

# PROJECT REPORT

## MASON PARK WETLAND BIRD SURVEYING AND COMMUNITY FIELD EVENTS



InSight Ecology for Strathfield Council

March 2021

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**Photographic credits:** Cover page: clockwise from top left – Black-winged Stilt adult foraging in southern lagoon of Mason Park Wetland (MPW), 13/12/20 (Melissa Alderton); Australasian Darter (rear) and Great Cormorant (front) both in breeding plumage roosting at junction of Powell’s Creek and Saleyards Creek, Homebush, 9/12/20 (InSight Ecology); Eastern Great Egret (breeding plumage) foraging in southern lagoon of MPW, 12/12/20 (InSight Ecology); central section of MPW showing central lagoon, coastal saltmarsh, mangroves and planted she-oaks at rear, 10/12/20 (InSight Ecology); conservation-significant Latham’s Snipe – recorded in the northern saltmarsh section at Mason Park Wetland during the survey (Jason Girvan, commons.wikimedia.org). Inside cover page: Black-winged Stilt parent (left) with 3 fledglings foraging in MPW’s southern lagoon, 11/12/20 (InSight Ecology, taken from The Hill revegetation site).

## Acknowledgements

I am grateful to Strathfield Council for the opportunity to undertake this project, particularly the project manager Sam Shaw who also joined some field survey sessions and his manager Patrick Wong. I am appreciative of Strathfield Council's ongoing support of my ornithological work in the LGA which started in 2007. Council also provided access to other ecological and biodiversity studies undertaken in Strathfield LGA, as well as materials needed to run the community field events.

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I thank Melissa Alderton for permission to use photographs she took during and soon after the second community event at Mason Park Wetland. Other photographers who kindly made their work available for this project were Jason Girvan, Greg Miles, Tom Skulander, Lindsay Hansch and Trevor Bullock – to all I am grateful.



## Summary

Louisa Meredith, a resident and illustrator/writer of D'Arcy Wentworth's Homebush Estate from 1839 to 1894 which included Mason Park Wetland, described the area as having extensive mangrove forests and wetlands with "abundant robins, whipbirds, quail, ducks, snipe, native cats and dingoes among other wildlife". Extensive land infilling and reclamation, construction of drainage channels through the wetlands, brickworks, cattle saleyards and an abattoir transformed this natural environment into a highly disturbed urban landscape. By 1963, about half of Mason Park had become a rubbish tip on raised, infilled land with the remainder comprising the original mudflats covered with 'swamp grass'.

The road to preservation and restoration has been long and challenging for Mason Park Wetland and is ongoing today. The efforts of local concerned residents and universities in the early-mid 1970s led to Mason Park Wetland being declared a site of regional, state, national and international ecological significance. The wetland was protected through Australia's migratory bird treaty with Japan and its 1997 listing on the Register of the National Estate. Current migratory bird protection agreements between Australia and China, Japan and the Republic of Korea apply to the protection and conservation management of migratory shorebirds and other aquatic birds and their habitat at Mason Park Wetland.

Since at least the year 2000, Strathfield Council has actively pursued and supported efforts to protect and restore Mason Park Wetland for biodiversity and as an environmental resource for the local community. Professional fauna and flora surveys and studies have been commissioned by Strathfield Council, a plan of management prepared and is being currently reviewed, revegetation and mangrove reduction work undertaken and liaison with other organisations such as Sydney Olympic Park Authority and BirdLife Australia has occurred.

The current project arose from the impetus achieved through these previous biodiversity studies. The survey component of this project aimed to determine the abundance and species richness of the bird community present at Mason Park Wetland and surrounding sites in December 2020. Surveying focused on shorebirds, other aquatic birds and terrestrial birds present at 5 wetland sites and 6 other adjacent sites. Five-to-seven of these sites were also surveyed during previous faunal studies in 2007-08 and 2016. The 2020 project also investigated the wetland's ecological condition/health and utilisation of habitats by birds.

Community engagement and education was also a key component of the current project. This attracted 22 keen local residents to 2 field events at Mason Park Wetland run by a professional ornithologist and ecologist working with Strathfield Council and BirdLife Australia. A booklet introducing participants to the birds of Mason Park Wetland and their habitats was produced and used at these events.

The results of the current project demonstrate that Mason Park Wetland and adjacent sites continue to provide important foraging, breeding (for Black-winged Stilt) and resting habitat for 54 bird species including 18 aquatic and 36 terrestrial species. However, only 3 shorebird species – Black-winged Stilt (31 birds with 14 new young), Latham's Snipe (1-2 birds) and Masked Lapwing (10 birds) - were recorded over 12 repeated survey sessions at 5 sites around the wetland. This amounted to 8 fewer shorebird species than were recorded in the December 2008 survey. Only one of these species - Latham's Snipe - is an intercontinental migratory shorebird.



The results obtained in the current study suggest that a decline in the number of particularly long-distance migratory shorebird species has occurred at Mason Park Wetland over the past 12 years. This outcome conforms with widespread and sustained declines in the number and diversity of particularly intercontinental migratory shorebird species returning to Parramatta River Estuary and other wetlands in eastern Australia over at least the past 50 years. Drivers of this decline include broad-scale habitat loss, degradation and fragmentation particularly along the East Asian-Australasian Flyway, climate change effects, pollution and reduction in the quality and availability of invertebrate food supplies, disturbance of foraging and roosting habitats and drought impacts. At Mason Park Wetland, recent sampling of benthic invertebrates has revealed a reduction in the species diversity of benthic invertebrates – important food for shorebirds.

Revegetated sites around Mason Park Wetland and along Powell's Creek and Saleyards Creek continued to provide important foraging, nesting and movement habitat for a suite of small bushland bird species of local conservation significance. These include White-browed Scrubwren, Superb Fairy-wren, Yellow Thornbill, Scarlet Honeyeater, Brown Honeyeater, New Holland Honeyeater and Red-browed Finch – all of which are uncommon in Sydney's inner-west. Small breeding populations of White-browed Scrubwren and Superb Fairy-wren foraged and nested in weed-invaded *Lomandra longifolia*, Australian Blackthorn and acacia plantings at 'The Hill', the main track from the car park along Saleyards Creek (east bank) and along lower Powell's Creek near north Bressington Park.

A set of recommended and prioritised actions are presented in this report based on the results of the current and previous avifaunal surveys of Mason Park Wetland. These emphasise the need to restore adequate tidal influence to all of the wetland, improve the quality of surface water entering the wetland, protect and restore threatened plant communities, increase the amount of available shorebird foraging and roosting habitat, continue engaging and educating the local community and establish annual summer surveying and monitoring of wetland birds particularly migratory shorebirds.

Finally, despite Mason Park Wetland's history of heavy disturbance and the surrounding highly urbanised landscape there is substantial potential for its long-term restoration. This will require a best-practice, coordinated and sustained effort by all key stakeholders involved in the wetland's comeback. After 14 years of surveying the biodiversity of Mason Park Wetland I believe there is ample scope and impetus for this to happen. Ensuring there is sufficient ongoing financial support for this work remains a key challenge.

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## 1. Project overview

Mason Park Wetland and surrounding reserves have been managed by Strathfield Council for their biodiversity, recreational and historical values since the 1970s. Various studies have been undertaken and plans prepared to understand, protect and conserve this highly urbanised and impacted wetland, particularly in the past two decades. These have included fauna and flora surveys, a biodiversity strategy and a management plan as well as associated on-ground actions such as the recent removal of encroaching mangroves and sampling of benthic invertebrates. The latter work has been undertaken to determine the quality and quantity of food available to shorebirds and other aquatic bird species at the wetland. These projects have contributed to our knowledge and protection of the wetland by identifying key threats or stressors, management needs and actions.

InSight Ecology was commissioned by Strathfield Council to undertake the current project in October 2020. This work comprised two components – 12 targeted bird surveys of the wetland and adjacent sites in December 2020 and 2 community engagement and education events held during the survey period. A small field guide was produced to introduce community participants to the birds of Mason Park Wetland and their habitats.

This document reports on the key results of the bird surveys and community field events conducted at Mason Park Wetland in December 2020. Recommendations are provided to assist Council in the ongoing conservation and management of the wetland in partnership, where feasible, with the local community, BirdLife Australia, Sydney Olympic Park Authority and other stakeholders.

## 2. Objectives

The bird surveying component of this project sought to obtain a representative sample of the avifauna of Mason Park Wetland (MPW) and adjacent sites (the 'study area') including their use of aquatic and terrestrial habitats. The community field event engaged and educated the local community about these bird populations and communities, their habitats and conservation management needs.

Specifically, the project aimed to:

- Determine the occurrence, species richness and relative abundance of bird species surveyed at MPW and 4 adjoining sites in December 2020.
- Describe the main bird habitats present at surveyed sites, their current ecological condition and use by birds. This will help indicate the ecological health of these habitats and assist in their ongoing restoration and conservation.
- Provide recommendations to assist in the protection, restoration and conservation management of the birds of MPW and their habitats.
- Promote local community awareness, engagement, education and participation in the conservation and management of avifauna and their habitats at MPW. Report on the structure and main outcomes of two community field events held at the wetland in December 2020 to achieve this objective.



