOGY

Measurements were made in general accordance with *AS 1055-2018 Acoustics – Description and measurement of environmental noise*. Measurements were carried out in one-third octave bands from 6 Hz to 20 kHz. The microphones were placed at approximately 1.2 metres above the ground and away from any reflective structure. At the time of the survey, weather conditions were warm and dry with low windspeed, conducive to representative noise measurements as per AS 1055-2018. Seasonal changes in temperature are expected to have diminishing effects on the measured noise level.

WSP equipment used during the noise surveys are presented in Table 2. The in-field calibration was checked before and after the measurements and no significant drift (greater than ±0.5 dB) was observed. All equipment used in the survey were calibrated by a NATA-approved laboratory and have current calibration certificates as required in AS1055:2018.

Table 2 WSP noise measurement equipment – noise monitoring location NM1.

EQUIPMENT	MANUFACTURER	MODEL	SERIAL NO.	CALIBRATION DUE
Sound Level Meter	NTi	XL2	A2A-05718-E0	04/11/2022
Acoustic Calibrator	Rion	NC-74	34315156	03/04/2021

3.3 NOISE MEASUREMENT INDICES

Sound can be defined as pressure variations in air that the ear can detect for which the decibel (dB) scale is used to represent the range of sound perceptible to human hearing. When analysing sound, different sound levels and weightings are used. Relevant sound levels to this report can be described as follows:

- L_{max}, presents the maximum sound level reached during, for example, an aircraft passby, illustrated in Figure 3.2.
- L_{10}, presents the noise level exceeded for 10 % of the measurement time period. L_{10} is commonly used to describe the average maximum noise level, illustrated in Figure 3.2.
- L_{eq}, presents the equivalent continuous sound level of the measurement time period and is used as an average noise level, illustrated in Figure 3.2.
- L_{90}, presents the sound level exceeded 90% of a given time interval, illustrated in Figure 3.2. It is typically taken as representative of background noise.
- The A-weighted decibel scale dB approximates the sound sensitivity of humans across the audio frequency spectrum, ranging from low (20Hz) to high (20kHz) frequency sounds. Denoted with an 'A', e.g. L_{Amax} or dB**A**.
- Fast time weighting of sound level meter design-goal time constant which is 0.125 seconds. Denoted with an 'F', e.g. $L_{F\ max}$.

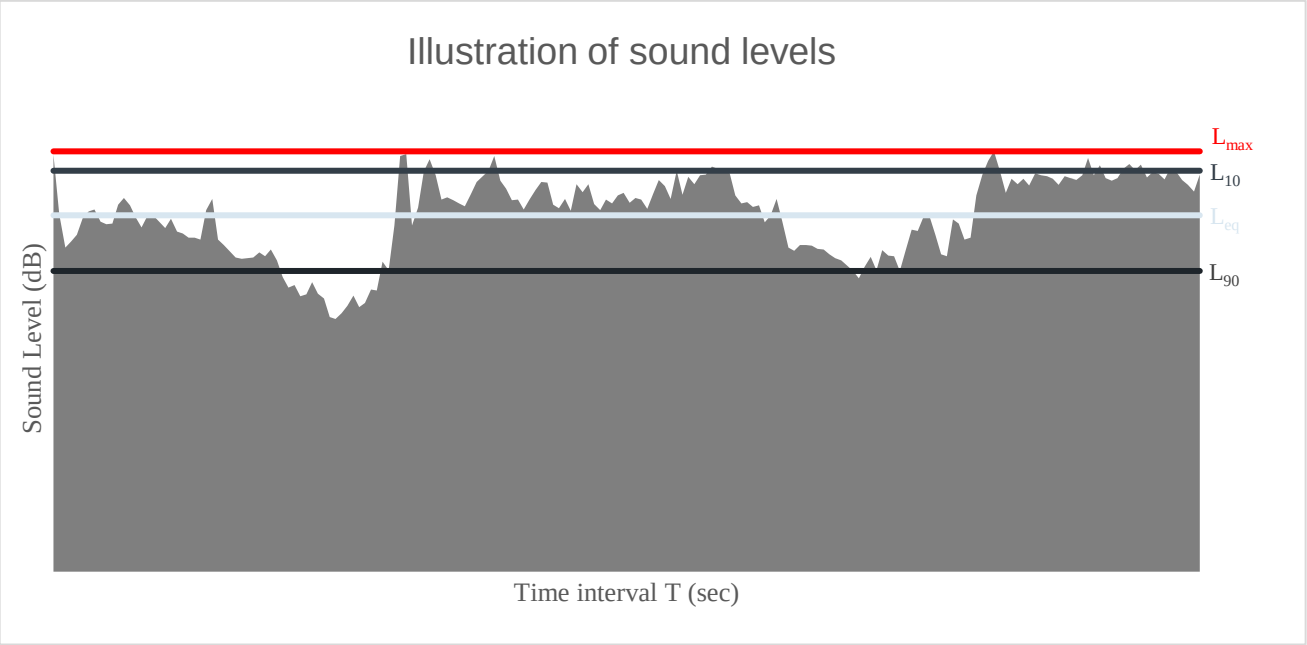


Figure 3.2 Indicative sound pressure variance over time during a noise event, with L_{90}, L_{eq}, L_{10} and L_{max} values indicated

3.4 MEASUREMENT RESULTS

Results from the noise monitoring at the three locations along the flight path are presented in Table 3, and illustrated as time histories in the graphs in Appendix A.

Monitoring location NM1 was attended by WSP, while the other two locations were attended by ACT EPA. Limited data and observations were provided for the EPA locations. Results and assessment implied from data at these locations should therefore be used with modest caution.

From NM1, during landing it was observed highest noise levels were only emitted for very short periods of time (less than 30 seconds). During landing the maximum noise levels were recorded during docking of the seaplane and during takeoff at ignition of the engine.

Table 3 Measured sound pressure levels during seaplane trial

NOISE MONITORING LOCATION	MEASURED MAXIMUM SOUND PRESSURE LEVEL			BACKGROUND NOISE LEVEL
	OVER FLIGHT	LANDING / TAKEOFF	DOCKING MANOEUVRES	
NM1	57 dB $L_{AF\ 10}$(1)	- (2)	82 dB $L_{AF\ max}$	51 dB $L_{AF\ 90}$
NM2	-	75 dB $L_{AF\ max}$	-	44 dB $L_{AF\ 90}$
NM3	-	72 dB $L_{AF\ max}$	-	-

(1) Due to disturbances caused by spectators at the location of the noise monitoring $L_{AF\ 10}$ has been used rather than maximum value.

(2) Noise at the landing strip area was not audible at location NM1.

4 DISCUSSION

4.1 PREDICTED NOISE LEVELS

Table 4 presents estimated maximum noise levels at the locations of the nearest potentially noise-sensitive receivers. These estimates are based on the measured maximum noise levels and estimated distance from the flight path, docking location or landing area. The presented estimates would be external to a residence.

Note that these are maximum noise levels expected at the receiver and will only have very short duration. Of course, noise levels will be lower at more distant receivers.

For each receiver location, the closest overflight path distance, closest docking location or closest landing area has been assumed in estimating distance losses. Screening effects from ground topography or buildings have not been specifically included in this model. Noise levels at more distant receiver locations are likely to be lower than presented in Table 4.