### 3. The study area

#### 3.1 Location

Mason Park Wetland is a small (approximately 8 ha) urban wetland surrounded by industrial, commercial, recreational and residential land at Homebush in Sydney's inner-west (Figure 1). Wedged between Homebush Bay Drive and Saleyards Creek canal to the west, Powell's Creek and housing to the east and an electricity substation and Flemington Markets to the south, it has been historically degraded by urban and industrial development since 1826 (Urban Bushland Management 1994). Much of the original wetland area was infilled during mechanised land reclamation operations from 1949 to c. 1975 (Fox and Associates 1986; Clarke and Benson 1988).

Section 3.2 provides an historical overview of land use impacts and conservation history of Mason Park Wetland. This helps set the necessary context for later discussion of the health of the wetland's bird communities, its ecological condition and key conservation management and restoration priorities.

Figure 1: Location of Mason Park Wetland (MPW) and adjacent sites surveyed by InSight Ecology in December 2020 for this project. The red line indicates the approximate boundary of MPWd that was surveyed in this project. Dots indicate sites surveyed for birds: yellow = MPW Site 1 southern wetland, light blue = MPW Site 2 south-east wetland near metal waterbird identification sign, light green = MPW Site 3 central wetland, MPW Site 4 = northern wetland at interpretation signs platform and saltmarsh, purple = MPW Site 5 western edge of wetland (discontinued after active stilt nest located nearby), white = The Hill revegetation, pink = Powell's Creek canal and banks (2 sites), grey = revegetation transect along main walking trail, light brown = Saleyards Creek canal and revegetation and red = Powell's Creek revegetation and mangroves opposite north-east Bressington Park. Image: Google Earth 2020.



### 3.2 Land use impacts

Intensive urban land uses have had deleterious impacts on the once-natural environment of Mason Park Wetland, specifically its extent, ecological condition and function and composition of native plant and animal communities. These have included wastewater discharge from the former Homebush Cattle Sales Yards (now Flemington Markets) which continued until 1967 (Thorp for Fox and Associates 1986), dumping of domestic rubbish when the wetland was used as a Council tip until the 1970s (Jones 2005), disposal of manufacturing wastes including metal tins from the former Arnott's Biscuits Factory in Homebush from 1929-1950 (Jones 2005), landfill and wetland reclamation operations which commenced at Homebush Bay in 1826 and continued until about 1975 (Jones 2005) and the installation and operation of sewer lines by Metropolitan Water, Sewerage and Drainage Board (now Sydney Water Corporation) from 1915-1965 (Urban Bushland Management 1994).

A detailed review of these impacts at Mason Park Wetland is beyond the scope of this report. However, some impacts continue to affect the wetland today and require long-term mitigation action to help repair and store the wetland system (Section 7). The obstruction of tidal flow to and from the wetland particularly in the southern end remains a key management issue (see Section 7).

### 3.3 Protection and conservation of Mason Park Wetland

The protection of Mason Park Wetland was initiated by the dedicated work of local communities, universities (Macquarie and Sydney) and political pressure in the early-mid 1970s. Allen Davis, a local naturalist, wrote to Strathfield Council requesting Council protect the wetland for birds (Jones 2005). Professor Talbot of Macquarie University's Environmental Studies Program also lobbied Council urging protection of the wetland and its fauna.

Senator Mulvihill raised the need to protect Mason Park Wetland in the Senate on 23 May 1976 under the Migratory Bird Treaty 1974 between the governments of Australia and Japan (Jones 2005). Around this time, the then Prime Minister Malcolm Fraser visited Japan and needed to demonstrate Australia's compliance with the Treaty (Jones 2005). He used Mason Park Wetland among other sites to achieve this and so the wetland was listed under the Migratory Bird Treaty between Australia and Japan.

Mason Park Wetland is listed on the Register of the National Estate which became the National Heritage List of Australia (Appendix 1). Key contributing factors that underpinned this listing were the summer presence of intercontinental migratory shorebirds at Mason Park Wetland (MPW), the occurrence of the threatened (in NSW) Narrow-leaved *Wilsonia wilsonia backhousei*, important stands of the native Saltmarsh Rush *Juncus kraussii* and the rarity of semi-natural wetlands in Sydney's inner-west and along Parramatta River. The migratory shorebird species are listed under migratory bird protection agreements between Australia and China and Japan. MPW was home to one of three remaining Sydney populations of the threatened saltmarsh/samphire specialist White-fronted Chat *Ephthianura albifrons* which has now gone extinct from the wetland. MPW also provided habitat for one of the largest populations of Chestnut Teal in NSW (Appendix 1).

Strathfield Council and key stakeholders such as BirdLife Australia, Sydney Olympic Park Authority, Greater Sydney Local Land Services (GSLLS), Sydney Water Corporation and local residents continue to work to protect and conserve Mason Park Wetland. Since 2000, Strathfield Council has commissioned professional ecological and ornithological studies of the wetland to help inform

management planning. Volunteer-based bird surveys of the wetland have also been undertaken. Council has also been recently working with SOPA, BirdLife Australia, GSLLS and volunteers on projects such as the removal of mangroves to promote saltmarsh survival and provide foraging habitat for aquatic birds and sampling of benthic invertebrates to help determine the abundance and diversity of food supplies for shorebirds.

## 4. Methods

### 4.1 Literature and data review

A range of relevant previous studies, survey reports, management plans, reference books, published scientific papers and other documents and ecological data were reviewed for this project. These documents and data provided the necessary planning, biodiversity knowledge base and historical context for undertaking the project. This information also assisted in the formulation of recommendations and design of the community engagement component. These included:

- Sydney's vegetation 1788-1988: utilisation, degradation and rehabilitation (Benson and Howell 1990);
- Taken For Granted: The Bushland of Sydney and its Suburbs (Benson and Howell 1995);
- The New Atlas of Australian Birds. Birds Australia, Melbourne (Barrett et al. 2003);
- Status and Management of Migratory Shorebirds in Sydney. Seminar (19/7/2002) proceedings, NSW Wader Study Group (ed. Phil Straw) for Sydney Olympic Park Authority and NPWS, 78 pp. (SOPA, NPWS and NSW Wader Study Group 2003);
- Threatened migratory shorebird habitat mapping project (NSW Department of Environment and Conservation [DEC] 2006);
- Bird Communities and Habitats in Strathfield Local Government Area. Technical survey report by InSight Ecology to Strathfield Council, 2007-2008 (InSight Ecology 2008);
- Mason Park Management Plan – June 2008. Sainty and Associates and partners to Strathfield Council (Sainty and Associates 2008);
- Vertebrate Fauna Study for the Strathfield Local Government Area. Technical survey report by Ambrose Ecological Services Pty Ltd, 2009 to Strathfield Municipal Council (Ambrose Ecological Services Pty Ltd 2009);
- Urban landscapes as functioning ecosystems: the ecology and movement of birds in urban streetscapes, neighbourhoods and planted corridors. Field survey data for 27 sites across 10 LGAs in western and northern Sydney, 2005-06 (InSight Ecology 2006), for the project, “Examining linkages between urban spatial patterns and ecological and social processes in Sydney”, CSIRO and Sydney Olympic Park Authority;
- Review of Ecological Literature and Avifaunal Data. Report by InSight Ecology for City of Ryde and Hunter’s Hill Council – River to River Corridors Project (InSight Ecology 2010);
- The Fauna of City of Canada Bay Local Government Area: 2013-2014. Report on a study by InSight Ecology for City of Canada Bay Council, Sydney, 193 pp. (InSight Ecology 2014);
- Wildlife Conservation Plan for Migratory Shorebirds 2015 (Australian Government 2015);
- Conservation Advice for Bar-tailed Godwit *Limosa lapponica baueri*, Threatened Species Conservation Committee, 5 May 2016 (Australian Threatened Species Scientific Committee 2016);
- Parramatta River Catchment Ecological Health Project (CT Environmental 2016);
- National Migratory Shorebird Conservation Action Plan (BirdLife Australia 2017);



- Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species – EPBC Act Policy Statement 3.21 (Australian Government 2017);
- The Fauna of Strathfield Council Local Government Area: 2016. Technical survey report by InSight Ecology for Strathfield Council (InSight Ecology 2017a);
- East Asian-Australasian Flyway (EAAF) Partnership Strategic Plan (EAAF 2018a) and CEPA Action Plan (EAAF 2018b);
- Shorebird occurrence records at Sydney Olympic Park (Sydney Olympic Park Authority [SOPA] 2019).
- Strathfield Council Biodiversity Conservation Strategy and Action Plan 2020-2030 (Strathfield Council 2020);
- Bird occurrence records obtained under licenced access from NSW Wildlife Atlas (BioNet). Some records were also obtained from Birddata (BirdLife Australia volunteers' data portal).

## 4.2 Field surveying

### 4.2.1 Survey period

Field surveying targeted avifauna present at Mason Park Wetland during the survey period, 2-12 December 2020. This period conformed with previous summer bird surveys of MPW (see InSight Ecology 2008, 2016; Ambrose Ecological Services Pty Ltd 2009) and the recommended window for surveying intercontinental migratory shorebirds during their non-breeding time in Australia (Australian Government 2015). Other sites were also surveyed during this period (Section 4.2.2).