All results are presented as 5 dBA ranges, reflecting the uncertain nature of undertaking this type of prediction using maximum noise levels derived from a one single flight test.

Table 4 Calculated noise level at receivers

RECEIVER REF (SEE SECTION 2)	MAXIMUM SOUND PRESSURE LEVEL ($L_{AF,max}$)		
	OVERFLIGHT	LANDING / TAKEOFF	DOCKING MANOEUVRES
R1	50 to 55 dBA	50 to 55 dBA	70 to 75 dBA
R2	50 to 55 dBA	50 to 55 dBA	60 to 65 dBA
R3	50 to 55 dBA	55 to 60 dBA	60 to 65 dBA
R4	50 to 55 dBA	55 to 60 dBA	60 to 65 dBA
R5	45 to 50 dBA	50 to 55 dBA	60 to 65 dBA
R6	50 to 55 dBA	Unlikely to be audible	Could be faintly audible
R7	55 to 60 dBA	Unlikely to be audible	Could be faintly audible
R8	50 to 55 dBA	Unlikely to be audible	Could be faintly audible
R9	45 to 50 dBA	Unlikely to be audible	Could be faintly audible

4.2 SEAPLANE IN CONTEXT OF NEIGHBOURHOOD NOISE

Figure 4.1 shows the estimated sound pressure level and how the sound level changes over time, at the closest residential receiver and based on the measured noise levels during the seaplane trial.

This information is provided to provide general context against other typical external neighbourhood noise sources; a lawnmower, truck passing by and leaf blower. These ‘typical’ noise sources were measured by WSP in the ACT. Each are represented at their own typical distance from the noise-sensitive receiver; around 15 m for the neighbourhood noise sources, around 300 m from seaplane docking at closest location (R1), and 350 m from overflight path at location (R7).

WSP measurements at location NM1 resulted in clear measurements of noise during taxi and manoeuvring to the jetty. Overflight data was extrapolated from the landing and takeoff part of the trial, which also passed relatively close to NM1.

As noise from the landing area was not audible at NM1, and time histories not provided for monitoring locations NM2 and NM3 (closer to the landing strip), it is only possible to present overflight and docking manoeuvres as a time history.

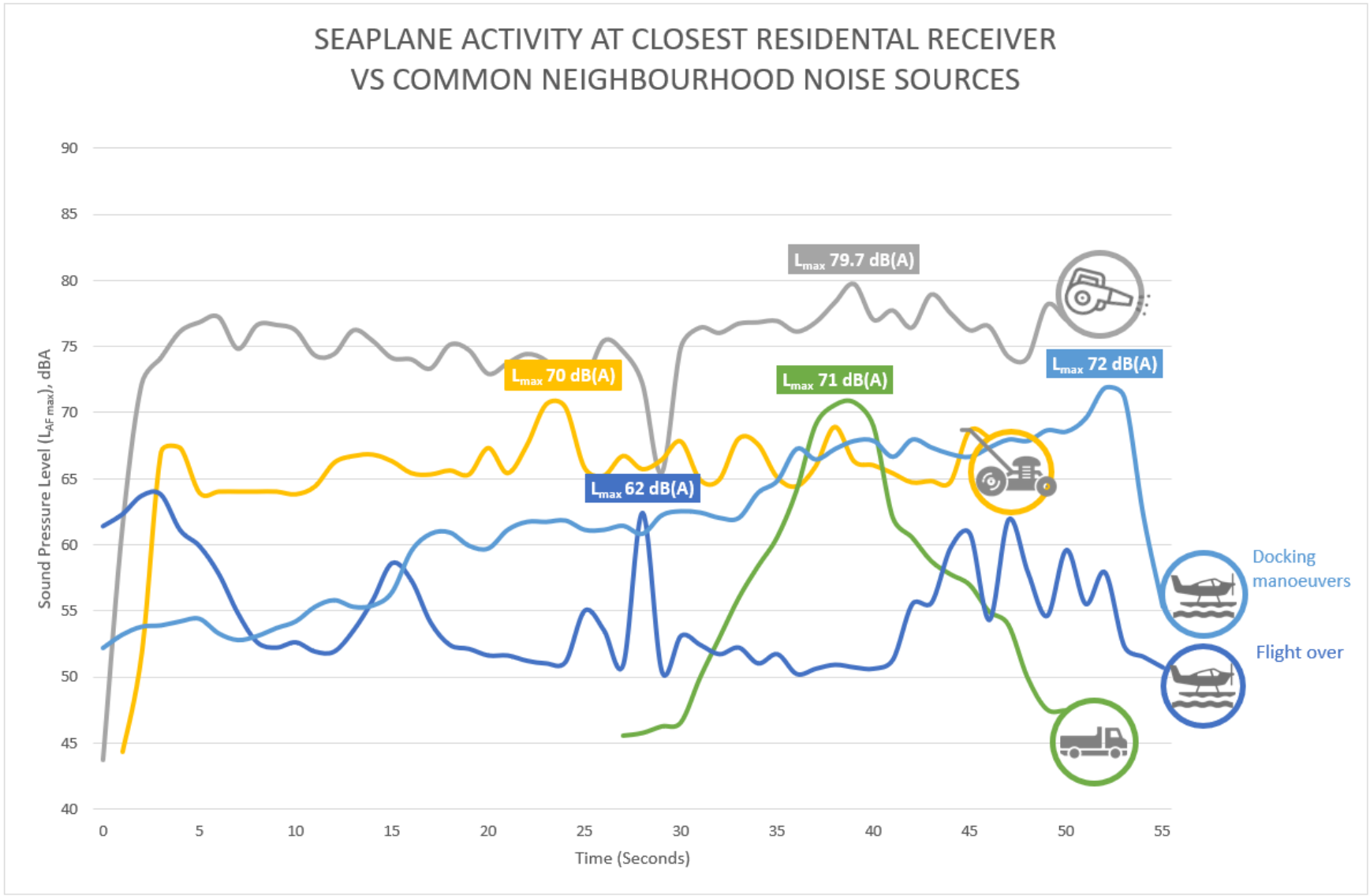


Figure 4.1 Estimated noise level of the seaplane over time at closets location R1 (docking) and R7 (overflight), with respect to other common neighbourhood noise sources

4.3 DISCUSSION

The following observations can be made:

- Typical daytime background noise levels at the measurement locations were around 45 to 50 dBA $L_{AF\,90}$ (Table 3).
- This concurs broadly with the ACT daytime zone noise standards around 45 to 60 dBA $L_{AF\,10}$ in these areas (Table 1).
- From Figure 4.1 it can be noted that specific individual noise events in suburban locations can have short term noise levels in the region of 50 to 70 dBA.
- The predicted maximum (very short term) seaplane noise levels at the closest potentially noise-sensitive locations can be summarised as follows:
  - Overflight maximum sound pressure levels in the region of 45 to 60 dBA $L_{F\,max}$
  - Where audible at all at locations in the vicinity of the landing areas, landing and takeoff maximum sound pressure levels in the region of 50 to 60 dBA $L_{F\,max}$
  - Where audible at all, at the closest locations only, maximum sound pressure levels from taxi and docking manoeuvres in the region 60 to 75 dBA $L_{F\,max}$
- Overflight noise from the seaplane is likely to be audible above background noise at most of the closest locations, but unlikely to be a specific cause of noise disturbance in the general context of neighbourhood activity. This can be noted by overlaying worst-case locations R1 and R7 with typical neighbourhood noise sources in Figure 4.1.
- Landing, taxi, docking, and takeoff noise is likely to be audible above general background noise at locations that closest to these parts of the lake.