### 4.2.2 Site selection, number and location

A total of 11 sites were surveyed for aquatic and terrestrial bird species in the study area (Figure 1). Five (5) of these targeted Mason Park Wetland. These were distributed around the wetland in order to achieve adequate spatial coverage, survey different habitats including open water, muddy substrates, woody debris, coastal saltmarsh and mangroves and increase the potential for detecting cryptic species such as Latham's Snipe.

Station 5 (purple dot in Figure 1) was abandoned after 9 December 2020 because of disturbance caused to a nearby nesting Black-winged Stilt. Additional time was spent surveying at Stations 2 (light blue dot), 3 (light green dot) and 4 (dark blue dot) including targeting Station 5's location to compensate for this change.

The remaining 6 sites were surveyed for birds in habitats adjacent to or near Mason Park Wetland (MPW). They included open water, revegetated banks and concrete surfaces at two sites along Powell's Creek (pink dots in Figure 1), open water and concrete structures on Saleyards Creek canal (brown dot), and revegetated bushland at 3 sites – 'The Hill' adjoining MPW's south-eastern edge (white dot), the main walking track from Mason Park carpark (grey dot) and along Powell's Creek opposite the north-eastern limit of Bressington Park (red dot) (Figure 1).

### 4.2.3 Survey effort

A total of 14.61 hours was spent surveying birds across 86 individual survey sessions in the study area during the project. Approximately 62% of this time (53 sessions totalling 7.88 hours) occurred

at Mason Park Wetland sites with the remaining c. 38% (33 sessions totalling 6.73 hours) spent surveying birds at the other sites.

Each of the four main MPW sites were surveyed 12 times during the study. This level of survey replication was considered adequate to detect shorebirds utilising MPW habitats including more cryptic species such as Latham's Snipe. Only 5 sessions were completed at Site 5 in MPW before surveying ceased at this site after 9/12/20 because of disturbance caused to a pair of Black-winged Stilt that were nesting nearby. These birds continued nesting at this site.

Survey effort at the other sites in the study area were 11 minutes (3 sessions) spent at Saleyards Creek canal, a total of 42 minutes (6 sessions) at both Powell's Creek sites, 1.92 hours at 'The Hill' revegetation (8 sessions), 1.83 hours at the revegetation along the main walking track (11 sessions) and 2.17 hours at Powell's Creek revegetation adjacent to the northern end of Bressington Park (5 sessions). Opportunistic recording of aquatic and terrestrial birds occurred along Powell's Creek and at the junction of Powell's Creek and Saleyards Creek. Some people were observed feeding exotic and native waterfowl and other species at the latter site.

#### 4.2.4 Survey methods and equipment

The fixed-point count method was used to survey birds in the study area. A fixed point or count station was established at each of the 5 locations around MPW, two sites along Powell's Creek and at Saleyards Creek canal. Fixed points along line transects were used at 'The Hill' revegetation, revegetation along the main track parallel to lower Saleyards Creek and at Powell's Creek adjacent to the northern end of Bressington Park. An experienced ornithologist (A.H.) stood at these fixed points and recorded the number and species of all shorebirds and other aquatic birds present and their behaviour - foraging, preening, nesting, calling/interacting including aggressive pursuits of intruders (other birds, humans) near nests or young and resting on or flying to habitat. Wherever possible, physical entry into Mason Park Wetland was avoided except for surveying at Sites 1 and 3 and then using bare earth areas only thus avoiding trampling of saltmarsh and other sensitive plant communities.

A handheld GPS (Garmin GPSmap 62s) was used to record the location of each of these count stations, transects and sites (Table 1). Photographs of each surveyed site were taken using a Nikon Digital D3200 camera. Data were recorded in a field notebook. Bird nomenclature used conformed to Christidis and Boles (2008).

The type, extent and condition of the main shorebird and other aquatic bird habitats present in the study area were recorded at each surveyed site. Shorebird and other aquatic bird habitats included shallow open water, muddy banks and shorelines, fallen branches, saltmarsh, piles of cut mangrove branches, mangroves and artificial sites used for nesting and roosting such as old sewerage infrastructure and debris.

Potential threats to shorebirds and other aquatic bird species and their habitat were recorded at each surveyed site. These included the type and level of human disturbance including walking, jogging, cycling, dog activity (leashed and unleashed), rubbish disposal, type and degree of weed incursion.

Table 1: Location of sites surveyed for birds in the study area. The location of waypoints taken for stations is given as decimal degrees in Latitude (S = south) and Longitude (E = east). This is based on Map Datum WGS 84 and Zone 56H. MPW = Mason Park Wetland.

Site number	Site name	Survey station	Survey station location		Description
			Latitude (S)	Longitude (E)	
1	MPW Site 1	MPW01	33.85634°	151.08205°	southern end of wetland
2	MPW Site 2	MPW02	33.85561°	151.08281°	south-east corner near waterbird ID sign
3	MPW Site 3	MPW03	33.85462°	151.08224°	central section of wetland
4	MPW Site 4	MPW04	33.85329°	151.08229°	northern end near tidal culvert and saltmarsh, shorebird interpretation platform off walk/cycle trail
5	MPW Site 5	MPW05	33.85506°	151.08145°	western section of wetland (discontinued after 9/12/20)
6	'The Hill' revegetation transect	THREV	33.85618° 33.85633°	151.08284° 151.08289°	older revegetation nr south-east end of wetland
7	Powell's Creek south	POWELLS1	33.85603°	151.08333°	southern end of Powell's Ck
8	Powell's Creek north	POWELLS2	33.85314°	151.08234°	northern end of Powell's Ck
9	Main track revegetation (transect to car park)	MTREV	33.85335° 33.85273°	151.08110° 151.08176°	older revegetation along main walking path
10	Saleyards Creek canal	SYARDC	33.85390°	151.08052°	Saleyards Ck canal and revegetation (east bank)
11	Powell's Creek revegetation (north)	POWELLSNTH	33.85119°	151.08150°	Powell's Ck revegetation near the northern end of Bressington Park

Surveying generally avoided wet, windy or very hot weather conditions. Survey sessions were designed to sample a degree of tidal variation at Site 4 in the northern end of the wetland where some tidal influence still occurred via a tidal inflow/outflow boxed culvert and small gridded opening to Powell's Creek. Tidal influence did not extend to the central (Sites 3 and 5) and southern lagoon (Sites 1 and 2) sections of the wetland. The southern lagoon contained mostly fresh or brackish water from earlier rainfall events and surface runoff from areas to the south. Very little rainfall was received at the wetland or adjacent sites during the survey period.

#### 4.2.5 Previous professional biodiversity surveys

Mason Park Wetland has been previously professionally surveyed as part of Strathfield Council's biodiversity data acquisition and reserve management planning program. A systematic avifaunal survey of streetscape, parkland, remnant and revegetated bushland and wetland was undertaken in November 2007 and March 2008 (InSight Ecology 2008). An LGA-wide survey of fauna was completed soon after, in May and December 2008 (Ambrose Ecological Services Pty Ltd 2009). This was followed by the Strathfield Fauna Study in April and December 2016 (InSight Ecology 2017a) which included MPW and surrounding sites in Bressington Park and Mason Park playing fields.

#### 4.3 Community engagement and education

Two community events were held at Mason Park Wetland, one on Saturday 5 and the second on Sunday 13 December 2020. These aimed to engage and educate the local community by providing opportunities for people to experience the birds and habitats of the wetland and develop basic bird



identification skills. These events were also intended to stimulate interest in the protection and conservation management of Mason Park Wetland and its bird communities.

The event management and ticketing website Eventbrite was used to publicise the events and manage registrations. Strathfield Council erected signs around MPW and adjacent trails to notify people of the events (Plate 1) and posted notices on Council's website and at other local venues.

A pocket-sized (A6) booklet was produced by InSight Ecology in consultation with Strathfield Council and distributed free to field event attendees (Appendix 2). This provided examples of the main habitat types present at MPW and adjacent sites and some shorebird and other aquatic bird species that have been recorded at the site.

Both events complied with NSW Government Covid-19 restrictions at the time by providing contactless and safe registration and participation, hand sanitiser and binocular wipes, and maintaining 1.5 metres social distancing throughout each event. The event coordinator InSight Ecology acted as a Covid-19 Marshall by ensuring these requirements were adhered to by participants at each event.

Plate 1: One of the information signs installed by Strathfield Council around Mason Park Wetland and adjacent walking/cycling trails promoting the community field and survey events (InSight Ecology, 2/12/20).



## 5. Results

### 5.1 Bird species and habitats surveyed

Fifty-four (54) bird species were recorded at sites surveyed in the project. These included 3 shorebirds – the intercontinental migrant Latham’s Snipe *Gallinago hardwickii*, resident/locally dispersive Black-winged Stilt *Himantopus himantopus* and resident Masked Lapwing *Vanellus miles*. In addition, 15 other aquatic bird species and 36 terrestrial bird species were recorded during the study. Aquatic species were recorded mostly at Mason Park Wetland and also along Powell’s Creek and at Saleyards Creek sites. Terrestrial bird records were obtained predominantly from the 3 revegetation sites – ‘The Hill’ (Site 6), main track from carpark (Site 9) and Powell’s Creek near north Bressington Park (Site 11).