It should be noted that:

- The preliminary assessment above assumes typical daytime background and neighbourhood noise sources. Seaplane noise would be more prominent if flights occurred at night.
- All noise levels discussed are **external** to a building. Noise levels inside a building are likely to be:
  - Around 25 to 30 dBA lower than presented inside building with closed windows and no open ventilation paths
  - Around 10 to 15 dBA lower than presented in a residential house with windows opened
- Of course, all seaplane noise levels will be lower at receiver locations that are further from the landing areas on Lake Burley Griffin, and the flight paths.

It should be noted that this entire assessment has been extrapolated from measurements made during a single seaplane flight. This introduces a great deal of uncertainty to the assessment and all findings or observations should be taken as preliminary only.

5 CONCLUSION

This technical report gave a preliminary noise assessment of a seaplane trial with landing and takeoff at Lake Barley Griffin performed on 15 December 2020. WSP undertook measurements at one fixed position during the landing, taxi, docking and takeoff of a seaplane during the 15 December 2020 trial. The ACT Environment Protection Authority undertook measurements at two further locations. This report:

- Summarises the regulatory context of aircraft noise in the ACT
- Summarises the noise survey and measured data
- Presents a review of potentially noise-sensitive receivers nearby the typical flight paths, landing strips and docking locations
- Uses the relatively limited noise measurement data to extrapolate typical seaplane noise levels at these receivers
- Discusses this typical aircraft noise in the context of other neighbourhood noise sources

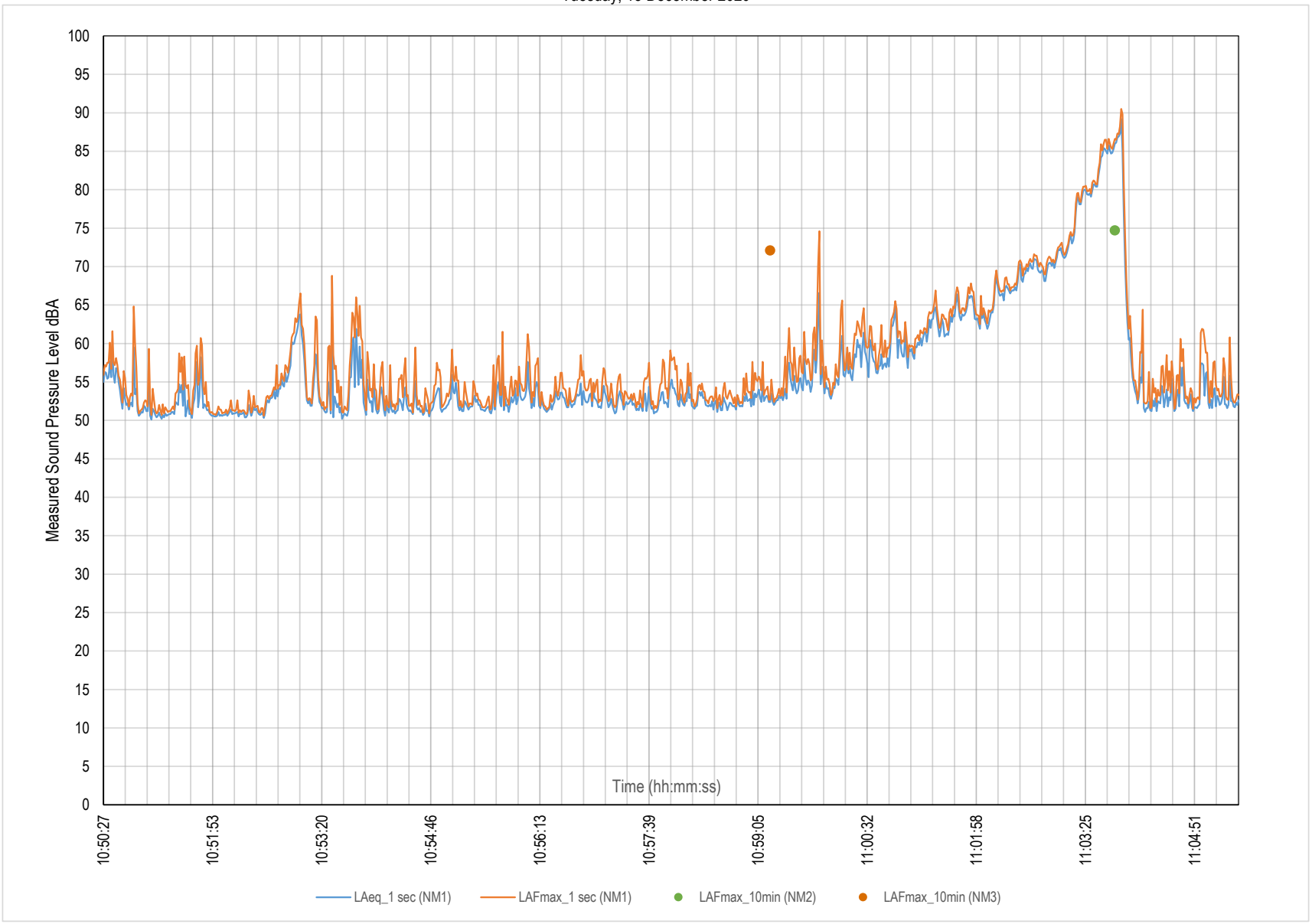
It should be noted that this entire assessment has been extrapolated from measurements made during a single seaplane flight. This introduces a great deal of uncertainty to the assessment and all findings or observations should be taken as preliminary only.

APPENDIX A

NOISE MEASUREMENT TIME HISTORIES

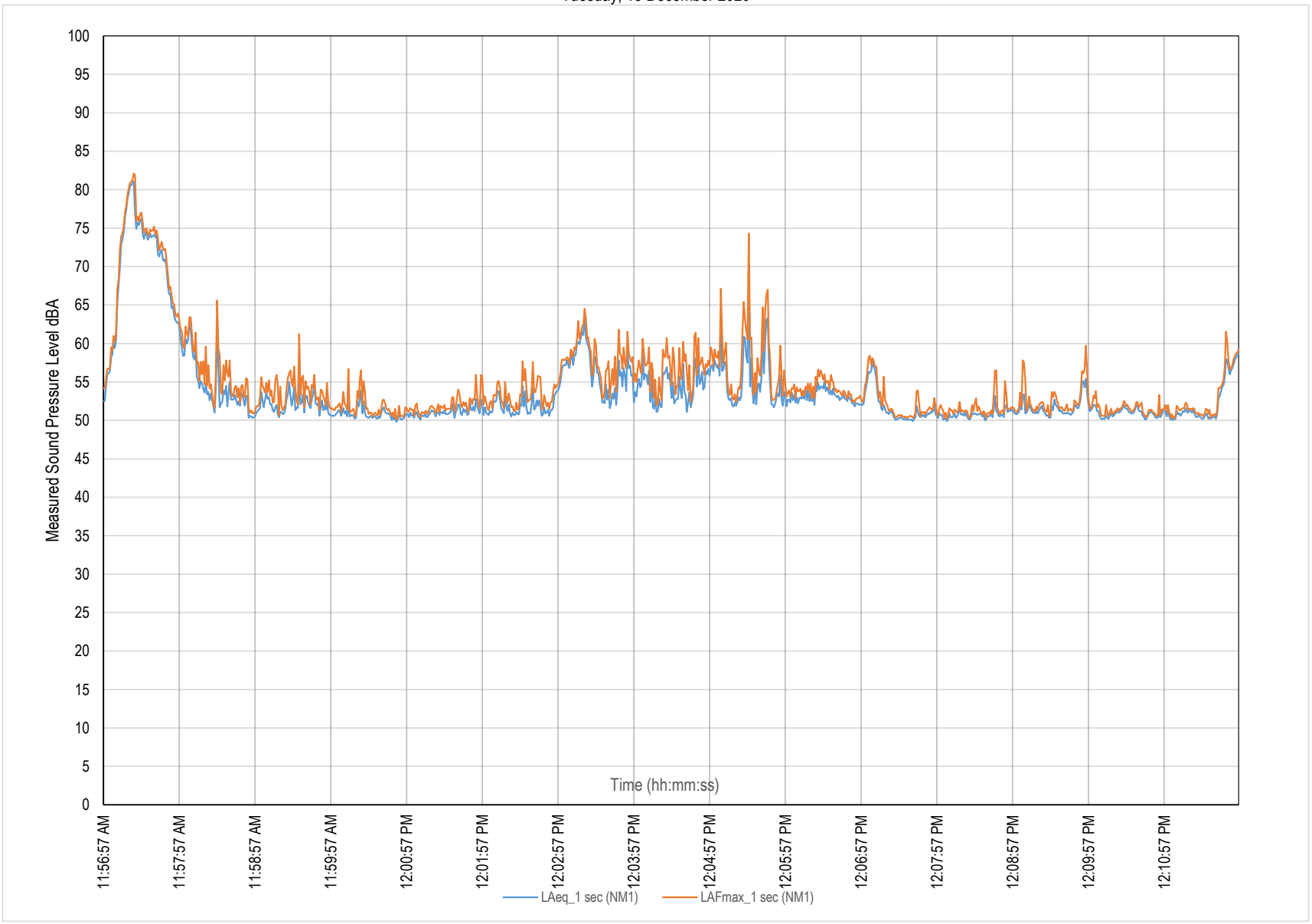
Measured Noise Levels - Landing

Tuesday, 15 December 2020



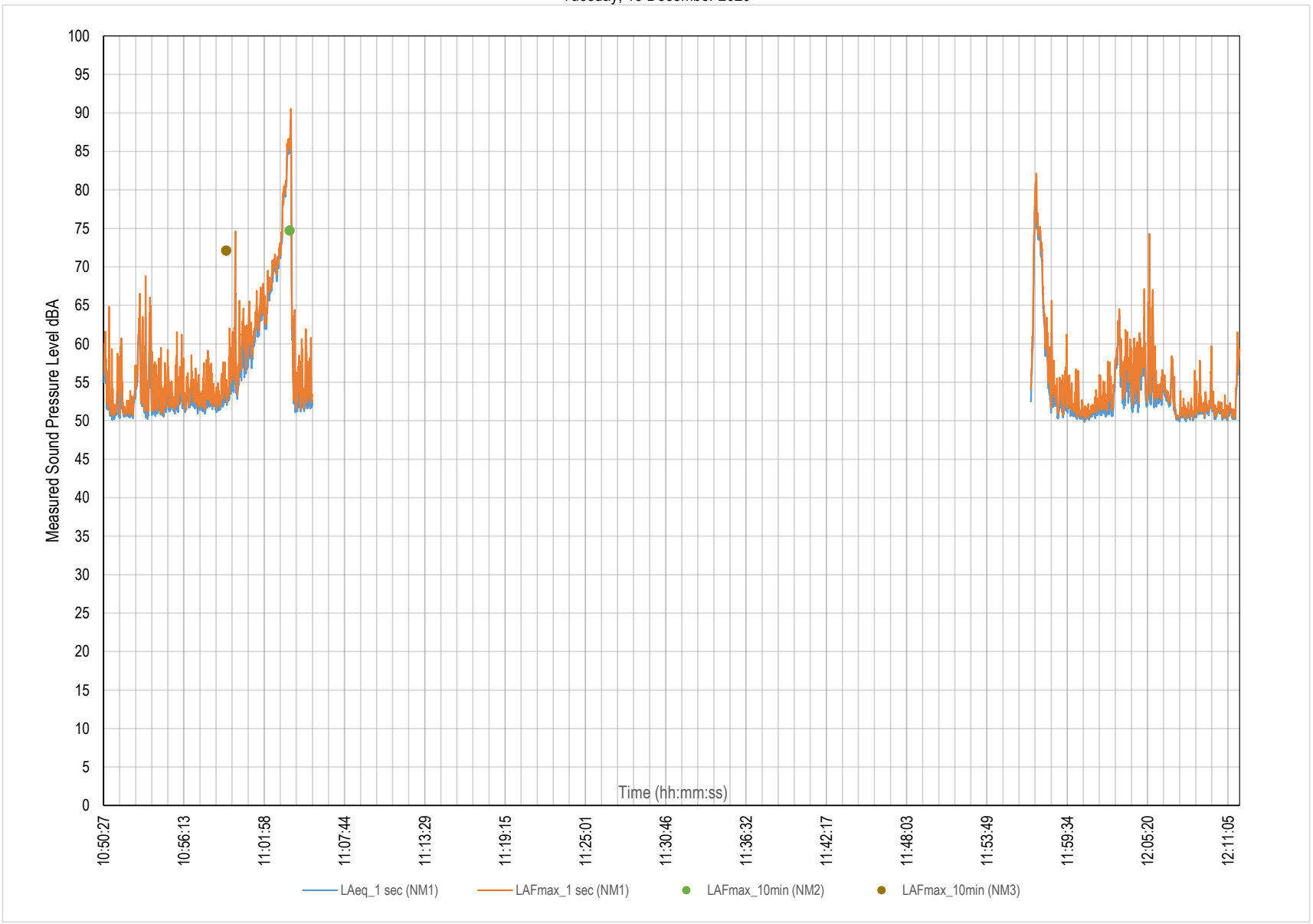
Measured Noise Levels - Takeoff

Tuesday, 15 December 2020



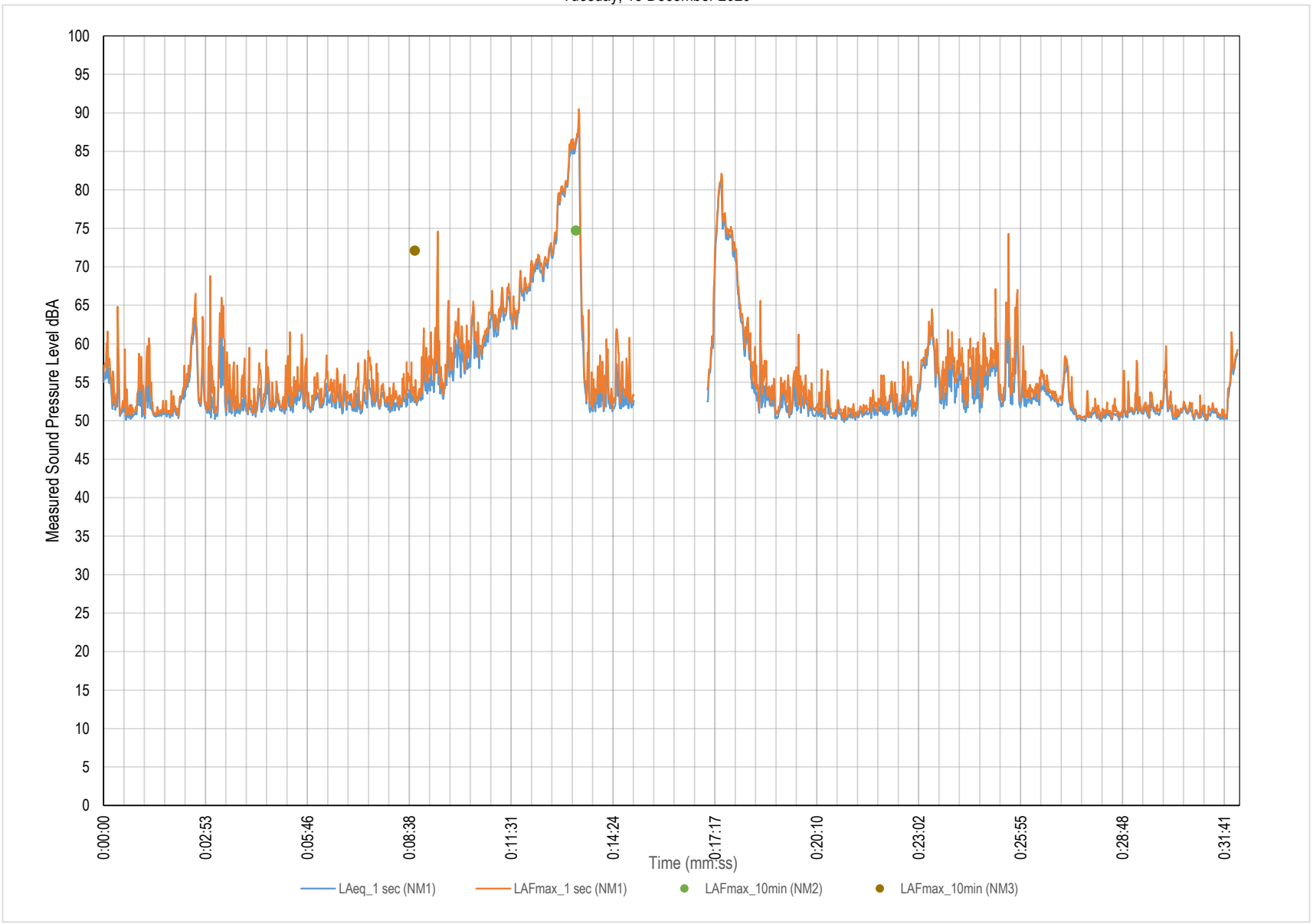
Measured Noise Levels - Landing and Takeoff

Tuesday, 15 December 2020



Measured Noise Levels - Landing and Takeoff, gap shortened

Tuesday, 15 December 2020



Memo

To:	National Capital Authority: Ilse Wurst, Director Statutory Planning & Heritage
From:	GML Heritage Pty Ltd (GML)
Date:	9 March 2021
Our Ref:	19-0227B
Subject:	Sydney Seaplanes Trail—Preliminary Heritage Impact Advice

Introduction

The National Capital Authority (NCA) engaged GML Heritage Pty Ltd (GML) to attend—and provide heritage impact advice on—the Sydney Seaplanes 'trial' landing, taxi and take-off of an amphibious Cessna Caravan plane at West Basin, Lake Burley Griffin. This advice is informed by two previous Heritage Impact Assessments (HIAs) written by GML, prepared for the general proposed action involving commercial, recreational seaplane use of the lake.

The trial flight occurred on 15 December 2020 between approximately 10.45am and 12.05pm.

Previous Heritage Advice

The first HIA, prepared in August 2019, was of a general proposal by South Coast Seaplanes and concluded that the action would result in a likely 'significant impact' on the heritage values of Lake Burley Griffin and the Parliament House Vista.

The second HIA was prepared in March 2020 on the specific proposal by Sydney Seaplanes. It concluded that further assessment was required to better understand other impacts and the extent of impacts on heritage places and values within the vicinity.

Key recommendations from the March 2020 HIA included the investigation of the impact of noise from the action and appropriate landing and take-off locations through a trial flight or a period trial flights. The HIA referred to the broader West Basin, including Acton Peninsula and Lotus Bay as areas that could be further explored. Areas advised to avoid were Central Basin, East Basin and West Lake and areas of the lake with naturalistic foreshores that exhibit quiet and still qualities.

Objectives