The following section lists all bird species and the number of individual birds per species recorded at each site during the survey (Tables 2-12). Species of conservation significance recorded during the survey are listed in these tables (and see Section 5.3).

During the survey, care was taken not to record the same bird more than once at a given site or, as much as possible, between nearby sites. This helped to minimise the risk of over-estimating local bird population size, particularly in small areas where the same species (e.g. Black-winged Stilt, Chestnut Teal) were resident throughout the survey period. Therefore, the number of individual birds recorded per species was averaged at each site over the survey period. Total individuals recorded at each site during the survey reflected these averages. The estimated sizes of local populations of the main shorebird and other aquatic bird species surveyed at MPW during the project are provided after Table 6.

To aid readability, representative bird species recorded and the habitats they utilised during the survey are shown after each table in Plates 2-32.

Table 2: Bird species recorded at **Mason Park Wetland - Site 1**. Note that although 12 sessions were completed at each wetland site, not every species recorded at these sites was detected in every survey session, e. g. Grey Teal – was recorded in 9 out of the 12 survey sessions. The averaged total number of individual birds recorded at the site during the survey is shown at the base of this table together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Chestnut Teal	<i>Anas castanea</i>	12	10.2	2/12/20	cool S, 25°C, sun/cloud	group foraged in lagoon shallows
		9		3/12/20	cool, lt NE, 22°C	
		6		4/12/20	hot 32°C, lt NE	
		6		5/12/20	warm 26°C	group rested, foraged
		8		7/12/20	sunny 25°C	
		4		7/12/20	sunny hot 31°C	
		8		8/12/20	lt-mod SE, 20°C	
		14		9/12/20	calm full sun cool 15°C	group foraged in shallows
		12		9/12/20	warm NE 25°C	
		19		11/12/20	o/n lt shower, cool, 15°C @0700	larger group foraged in lagoon shallows
		14		12/12/20	early drizzle,	rested, foraged

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
					calm, overcast, 17°C @ 0600	
Grey Teal	<i>A. gracilis</i>	2	2.5	2/12/20	cool S, 25°C, sun/cloud	rested on old sewer valves
		2		3/12/20	cool, lt NE 22°C	
		2		4/12/20	hot 32°C, lt NE	
		4		5/12/20	warm 26°C	rested
		4		7/12/20	sunny 25°C	
		2		7/12/20	sunny hot 31°C	
		2		8/12/20	lt-mod SE, 20°C	
		4		11/12/20	o/n lt shower, cool, 15°C @0700	resting, foraging in lagoon
		1		12/12/20	early drizzle, calm, overcast, 17°C @ 0600	
Black-winged Stilt <sup>CS</sup>	<i>Himantopus himantopus</i>	5	6.6	2/12/20	cool S, 25°C, sun/c	1 bird on nest, sentry bird guarding nest site
		10		3/12/20	cool, lt NE, 22°C	incl. 1 fledgling
		4		4/12/20	hot 32°C, lt NE	sentry chased 3 Raven
		8		5/12/20	warm 26°C	incl. 2 fledglings, 2 active nests; Community Event 1
		5		7/12/20	sunny 25°C	incl. 2 active nests
		5		7/12/20	sunny hot 31°C	1 bird on nest
		7		8/12/20	lt-mod SE, 20°C	1 bird on nest – total 3 active nests
		6		9/12/20	calm full sun cool 15°C	
		5		9/12/20	warm NE 25°C	
		7		10/12/20	calm, cloud/sun, warming	2 on active nests incl 1 near ex-Site 5; 1 juvenile; approach distance 40-50 m
		11		11/12/20	o/n lt shower, cool, 15°C 0700	2 on active nests, 4 fledglings in lagoon
		6		12/12/20	early drizzle, calm, overcast, 17°C at 0600	2 on nests, 1 fledgling, 3 adults
		Masked Lapwing		<i>Vanellus miles</i>	3	3
Welcome Swallow	<i>Hirundo neoxena</i>	3	3.75	2/12/20	cool S, 25°C, sun/c	
		2		3/12/20	cool, lt NE, 22°C	
		9		4/12/20	hot 32°C, lt NE	perched on branch
		1		9/12/20	calm full sun cool 15°C	
Eastern Great Egret <sup>CS – CAMBA, JAMBA</sup>	<i>Ardea modesta</i>	1	2	11/12/20	o/n lt shower, cool, 15°C 0700	Protected under JAMBA, CAMBA; foraged in shallows
		3		12/12/20	early drizzle, calm, overcast, 17°C 0600	2 in breeding plumage, foraged in remaining pool

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
White-faced Heron	<i>Egretta novaehollandiae</i>	1	1	12/12/20	early drizzle, calm, overcast, 17°C 0600	foraged in remaining pool
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	1	3	10/12/20	calm, cloud/sun, warming	perched on overhanging she-oak branch
		3		11/12/20	o/n lt shower, cool, 15°C 0700	foraged in lagoon shallows, mobbed by stilt sentries
		2		12/12/20	early drizzle, calm, overcast, 17°C at 0600	foraged in main pool, mobbed by stilts
Pied Cormorant	<i>P. varius</i>	1	1	11/12/20	o/n lt shower, cool, 15°C 0700	dried on she-oak branch W side
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	1	1	11/12/20	o/n lt shower, cool, 15°C 0700	foraged in shallows
Australian White Ibis	<i>Threskiornis molucca</i>	1	1.75	3/12/20	cool, lt NE, 22°C	foraged
		1		4/12/20	hot 32°C, lt NE	foraged in shallows
		2		11/12/20	o/n lt shower, cool, 15°C 0700	foraged in shallows
		3		11/12/20	o/n lt shower, cool, 15°C 0700	foraged, flew to south
Little Egret	<i>Egretta garzetta</i>	1	1	7/12/20	sunny hot 31°C	foraged in lagoon
Australian Raven	<i>Corvus coronoides</i>	3	3	4/12/20	hot 32°C, lt NE	mobbed by stilts near nest
Rock Dove*	<i>Columba livia</i>	4	3	10/12/20	calm, cloud/sun, cool	foraged, courted on dry surfaces between saltmarsh
		2		11/12/20	o/n lt shower, cool, 15°C 0700	took grit in bare areas
Crested Pigeon	<i>Ocyphaps lophotes</i>	2	2	10/12/20	calm, cloud/sun, cool	foraged near Rock Dove
Superb Fairy-wren <sup>CS</sup>	<i>Malurus cyaneus</i>	4	4	12/12/20	early drizzle, calm, overcast, 17°C at 0600	foraged in saltmarsh and young mangrove isolates at S end
Common Myna*	<i>Sturnus tristis</i>	1	1	10/12/20	calm, cloud/sun, cool	foraged near Rock Dove

<sup>CS</sup>conservation-significant species (including locally – within inner-western Sydney)

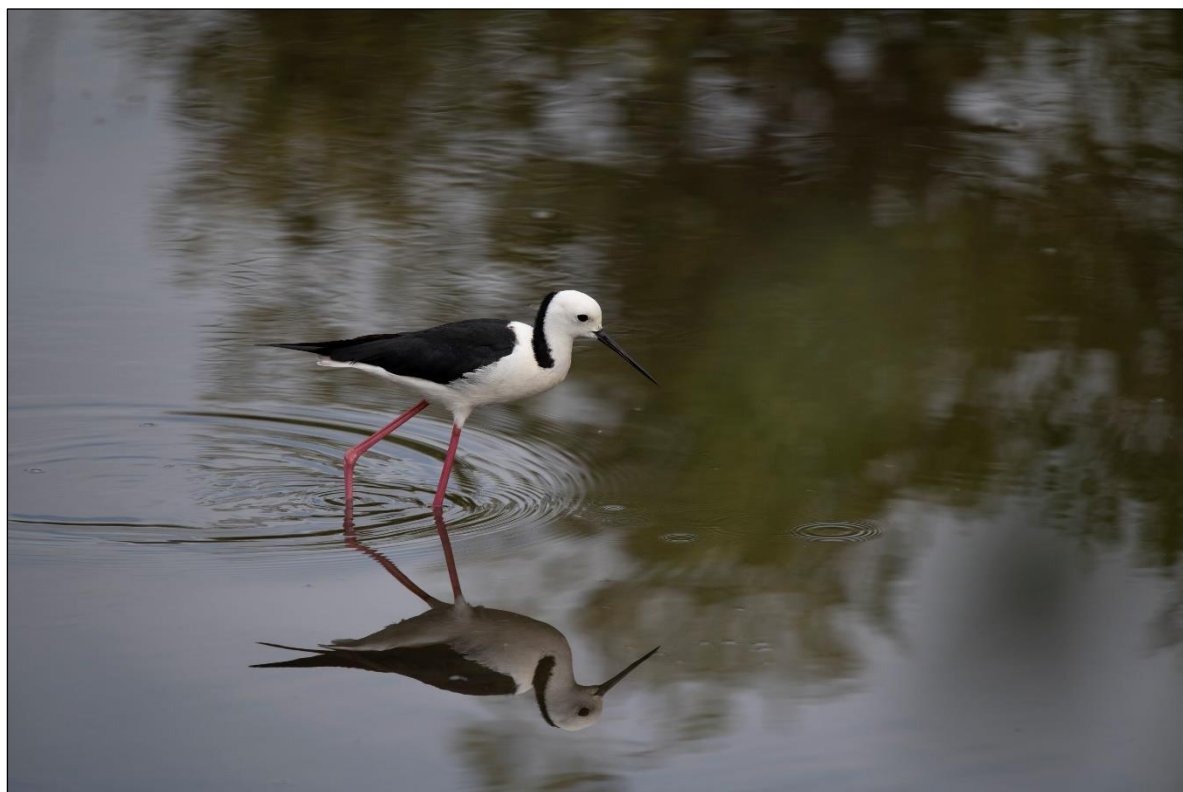
<sup>CAMBA</sup>China-Australia Migratory Bird Agreement <sup>JAMBA</sup>Japan-Australia Migratory Bird Agreement

\*Introduced species. Averaged total number of individual birds recorded at Site 1: 49.8

Plate 2: Black-winged Stilt adult (left) with 3 fledglings foraging in the southern (freshwater) lagoon at Site 1, 11/12/20. Note extensive algal areas during a hot period of very little rainfall and no inflow (InSight Ecology).