This memo of advice is to assist the NCA in considering the 'proposed action' of commercial seaplanes utilising Lake Burley Griffin. GML's role in this trial is to provide heritage advice as part of wider advice and documentation sought by the NCA, including technical auditory and ecological assessments.

The aim of GML viewing the trial flight was to gauge the noise 'acceptability level' for a 'lay person', taking into consideration the heritage values of the lake and surrounding context.

As identified above, the previous heritage advice recommended further investigation of the proposed action through trial flights. The trial in December 2020 allowed for a greater understanding of the noise level generated by seaplanes, and the visual and physical impacts of the action on the fabric—ie Lake Burley Griffin.

This memo is not a full HIA. Rather it is to provide background information to the NCA, as at this time, an NCA Works Approval application has not been made. Should the proponent (being Sydney Seaplanes) submit a Works Approval application, a comprehensive HIA would be prepared as part of the self-assessment process and be based on a detailed proposed 'action' when developed further, and prior to the action commencing.

Methodology

Four GML consultants viewed the landing, taxi and take-off of the seaplane on 15 December 2020. The consultants were located on the northern and southern shores of West Basin, Lake Burley Griffin, at:

- Acton Peninsula Jetty and Black Mountain Peninsula, on the northern shore; and
- Blue Gum Point and Canberra Yacht Club, on the southern shore.

These locations were selected for their proximity to the landing/take-off point, and to allow for a comprehensive understanding of the action from multiple viewpoints around the perimeter of the lake. A consultant also watched part of the taxiing and docking procedure at Yarralumla Bay.

Timings were noted from the point consultants first heard the plane, to the point of landing and then again from landing, to the time the plane taxied out of earshot. Consultants recorded and made note of the level and degree of noise disturbance during these periods. This was repeated from the same locations for the taxi from Yarralumla Bay and the take-off procedure.

Photographs and video recordings were made during the process to capture the visual and auditory impacts. Notes were made on the level of water disturbance at the shoreline at the time of landing, taxi and take-off.