Plate 3: Adult Black-winged Stilt foraging in open water habitat at Site 1's southern lagoon after overnight rainfall (Melissa Alderton, 13/12/20).





Plates 4-5: Black-winged Stilt sitting on nest built on an old mangrove stump in the southern lagoon (Melissa Alderton, 13/12/20). Inset (Plate 5) - Black-winged Stilt nest with 4 eggs near Site 5 (InSight Ecology, 6/12/20).



Plate 6: Eastern Great Egret foraged in shallow open water and mangrove habitats at Site 1's southern lagoon – adult bird in breeding plumage of back plumes and pea-green facial skin (InSight Ecology, 12/12/20).





Plate 7: Egrets, herons, cormorants, stilts and ducks were the main members of the aquatic bird community surveyed at Site 1 where they foraged in open water, mangrove, saltmarsh and artificial (old sewer line – see centre right edge of photograph) habitats (InSight Ecology, 12/12/20).



Table 3: Bird species recorded at **Mason Park Wetland - Site 2**. Note that although 12 sessions were completed at each wetland site, not every species recorded at these sites was detected in every survey session. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Chestnut Teal	<i>Anas castanea</i>	2	2	2/12/20	cool S, 25°C, sun/cloud	rested at edge of pool
Black-winged Stilt <sup>CS</sup>	<i>Himantopus himantopus</i>	10	4.7	2/12/20	cool S, 25°C, sun/cloud	1 juvenile and 3 fledglings foraging pool/saltmarsh
		9		3/12/20	cool, lt NE, 22°C	pair building nest
		2		4/12/20	hot 32°C, lt NE	1 on nest
		8		7/12/20	sunny hot 31°C	rested in main pool area, foraged
		2		8/12/20	mod SSE, 20°C @ 1630	foraged in shrinking pool
		1		10/12/20	calm, cloud/sun, warming	rested, foraged
		1		11/12/20	o/n lt shower, cool, 15°C 0700	rested at nearly dried pool
Masked Lapwing	<i>Vanellus miles</i>	4	4.8	3/12/20	early drizzle, calm, overcast, 17°C at 0600	rested in dried pool area
		5		4/12/20	hot 32°C, lt NE	rested on dry pan
		7		7/12/20	sunny hot 31°C	rested in ever-shrinking pool

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
		5		7/12/20	sunny hot 31°C	rested at pool edge
		6		9/12/20	calm full sun cool 18°C @ 0800	rested at pool (30% water remaining)
		6		9/12/20	warm 26°C @ 1700	rested
		1		12/12/20	early drizzle, calm, overcast, 17°C @ 0600	rested
Silver Gull	<i>Chroicocephalus novaehollandiae</i>	13	17.1	2/12/20	cool S, 25°C, sun/cloud	rested on dried pool area
		2		3/12/20	cool NE, 22°C, sun/cloud	rested in dried pool and shallows
		92		4/12/20	hot 32°C, lt NE	large flock rested on dry pan of pool & shallows
		21		7/12/20	sunny hot 31°C	rested in main pool area
		18		8/12/20	mod SSE, 20°C @ 1630	rested in shrinking pool
		3		9/12/20	calm full sun cool 18°C @ 0800	rested at pool (30% water remaining)
		3		9/12/20	warm 26°C @ 1700	rested
		1		10/12/20	calm, cloud/sun, warming	rested
		1		12/12/20	early drizzle, calm, overcast, 17°C @ 0600	rested, foraged
Welcome Swallow	<i>Hirundo neoxena</i>	10	10	5/12/20	hot 29°C mod N	foraged, perched
		14		7/12/20	sunny hot 31°C	foraged
		6		9/12/20	warm 26°C @ 1700	foraged
Intermediate Egret	<i>Ardea intermedia</i>	1	1	10/12/20	calm, cloud/sun, warming	foraged in remaining small pool
Brown Goshawk <sup>CS</sup>	<i>Accipiter fasciatus</i>	1	1	2/12/20	cool S, 25°C, sun/cloud	foraged among starlings
Australasian Darter	<i>Anhinga novaehollandiae</i>	1	1	2/12/20	cool S, 25°C, sun/cloud	flew over towards Conway Ave. footbridge area
Australian White Ibis	<i>Threskiornis molucca</i>	1	1.3	2/12/20	cool S, 25°C, sun/cloud	
		2		7/12/20	sunny hot 31°C	foraged
		1		11/12/20	o/n lt shower, cool, 15°C 0700	foraged nr pool
Little Corella	<i>Cactua sanguinea</i>	4	2.5	9/12/20	warm 26°C @ 1700	flew over
		1		10/12/20	calm, cloud/sun, warming	foraged on saltmarsh
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	1	2	10/12/20	calm, cloud/sun, warming	flew over
Australian Raven	<i>Corvus coronoides</i>	2	2	7/12/20	sunny hot 31°C	fed on dead gull on dry pan
Rock Dove*	<i>Columba livia</i>	1	1	7/12/20	sunny hot 31°C	foraged in dry pan
Superb Fairy-wren <sup>CS</sup>	<i>Malurus cyaneus</i>	2	2	2/12/20	cool S, 25°C, sun/cloud	foraged in rushes at edge
		2		3/12/20	cool, lt NE, 22°C	flew into wetland to forage



Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Magpie-lark	<i>Grallina cyanoleuca</i>	1	1	3/12/20	cool, lt NE, 22°C	foraged in saltmarsh
Common Starling*	<i>Sturnus vulgaris</i>	1	1	3/12/20	cool NE, 22°C, sun/cloud	foraged in saltmarsh
Common Myna*	<i>Sturnus tristis</i>	2	2	3/12/20	cool NE, 22°C, sun/cloud	foraged

<sup>CS</sup>conservation-significant species (within inner-western Sydney)

\*Introduced species

Averaged total number of individual birds recorded at Site 2: 56.4

Plate 8: Almost fully desiccated main lagoon looking south to substation at rear (InSight Ecology, 11/12/20).

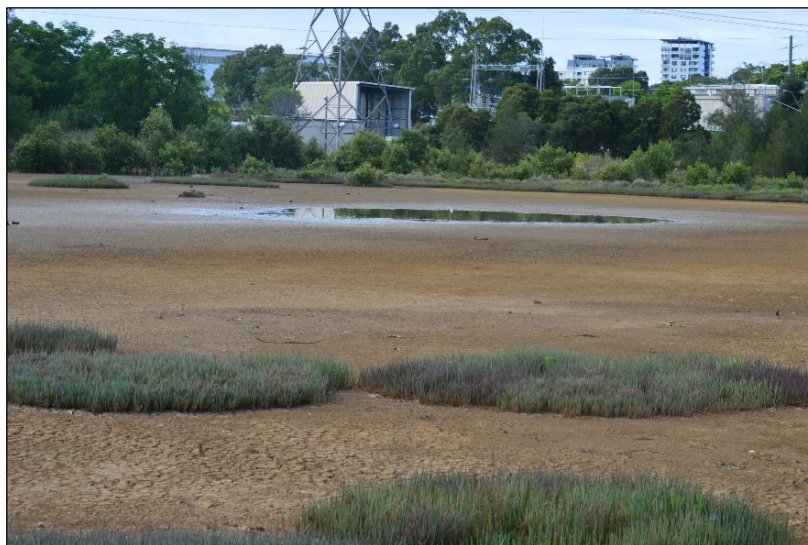


Plate 9: The main lagoon with open water, saltmarsh and dry pan resting and foraging habitats for stilts, gulls and Masked Lapwing, taken 8/12/20 from same location as Plate 8 (InSight Ecology).



Plate 10: A lone adult Black-winged Stilt on the dry pan of the stormwater-fed main lagoon with saltmarsh sections, taken 8/12/20 (InSight Ecology).