Heritage Context

Lake Burley Griffin is nominated to the CHL and is within the Parliament House Vista Commonwealth Heritage place (the listed area, place ID 105466).

The Heritage Assessment prepared by Godden Mackay Logan (now GML) found that Lake Burley Griffin and all its components and places—foreshore plantings, reflective qualities, activities on the lake, lakeside vegetation, natural habitat areas, relationship to views and vistas of surrounding lands, particularly Mount Ainslie, Black Mountain, and the Parliament House Vista, the dam, bridges, islands, relationship to the land axis, the designed foreshore parklands and important foreshore developments—meets the threshold for Commonwealth and National heritage value.

The precautionary principle of the EPBC Act (Section 391) applies to the proposed action, to avoid impacting the identified heritage values of Lake Burley Griffin. The precautionary principle provides a framework for governments to set preventative policies where existing science is incomplete or where no consensus exists regarding a particular threat.[1] As Lake Burley Griffin is not yet a formally listed heritage place, applying the precautionary principle, means the heritage values of nominated places would, in the meantime, be protected through best heritage and environmental practices.

A summary of the identified heritage values of Lake Burley Griffin and the listed heritage values of Parliament House Vista have been included in Appendix A for reference. For detailed background on the

heritage values of the site, refer to Godden Mackay Logan, Lake Burley Griffin Heritage Assessment, 2010, prepared for the National Capital Authority.

Observations

Four GML consultants viewed the landing, taxi and take-off from locations on the north and south of the lake. The conditions on the day were cloudy and still. Background noise could be heard from Parkes Way, nearby carparks and smaller roads, birds, cicadas, and nearby spectators.

The following observations of the flight were made in the categories of fly over, landing, arrival taxiing, departure taxiing and take-off (refer to Figure 1):

Fly Over—10.49am

- Generally:
  - The seaplane entered the Lake Burley Griffin airspace at approximately 10.49am from the east, flying over Lennox Gardens, towards Black Mountain Peninsula. The noise was comparable to a 'normal' light aircraft and not overly loud.
  - The seaplane turning around to prepare for the west to east landing was out of ear shot (with the exception of the Black Mountain Peninsula viewing location, where the plane was still audible).
  - As a helpful comparison, an unrelated light aircraft flew over after the seaplane landed, which had a similar noise level as the seaplane flyover.
- Specifically:
  - From the Canberra Yacht Club viewpoint, the sound dissipated once the seaplane was over Black Mountain Peninsula but it could be seen turning around in the west, approximately over Glenloch Interchange.
  - From Blue Gum Point the sound of the seaplane flying over was short lived, lasting approximately 1 minute.

Landing—10.52am

- Generally:
  - The noise of the landing was a low steady sound with the exception of a short, louder sound of a gear change/'reverse thrust' audible for a few seconds while the seaplane turned around in the lake.
- Specifically:
  - From Blue Gum Point, the landing procedure began suddenly, with the plane appearing from the west over Black Mountain Peninsula area at approximately 10.52am and landing shortly afterwards in West Lake to the east.
  - From Black Mountain Peninsula and Acton Peninsula Jetty the landing noise was quiet.

Arrival Taxiing—10.52–10.54am

- Generally:
  - The taxiing commenced immediately after landing. The sound was a steady, low level sound, mainly of propeller noise rather than engine noise.
  - The plane docked at a jetty at Yarralumla Bay (Figure 2). The existing infrastructure appeared to be sufficient and appropriate for disembarking the plane.
- Specifically:
  - From Blue Gum Point the sound increased as the seaplane turned west and began taxiing towards Yarralumla Bay.
  - From Acton Peninsula Jetty, the seaplane was of a similar noise level to the noise from Parkes Way and the NMA carpark.
  - From the Canberra Yacht Club the taxiing could not be heard.

Departure Taxiing—12.00–12.02pm

- Generally:
  - The seaplane was audible to the consultants during taxiing from Yarralumla Bay to West Lake, from approximately 12:00pm until 12.02pm, when it became airborne.
- Specifically
  - From Black Mountain Peninsula, taxiing near Spinnaker Island, was loud enough to differentiate from nearby traffic, not loud enough to disturb the environment. It was noted that the level of noise is appropriate to warn watercraft in the vicinity of seaplane movement.
  - As the seaplane was traveling towards the location of three consultants (Acton Peninsula Jetty, Blue Gum Point, the Yacht Club), it sounded louder and was within earshot for a longer period than the arrival taxiing.

Take-off—12.02–12.04pm

- Generally
  - The take-off sequence was generally louder when revving up to speed and as it moved east towards the consultants at all locations (or list locations).
  - The engine could be heard from the take-off location in West Lake near Spinnaker Island.
  - The take-off sequence (including increasing engine up to speed) appeared to take longer than the landing sequence but was still reasonably fast.
  - The plane became airborne in front of the Yacht Club at 12.02pm and travelled through to the east end of West Lake, near Acton Peninsula and Commonwealth Avenue Bridge.
  - Once airborne, the noise level was similar to a low flying normal plane.

- The seaplane hooked south over Central Basin and could be seen and heard faintly until 12.04pm.

- Specifically
  - From the Canberra Yacht Club the noise was relatively quiet and similar to that of a light aircraft.
  - The noise from the Black Mountain Peninsula was of moderate level.

Overall

- Generally, the consultants noted that while there was visible water disruption at the landing point, there was no notable disruption at the shoreline from any locations.

Unofficial vox-pop questions about the seaplane as a new activity on the lake, asked of spectators, were generally positive. The only concern raised was about the safety of other lake users and the cost.