Table 4: Bird species recorded at **Mason Park Wetland - Site 3**. Note that although 12 sessions were completed at each wetland site, not every species recorded at these sites was detected in every survey session. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Latham's Snipe <sup>CS</sup> CAMBA, JAMBA, ROKAMBA	<i>Gallinago hardwickii</i>	1	1	3/12/20	cool, lt NE, 24°C @ 1300	flushed @ 1323, 1335 and 1350 (@ 33.85495°, 151.08208°) from mangrove forest & saltmarsh ecotone, also, Juncus and saltmarsh patch; mobbed by BW Stilt
Black-winged Stilt <sup>CS</sup>	<i>Himantopus himantopus</i>	3	3.6	2/12/20	cool S, 25°C, sun/cloud	foraged in saltmarsh
		3		3/12/20	cool, lt NE, 24°C @ 1300	foraged in saltmarsh
		4		5/12/20	warm 26°C	3 juveniles, 1 on nest
		7		8/12/20	mod SSE, 20°C @ 1630	3 juveniles, 4 adults on remaining pool
		5		9/12/20	calm full sun cool 18°C @ 0800	2 parents & 3 fast-growing juveniles, foraged
		5		9/12/20	warm 26°C @ 1700	foraged, incl. 2 juveniles
		1		10/12/20	calm, cloud/sun	foraged



Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
		1		12/12/20	calm, overcast, humid 21°C @ 0800	rested & foraged at almost-dry central pool
Masked Lapwing	<i>Vanellus miles</i>	1	1.25	3/12/20	cool, lt NE, 24°C @ 1300	rested edge of saltmarsh
		2		8/12/20	mod SSE, 20°C @ 1630	rested near pool, dry edge
		1		9/12/20	calm full sun cool 18°C @ 0800	flew over
		1		12/12/20	calm, overcast, humid 21°C @ 0800	rested at edge of dry pool
Silver Gull	<i>Chroicocephalus novaehollandiae</i>	1	1	10/12/20	calm, cloud/sun	rested on dry pan area
Welcome Swallow	<i>Hirundo neoxena</i>	11	7.5	3/12/20	cool, lt NE, 24°C @ 1300	foraged in saltmarsh and pools
		4		12/12/20	calm, overcast, humid 21°C @ 0800	foraged over saltmarsh and dry central pool
Brown Goshawk <sup>CS</sup>	<i>Accipiter fasciatus</i>	1	1	11/12/20	o/n lt shower, cool, 15°C 0700	flew over to Site 5 area, mobbed by stilts
White-faced Heron	<i>Egretta novaehollandiae</i>	1	1	8/12/20	mod SSE, 20°C @ 1630	flew over towards Site 4
Australian White Ibis	<i>Threskiornis molucca</i>	3	3.5	2/12/20	cool S, 25°C, sun/cloud	foraged in saltmarsh
		2		9/12/20	warm 26°C @ 1700	foraged in saltmarsh, pool
		7		10/12/20	calm, cloud/sun	foraged, flew over
		2		12/12/20	calm, overcast, humid 21°C @ 0800	foraged in saltmarsh
Galah	<i>Eolophus roseicapillus</i>	1	1	10/12/20	calm, cloud/sun	flew over
Grey Butcherbird	<i>Cracticus torquatus</i>	1	1	10/12/20	calm, cloud/sun	flew over
Rock Dove*	<i>Columba livia</i>	1	3	3/12/20	cool, lt NE, 23°C	foraged in bare patches between saltmarsh
		5		10/12/20	calm, cloud/sun	flew over
Spotted Dove*	<i>Streptopelia chinensis</i>	1	2	3/12/20	cool NE, 22°C, sun/cloud	foraged
		1		9/12/20	warm 26°C @ 1700	rested in she-oak shade
Superb Fairy-wren <sup>CS</sup>	<i>Malurus cyaneus</i>	4	2.75	3/12/20	cool, lt NE, 24°C @ 1300	foraged in Juncus strip; 1x European brown hare (introduced locally in 1930s for coursing/hunting – J. Harrington pers. comm.) & flushed from Juncus strip
		3		7/12/20	sunny hot 31°C	foraged in <i>Juncus kraussii</i> strip
		2		9/12/20	calm full sun cool 18°C @ 0800	adult male foraged in old mangrove piles; 2 <sup>nd</sup> male called in Juncus strip

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
		2		12/12/20	calm, overcast, humid 21°C @ 0800	foraged, called in <i>Juncus kraussii</i> ridge area
Brown Honeyeater <sup>CS</sup>	<i>Lichmera indistincta</i>	1	1	8/12/20	mod SSE, 20°C @ 1630	foraged in she-oaks nr path; mobbed by Noisy Miner
Noisy Miner	<i>Manorina melanocephala</i>	1	1	8/12/20	mod SSE, 20°C @ 1630	mobbed Brown Honeyeater in she-oak stand near path
Common Myna*	<i>Sturnus tristis</i>	2	0.75	8/12/20	mod SSE, 20°C @ 1630	foraged on dry edge
		1		9/12/20	warm 26°C @ 1700	foraged on dry pan

<sup>CS</sup>conservation-significant species (including locally – within inner-western Sydney)

<sup>CAMBA</sup>China-Australia Migratory Bird Agreement <sup>JAMBA</sup>Japan-Australia Migratory Bird Agreement

<sup>ROKAMBA</sup>Republic of Korea-Australia Migratory Bird Agreement

\*Introduced species

Averaged total number of individual birds recorded at Site 3: 32.35

Plate 11: Saltmarsh Rush *Juncus kraussii* patch growing along a raised area across the central section of MPW at Site 3 with the walking and cycling path at rear along Powell's Creek. This strip provided foraging and shelter habitat for Superb Fairy-wren and Latham's Snipe in the survey (InSight Ecology, 7/12/20).





Plate 12: The central lagoon from Site 3 survey station looking north-west to mangrove forest and planted Swamp Oak with saltmarsh and rushland habitats in the foreground. Latham's Snipe (1 bird), Black-winged Stilt and Australian White Ibis foraged across this area (InSight Ecology, 10/12/20)



Table 5: Bird species recorded at **Mason Park Wetland - Site 4**. Note that although 12 sessions were completed at each wetland site, not every species recorded at these sites was detected in every survey session. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Chestnut Teal	<i>Anas castanea</i>	2	3	5/12/20	warm 26°C	foraged in mangroves and saltmarsh @ high tide
		1		7/12/20	sunny hot 31°C @ 1700	foraged in wet saltmarsh, high tide
		6		12/12/20	calm, overcast, humid 21°C @ 0800	2 parents with 4 ducklings, walked through wet saltmarsh on route to Powell's Creek (likely same birds recorded in Saleyards Ck canal 2/12/20)
Latham's Snipe <sup>CS</sup> CAMBA, JAMBA, ROKAMBA	<i>Gallinago hardwickii</i>	1	1	5/12/20	warm 26°C	flew from mangroves and samphire (1603 hrs) to nr ibis. 15 m from viewing platform @ 33.85329°, 151.08229° - high tide
		1		9/12/20	warm 26°C @ 1700	flushed from wet saltmarsh near platform – likely same bird as 5/12, high tide

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Black-winged Stilt <sup>CS</sup>	<i>Himantopus himantopus</i>	3	4.25	2/12/20	cool S, 25°C, sun/cloud	foraged in saltmarsh and mangrove edge
		7		4/12/20	hot 32°C, lt NE	foraged, agitated nr nest
		5		5/12/20	warm 26°C	4 adults, 1 juvenile – high tide
		4		7/12/20	sunny hot 31°C @ 1700	incl 1 on nest, high tide
		1		8/12/20	mod SSE, 20°C @ 1630	foraged in young mangroves @ high tide
		5		9/12/20	warm 26°C @ 1700	1 bird on nest, 2 juveniles, 2 adults foraged, high tide
		6		10/12/20	calm, cloud/sun	3 adults, 3 fledglings foraged in pool & saltmarsh falling tide
		3		13/12/20	calm, overcast, humid, 20°C @ 0730	3 x 2–3-day-old fledglings not previously counted, likely fr nest nr mangrove pile; community event 2
Masked Lapwing	<i>Vanellus miles</i>	2	2.5	5/12/20	warm 26°C	foraged in saltmarsh
		3		10/12/20	calm, cloud/sun	called, flew
Dusky Moorhen	<i>Gallinula tenebrosa</i>	1	1	5/12/20	warm 26°C	foraged, called in mangroves, high tide
White-faced Heron	<i>Egretta novaehollandiae</i>	1	1	2/12/20	cool S, 25°C, sun/cloud	foraged in saltmarsh and mangrove edge
		1		7/12/20	sunny hot 31°C @ 1700	foraged in wet saltmarsh
		1		9/12/20	warm 26°C @ 1700	foraged in mangroves
		1		12/12/20	calm, overcast, humid 21°C @ 0800	foraged in saltmarsh and mangroves
Pied Cormorant	<i>Phalacrocorax varius</i>	1	1	5/12/20	warm 26°C	flew over from Powell's Creek
Australian White Ibis	<i>Threskiornis molucca</i>	3	4.9	2/12/20	cool S, 25°C, sun/cloud	foraged in saltmarsh and mangrove edge
		3		5/12/20	warm 26°C	foraged and rested in saltmarsh
		8		7/12/20	sunny hot 31°C	foraged in mangrove and saltmarsh shallows
		17		7/12/20	sunny hot 31°C @ 1700	foraged in wet saltmarsh
		3		8/12/20	mod SSE, 20°C @ 1630	foraged, flew, high tide
		5		9/12/20	calm full sun cool 18°C @ 0800	foraged in mangroves
		3		9/12/20	warm 26°C @ 1700	foraged in mangroves and saltmarsh
		1		11/12/20	lt SW cool 15°C @ 0700, cloud/sun	foraged in saltmarsh
		1		12/12/20	calm, overcast, humid 21°C @ 0800	foraged around pooled areas, saltmarsh

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Galah	<i>Eolophus roseicapillus</i>	2	2	4/12/20	hot 32°C, lt NE	foraged saltmarsh gaps
		2		11/12/20	lt SW cool 15°C @ 0700, cloud/sun	foraged on saltmarsh fruit
Crested Pigeon	<i>Ocyphaps lophotes</i>	5	5	8/12/20	mod SSE, 20°C @ 1630	rested in small she-oak nr viewing platform
Superb Fairy-wren <sup>CS</sup>	<i>Malurus cyaneus</i>	1	1	9/12/20	calm full sun cool 18°C @ 0800	foraged in old mangrove pile
Brown Honeyeater <sup>CS</sup>	<i>Lichmera indistincta</i>	3	3	9/12/20	warm 26°C @ 1700	foraged & called in mangroves
Common Myna*	<i>Sturnus tristis</i>	7	4.3	7/12/20	sunny hot 31°C @ 1700	foraged in wet saltmarsh
		4		8/12/20	mod SSE, 20°C @ 1630	foraged near viewing platform
		2		9/12/20	warm 26°C @ 1700	foraged in saltmarsh, mobbed by stilts

<sup>CS</sup>conservation-significant species (including locally – within inner-western Sydney)

<sup>CAMBA</sup>China-Australia Migratory Bird Agreement

<sup>JAMBA</sup>Japan-Australia Migratory Bird Agreement

<sup>ROKAMBA</sup>Republic of Korea-Australia Migratory Bird Agreement

\*Introduced species

Averaged total number of individual birds recorded at Site 4: 33.95

Plate 13: Latham's Snipe migrates between its non-breeding grounds in Australia and breeding grounds in Japan, arriving in south-eastern Australia in late August to December and departing by the end of February (Higgins and Davies 1996). One and possibly two individual birds were recorded in wet saltmarsh and mangroves at Sites 3 and 4 in the study. When flushed Latham's Snipe fly in a characteristic zig-zag pattern. Size of adult bird – 28-31 cm (Pizzey and Knight 1997). Image: Jason Girvan en.wikimedia.org.





Plate 14: The threatened ecological community of coastal saltmarsh (foreground) as well as mangrove forest (midground) provided food and refuge for Latham's Snipe, Black-winged Stilt, Chestnut Teal, Dusky Moorhen and several other wetland species at Site 4. Tidal influence occurred here (InSight Ecology, 3/12/20).



Table 6: Bird species recorded at **Mason Park Wetland - Site 5**. Note that only 5 sessions were completed at this site, ie. up to and including 9/12/20. This was because of disturbance generated by the presence of the ornithologist of a nearby nesting pair of Black-winged Stilt which would have increased if surveying continued at the site. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Chestnut Teal	<i>Anas castanea</i>	8	8	2/12/20	cool S, 25°C, sun/cloud	foraged in W side of wetland c. 20 m N planted saltbush patch oval edge
Grey Teal	<i>Anas gracilis</i>	4	4	2/12/20	cool S, 25°C, sun/cloud	foraged in W side of wetland c. 20 m N planted saltbush patch oval edge
Northern Mallard*	<i>Anas platyrhynchos</i>	2	2	9/12/20	calm full sun cool 18°C @ 0800	foraged in pool, pair from feeding station @ junction Saleyards & Powell's Creeks
Black-winged Stilt <sup>CS</sup>	<i>Himantopus himantopus</i>	2	2.75	2/12/20	cool S, 25°C, sun/cloud	foraged in W side of wetland c. 20 m N planted saltbush patch oval edge
		4		7/12/20	sunny hot 31°C @ 1700	2 adults (1 sitting on nest), 2 fledglings
		2		8/12/20	mod SSE, 20°C @ 1630	incl. 1 bird on nest

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
		3		9/12/20	warm 26°C @ 1700	2 foraged, 1 sat on nest; 1 European brown hare
Masked Lapwing	<i>Vanellus miles</i>	4	4	2/12/20	cool S, 25°C, sun/cloud	foraged in W side of wetland c. 20 m N planted saltbush patch oval edge
Welcome Swallow	<i>Hirundo neoxena</i>	4	4	7/12/20	sunny hot 31°C @ 1700	foraged – W side of wetland
Leaden Flycatcher <sup>CS</sup>	<i>Myiagra rubecula</i>	1	1	2/12/20	cool S, 25°C, sun/cloud	male foraged in adjacent planted swamp oak strip c. 20 m N of planted saltbush patch at oval edge

<sup>CS</sup>conservation-significant species (including locally – within inner-western Sydney)

\*Introduced species

Averaged total number of individual birds recorded at Site 5: 25.75

Estimated local population sizes and breeding status of shorebird and other aquatic bird species that regularly occurred at Mason Park Wetland during this survey:

- Latham's Snipe: 1-2 birds (non-breeding);
- Black-winged Stilt (breeding at MPW): 31 birds - comprising 17 adults, 14 young (juveniles and recent fledglings) and 5 active nests split between tidal-influenced northern and surface runoff-fed southern sections;
- Masked Lapwing: 10, all adults (breeding not confirmed at MPW);
- Eastern Great Egret: 3, all adults (2 birds in breeding plumage, breeding unlikely at MPW);
- Australian White Ibis: 24, mostly adults, some sub-adults (breeding not confirmed at MPW);
- White-faced Heron: 1-2 (breeding not confirmed at MPW);
- Chestnut Teal: 17 (breeding not confirmed but possible at MPW);
- Grey Teal: 6 (breeding not confirmed but possible at MPW);
- Silver Gull: 21, noting group of 92 visited Site 2 pool on 4/12/20 (non-breeding at MPW).



Plate 15: Two Black-winged Stilt fledglings foraged in the muddy shallows with saltmarsh and mangrove habitat patches nearby at Site 5 on the western side of Mason Park Wetland (InSight Ecology, 9/12/20).



Plates 16 and 17: Welcome Swallow (Plate 16) perched and Superb Fairy-wren foraged (and potentially nested) in old piles of mangroves (inset - Plate 17) removed by BirdLife Australia volunteers to protect and increase the amount of samphire and threatened coastal saltmarsh present at Mason Park Wetland and provide more mudflats for shorebirds to forage and roost (both images by InSight Ecology, 3/12/20).





Table 7: Bird species recorded at 'The Hill' Revegetation - Site 6. This site comprised c. 20-year-old plantings of paperbark tea-tree (to 10 m), acacia spp., swamp oak, Australian Blackthorn, grey ironbark and other species. Overgrown in parts with weeds - lantana thickets, paspalum, kikuyu and other exotic grasses, green cestrum, white cedar, broad-leafed privet, date palm, castor oil plant, ochna, wild aniseed, cobbler's pegs and other species. The site needs best-practice bush regeneration and removal of old furniture, seats, blue rubbish bin, table and other dumped rubbish in the central ridge area. This site was surveyed by InSight Ecology in 2016. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Yellow-tailed Black-Cockatoo <sup>CS</sup>	<i>Calyptorhynchus funereus</i>	2	2	5/12/20	hot, 29°C, mod N	foraged, called in acacias at NE edge
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	2	2	11/12/20	cool 15°C @ 0700 lt SE overcast	flew over hill, called
Yellow Thornbill <sup>CS</sup>	<i>Acanthiza nana</i>	2	2.8	7/12/20	sunny, 25°C @ 1000, calm	foraged in planted acacia
		2		7/12/20	sunny hot 31°C @ 1700	as above, called
		2		8/12/20	mod SSE, 20°C @ 1630	foraged in acacia
		4		10/12/20	calm, cloud/sun 24°C (session 1)	group foraged, called in acacia
		4		12/12/20	calm, overcast 19°C @ 0730	foraged, called in swamp oak and acacias
White-browed Scrubwren <sup>CS</sup>	<i>Sericornis frontalis</i>	5	3.6	7/12/20	sunny, 25°C @ 1000, calm	adult pair with 3 juveniles in dense lantana @ 33.85618° 151.08284°
		1		8/12/20	mod SSE, 20°C @ 1630	male gave territory call in weedy hilltop area
		4		10/12/20	calm, cloud/sun 24°C (session 2)	foraged near SW aniseed/white cedar edge
		4		11/12/20	cool 15°C @ 0700 lt SE overcast	2 adults, 2 juveniles, foraged in lantana
		4		12/12/20	calm, overcast 19°C @ 0730	group foraged, called in cedar/lantana N end
Brown Honeyeater <sup>CS</sup>	<i>Lichmera indistincta</i>	1	1.5	10/12/20	calm, cloud/sun 24°C	foraged in swamp oak
		2		11/12/20	cool 15°C @ 0700 lt SE overcast	foraged in swamp oaks
Red Wattlebird	<i>Anthochaera carunculata</i>	1	1	12/12/20	calm, overcast 19°C @ 0730	called in ironbark
Silveryeye	<i>Zosterops lateralis</i>	3	5.8	7/12/20	sunny, 25°C @ 1000, calm	foraged in lantana and privet edges
		2		7/12/20	sunny hot 31°C @ 1700	foraged in acacia and privet
		2		10/12/20	calm, cloud/sun 24°C (session 1)	called, foraged
		4		10/12/20	calm, cloud/sun 24°C (session 2)	foraged near SW aniseed/white cedar edge
		2		11/12/20	cool 15°C @ 0700 lt SE overcast	foraged in lantana