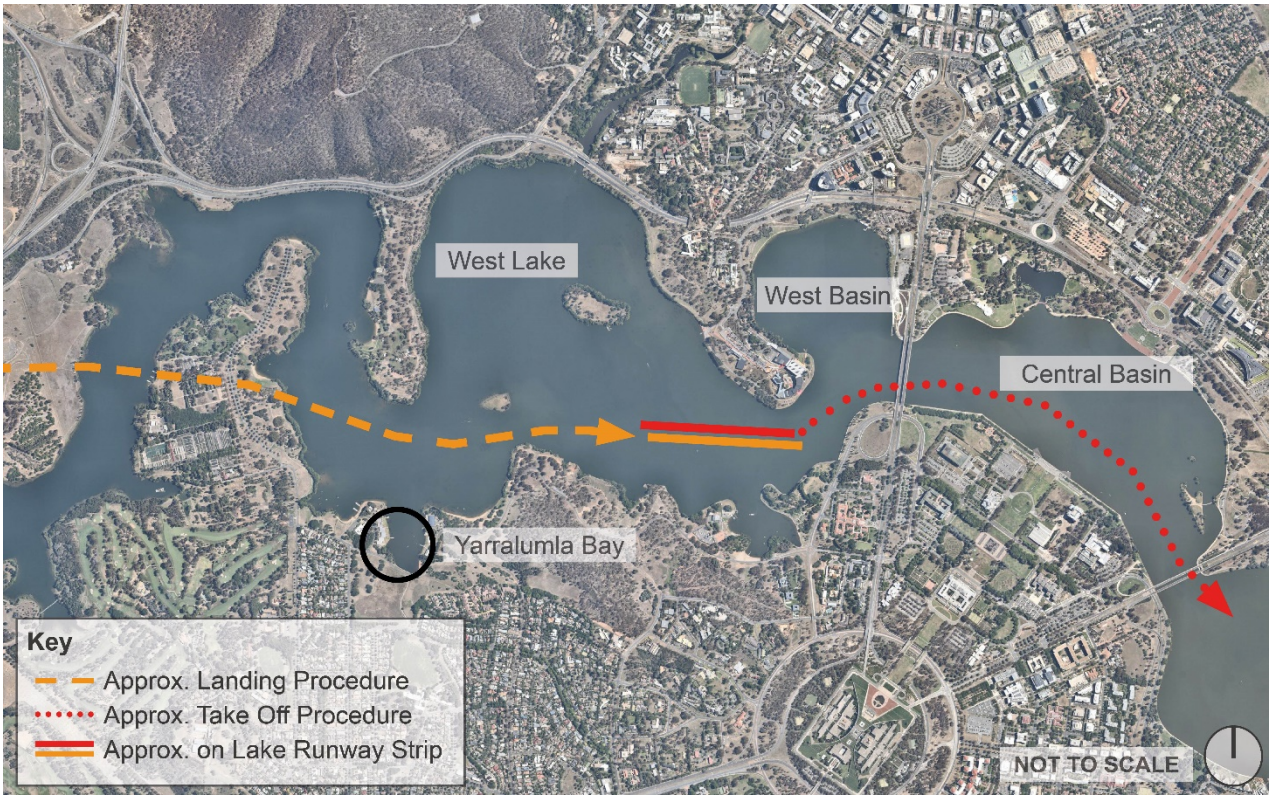


Figure 1 Aerial image showing the approximate locations of the landing and take-off procedure on Lake Burley Griffin. Yarralumla Bay is marked with the black circle. (Source: Nearmap with GML overlay, 2021)

Figure 2 Aerial image of Yarralumla Bay with the location of the jetty where the seaplane docked. (Source: Nearmap with GML overlay, 2021).

Preliminary Impact Advice

As identified above, the heritage values of Lake Burley Griffin are embodied in the reflective and quiet qualities of the landscape feature—its recreational activities, natural areas of the foreshore and views to and from the lake, amongst others.

GML assessed the trial landing and take–off from four locations to the north and south of West Basin. Our consultants assessed the noise level and potential disturbance from a lay person perspective, rather than a technical environmental noise test, and found that the trial flight was **not overly disruptive to the activities on the lake (noting that it was a weekday), was quieter than expected and completed in a short period of time.**

Noise Disturbance

The plane was audible for brief periods of a few minutes at a time. The noise level increased and decreased to varying degrees from each of the vantage points during the phases of landing, take-off and as the plane moved across the lake. The landing was generally inaudible from the locations. The take-off was considered the loudest phase; however, it was audible for 2–3 minutes, from the four locations.

Existing background noise was noted in all locations, including traffic from Parkes Way and general city noise. As noted above, a light aircraft flew over the lake after the seaplane landed which provided an opportunity to compare the noise levels between the two aircraft—both were comparable in volume and it is indicative of aircraft noise in central Canberra, over the lake being relatively common.

General Disturbance to the Lake

In the Sydney Seaplanes presentation to the NCA in January 2020, it was suggested that two take-offs and two landings would be conducted on the lake per day (days per week TBD). A 30-minute gap was proposed between the plane's arrival and its departure. This suggests that the seaplane would be within the vicinity of Lake Burley Griffin for approximately 1 hour per day.

The location selected for the trial, West Basin, was suggested in the March 2020 HIA to be preferable. Actions in the West Basin, Acton Peninsula, Lotus Bay area are less likely to cause impact as this area is already designated for recreational activities. Less appropriate areas include Westlake, Tarcoola Reach, Yarramundi Reach and Central Basin as they strongly demonstrate quiet, reflective qualities and naturalistic features.

The physical disruption to the lake edge was considered minimal during the trial. The landing caused the greatest degree of water disturbance, however at the shoreline the water movement was negligible and comparable to the effects of a slight breeze on the lake surface.

The existing dock at Yarralumla Bay appeared to be appropriate for docking and disembarking of passengers. However, it is not known if further infrastructure would be needed. Further exploration of any proposals involving the construction of infrastructure would need to be undertaken.

GML notes that as the activity of the seaplane on the lake and the engine noise occurred for short periods of 2–3 minutes per phase, the proposed timetable, involving limited frequency of operation is appropriate and would not cause a heritage impact. The timing—one landing and one take-off in the morning and in the afternoon—is suitable and could be scheduled to ensure the minimisation and disruption to the other lake users and recreational activities.

Summary

The noise and general disturbance to the lake observed during the trial landing and take-off operation did have a minor adverse impact on the heritage values of the lake, specifically the 'quiet and still' qualities of the water of the lake. However, the infrequency of the proposed operation and the temporary nature (approx. 2–3 minutes per phase) ensured the degree of impact was minimal for this one-off trial.

Recommendations

This advice memo is in response to the trial flight only. A full HIA should be prepared as part of the self-assessment process by the NCA, and based on a detailed proposed 'action' when this is further developed by the proponent. Recommendations for the development of the action to avoid heritage impacts include (but are not limited to) the following:

- scheduling a timetable for the operation that avoids disruption to other lake users and avoid peak periods of rowing, dragon boating, sailing races, lessons and recreational use, etc. Increasing the frequency of landings and take offs per day/per week/per month, etc, has the potential to have a greater heritage impact on the lake than the limited number currently being proposed;
- avoids the need for potential permanent (infrastructure on the lake shore, or in the lake to support ongoing operation). Visual and physical impacts could potentially arise from permanent, large-scale or inappropriate infrastructure;

- avoids diminishing the ability for the public to have free and open access to the lake and its foreshores. The Lake Burley Griffin Heritage Management Plan (HMP) provides policy to avoid conflicts with existing lake users. The policies aim to avoid the introduction of new uses which require the closure or the lake (or parts thereof); and

  avoids potential environmental impacts on the natural heritage values of the lake, water quality, ecology and the environment in general. This would need to be investigated and documented. It is understood that technical environmental noise audit and ecological advice is being sought by the NCA and the proponent.

Appendix A

Lake Burley Griffin

The Lake Burley Griffin HA[2] provides a summary statement of significance, relevant and key parts of the statement have been marked with **bold** text, as follows:

> *The Lake Burley Griffin Study Area possesses outstanding **creative, technical and aesthetic heritage** values to the nation as a whole, which meet the threshold for National Heritage Listing.*
>
> *Lake Burley Griffin is an essential part of what **defines Canberra and an essential component of the Griffin plan** for a lake to link and unify the axes and vistas of the plan to the underlying landform of the place. The lake is a unique and creative aspect of Australia's most successful urban plan, which is highly **valued by communities for its aesthetic qualities**. The lake is an outstandingly successful engineering and **technical achievement** which underpins the success of its creative and aesthetic qualities.*
>
> *The Lake Burley Griffin Study Area also possesses highly significant historical, rarity, social, representative and associative values which meet the threshold for Commonwealth Heritage Listing.*
>
> *The Lake Burley Griffin Study Area is important for its association with the creation of the national capital and subsequent phases of national development. It reflects two key periods of urban design: the City Beautiful/Garden City discourses, associated with the design of the lake, and the later discourses of International Modernism, associated with its construction, its edge treatments and features, including the fish-belly flap gates of Scrivener Dam and the bridges. The study area also has links to Canberra's history including the workers of the temporary Westlake settlement and the construction of the first sewer infrastructure for the capital.*
>
> *The study area **supports habitats for threatened ecological communities** and species: yellow box—Blakely's red gum grassy woodland, temperate natural grasslands, button wrinklewort, striped legless lizard, Perunga grasshopper **and the Murray Cod.***
>
> *The lake is valued highly by communities for its **landmark value, as a symbol of Canberra** and as an iconic **cultural landscape** which for many is a symbol of local identity.*
>
> *The lake is associated with important groups and individuals involved in the creative and technical aspects of the design and construction of the lake such as Walter Burley Griffin, Marion Mahony Griffin, Charles Scrivener, John Sulman, Charles Weston, Lindsay Pryor, Sir William Holford, Dame Sylvia Crowe, Richard Clough, Peter Harrison, Trevor Gibson, John Overall and the NCDC. Roman Cypress Hill and the Lindsay Pryor Arboretum are sites within the study area which are associated with the work of Griffin and Pryor.*
>
> *The study area **supports natural areas valued as remnants** of the pre-settlement environment and an aquatic ecosystem which is valued by the community.*
>
> *The Lake Burley Griffin Study Area possesses significant scientific research values and values as part of Indigenous tradition, which also meets the threshold for Commonwealth Heritage Listing.*
>
> *The study area possesses research potential relating to the study of the history and development of urban design, water engineering and key practitioners in this area. The occurrence of **threatened ecological communities** and species also provides some opportunities for research. The Indigenous archaeological sites of the study area are valued highly by Indigenous communities as evidence of their traditional occupation of this area. These sites also possess research potential for contributing to an understanding of past Indigenous lifeways in the area.*

Attributes

The attributes (that are relevant to this memo) which embody the heritage values of Lake Burley Griffin are described in the HA include:

- *The lake landscape including its edge treatments, islands and bridges.*
- *The lake as aquatic habitat of the Murray cod.*
- *The lake in its landscape context.*
- *The lake waterbody draw down zone (foreshore) and Spinnaker Island.*
- *Lake activity such as yachts and rowing boats.*
- *Views of the lake.*
- *Reflective qualities of the water.*
- *Lakeside vegetation.*
- *The natural areas and their habitat values.*
- *Lake edge properties and plantings.*
- *Integrity of the Griffin Land/Water Axis and associated lands (Mount Ainslie, Black Mountain, Parliament House Vista etc).*
- *The managed parkland settings.*
- *The native vegetation on surrounding hillsides.*
- *The lake as a whole and all its elements including foreshore plantings, the dam, bridges, islands, its relationship to the land axes, the designed foreshore parklands and important foreshore developments.*
- *Formal design elements especially Central Basin and its foreshores in relation to the Parliamentary Triangle and other elements of the Griffin land axis that adjoin the study area.*
- *Public access to and use of the lake and its foreshores.*
- *The presence of the lake in views of and within central Canberra.*
- *The identified indigenous sites, including the locations of submerged sites.*

Parliament House Vista

Part of the study area (the lake's Central Basin) is included in the Parliament House Vista. The following extracts from the summary statement of significance for the Parliament House Vista relate to the Central Basin of Lake Burley Griffin:

> *The Parliament House Vista is the central designed landscape of Canberra, that expresses the core of the Walter Burley Griffin design vision for Canberra. It is highly significant for its symbolic representation of the democratic interchange between the people and their elected representatives and its use of the natural landforms to generate a strong planning geometry. It expresses a masterly synthesis and ordering of topographical features and administrative functions to meet the needs of a national capital. The vista landscape embraces the central land axis and* ***part of the water axis*** *and most of the Parliamentary Triangle including the area known as the Parliamentary Zone.*

The Parliament House Vista incorporating the central national area, is the core of the most ambitious and most successful example of twentieth century urban planning in Australia. It is important for its design pattern with large landscape and waterscape spaces with their enframement by treed avenues and at the lake by bridges, the terminal vista features of the Australian War Memorial and Mount Ainslie at the northern end and Parliament House at the southern end, with the Carillon and Captain Cook Jet creating balanced vertical features in the water plane.

The place has high aesthetic significance due to the visual impact of the extensive open sweeping vista along the land axis that can be experienced in two directions, the designed axes set within natural features of forested hills, patterns and textures of architectural massing accentuated by planned open spaces, water planes and tree plantings that are arranged across the area.

The central national area has a special association with its designer, Walter Burley Griffin. Griffin is an important figure in Australia's cultural history for his overall design of Canberra as the Nation's Capital. The special association between the central national area and Griffin results from the area being the centrepiece of the planning geometry for Canberra and perhaps the only part of his Canberra plan to survive relatively intact. The area has a strong association with Marion Mahony Griffin who prepared the perspective drawings of the Vista. The Vista area has a strong association with numerous architects and planners, in particular John Smith Murdoch, Chief architect of the Commonwealth Government, and Thomas Charles Weston, Superintendent of Parks, Gardens and Afforestation in Canberra, and notable planners of the National Capital Development Commission such as Sir John Overall, Peter Harrison and Paul Reid.

Attributes

The attributes which embody the heritage values of the Parliament House Vista are described in the official citation and include:

- *The concentration of buildings, parklands and gardens that support Commonwealth parliamentary and governmental activity as well as, to some extent, national cultural life. These include Old Parliament House and Curtilage, East Block Government Offices, West Block and the Dugout, John Gorton Building, the National Library of Australia, the High Court of Australia, the National Gallery of Australia, Blundells Farmhouse, Slab Outbuildings and Surrounds, the Australian War Memorial, the Portal Buildings, The High Court – National Gallery Precinct, the Carillon, King George V Memorial, Sculpture Garden of the National Gallery, the National Rose Gardens, Commonwealth Park, the Peace Park, the Lakeshore Promenade and Kings Park and the Aboriginal Embassy site.*
- *The extensive vista along the land axis, the forested hills, patterns and textures of architectural massing accentuated by planned open spaces, water features and tree plantings, art works, the terminal features plus the interplay of scale and texture in the designed landscape.*
- *The whole of the vista, including all elements and features contained within it, as well as the natural wooded hills beyond.*
- *Memorial features including sculptures, plaques, commemorative trees, water features and gardens. Also, recreational landscape spaces and gathering spaces in which the community may demonstrate.*
- *The whole of the vista, its planned layout, and the view from the top of Mount Ainslie which illustrates the realisation of Marion Mahoney Griffin's perspective drawing.*

1 Department of Environment, The Australian Environment Act, https://www.environment.gov.au/system/files/resources/5f3fdad6-30ba-48f7-ab17-c99e8bcc8d78/files/final-report-13-decision-making-under-act.pdf pg 231

2 Godden Mackay Logan, Lake Burley Griffin Heritage Assessment, 2010, prepared for the National Capital Authority.

SEAPLANES ON LAKE BURLEY GRIFFIN

A Discussion Paper

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