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
		22		12/12/20	calm, overcast 19°C @ 0730	flock foraged, called, flew hilltop and SE sections
Superb Fairy-wren <sup>CS</sup>	<i>Malurus cyaneus</i>	5	5.5	7/12/20	sunny hot 31°C @ 1700	foraged, called in black-thorn/acacia edge with mown grass on east side
		11		8/12/20	mod SSE, 20°C @ 1630	2 groups - foraged, called, along SE edge
		4		10/12/20	calm, cloud/sun (session 1)	foraged in lantana
		4		10/12/20	calm, cloud/sun 24°C (session 2)	foraged near SW aniseed/white cedar edge
		4		11/12/20	cool 15°C @ 0700 lt SE overcast	foraged, called in lantana, acacias
		5		12/12/20	calm, overcast 19°C @ 0730	foraged, called N and SE weedy edges
Red-browed Finch <sup>CS</sup>	<i>Neochmia temporalis</i>	1	1	7/12/20	sunny hot 31°C @ 1700	foraged near Superb Fairy-wren group of 7/12
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	1	1	11/12/20	cool 15°C @ 0700 lt SE overcast	perched, called
Australasian Figbird	<i>Sphecotheres vieillotii</i>	1	1	8/12/20	mod SSE, 20°C @ 1630	perched on dead tall acacia
Pied Currawong	<i>Strepera graculina</i>	1	3	8/12/20	mod SSE, 20°C @ 1630	perched, foraged
		1		10/12/20	calm, cloud/sun 24°C (session 2)	perched, flew
		1		11/12/20	cool 15°C @ 0700 lt SE overcast	perched in ironbark
Torresian Crow	<i>Corvus orru</i>	1	1	10/12/20	calm, cloud/sun 24°C (session 2)	called, perched
Spotted Dove*	<i>Streptopelia chinensis</i>	2	2	8/12/20	mod SSE, 20°C @ 1630	called, perched, flew
		2		10/12/20	calm, cloud/sun 24°C (session 2)	called, perched SE edge
		2		12/12/20	calm, overcast 19°C @ 0730	perched, called
White-faced Heron	<i>Egretta novaehollandiae</i>	1	1	10/12/20	calm, cloud/sun 24°C (session 2)	flew in from NW (Site 1), perched on acacia
Eastern Koel	<i>Eudynamis orientalis</i>	1	1	12/12/20	calm, overcast 19°C @ 0730	called, perched in tall acacia N end
Common Starling*	<i>Sturnus vulgaris</i>	1	1	11/12/20	cool 15°C @ 0700 lt SE overcast	perched in acacia, SE edge
Common Myna*	<i>Sturnus tristis</i>	2	2.3	8/12/20	mod SSE, 20°C @ 1630	foraged, called SE edge
		2		10/12/20	calm, cloud/sun (session 1)	foraged, called
		3		12/12/20	calm, overcast 19°C @ 0730	perched, called, flew

<sup>CS</sup>conservation-significant (locally - within inner-western Sydney)

\*introduced species

Averaged total number of individual birds recorded at Site 6: 38.5

Plate 18: A small population of 5 White-browed Scrubwren continue to live in dense lantana, white cedar and other weeds as well as Australian Blackthorn and fallen acacias at Site 6. Two adults were recorded with 3 juveniles (this species breeds from late July-November). Future regeneration of the site needs to ensure sufficient dense groundcover vegetation is retained for this species and Superb Fairy-wren while weed removal occurs in stages (InSight Ecology, 7/12/20 – adult male shown).



Plate 19: A pair of Yellow-tailed Black-Cockatoo foraged and called in acacias – they listened for grubs in acacia trunks at Site 6 (female shown – grey eye-ring - InSight Ecology, 6/12/20).

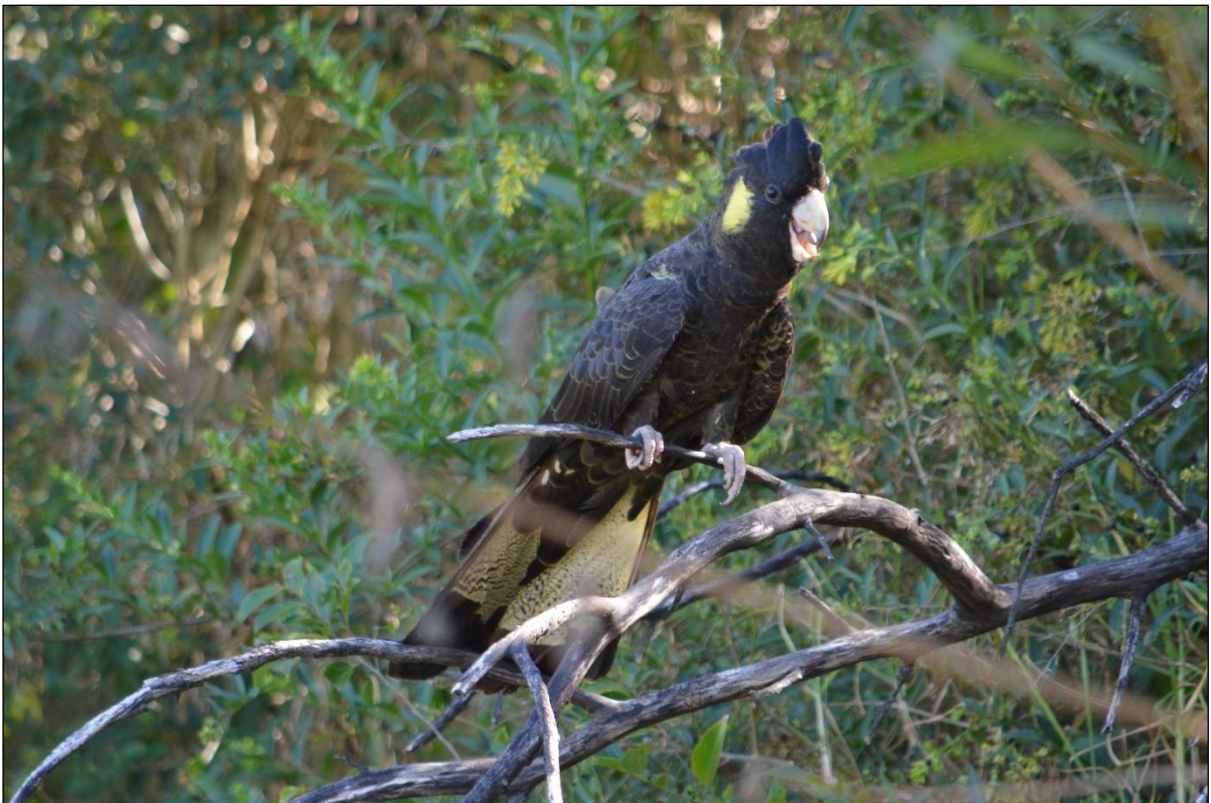


Table 8: Bird species recorded at **Powell's Creek south - Site 7**. Habitats surveyed were open water, the creek's concrete base (exposed at low tide) and rocky and well revegetated banks. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Chestnut Teal	<i>Anas castanea</i>	2	6.25	5/12/20	hot, 29°C, mod N	rested along muddy rocky banks, falling tide
		8		7/12/20	sunny hot 31°C @ 1700	foraged in open water, rested on rocky bank
		12		9/12/20	calm full sun cool 18°C @ 0800	flock rested on open water, perched on rocky bank @ falling tide
		3		4/12/20	hot 32°C, lt NE	foraged in canal, concrete base revealed @ falling tide
Grey Teal	<i>Anas gracilis</i>	1	2.25	5/12/20	hot, 29°C, mod N	rested along muddy rocky banks, falling tide
		4		7/12/20	sunny hot 31°C @ 1700	perched on rocky bank
		3		9/12/20	calm full sun cool 18°C @ 0800	foraged in open water, falling tide
		1		4/12/20	hot 32°C, lt NE	foraged in canal, concrete base revealed @ falling tide
Black-winged Stilt <sup>CS</sup>	<i>Himantopus himantopus</i>	4	4	5/12/20	hot, 29°C, mod N	foraged, rested along muddy rock wall banks
		4		11/12/20	cool 15°C @ 0700 lt SE overcast	foraged in saltmarsh, sedges planted bank
Little Egret	<i>Egretta garzetta</i>	1	1	4/12/20	hot 32°C, lt NE	foraged in canal, concrete base revealed @ falling tide
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	2	2	9/12/20	warm 26°C @ 1700	foraged in open water of canal, falling tide
Silver Gull	<i>Chroicocephalus novaehollandiae</i>	8	7	4/12/20	hot 32°C, lt NE	foraged in canal, concrete base revealed @ falling tide
		6		9/12/20	warm 26°C @ 1700	foraged in open water of canal, falling tide
Dusky Moorhen	<i>Gallinula tenebrosa</i>	1	1	4/12/20	hot 32°C, lt NE	rested in <i>Juncus kraussii</i> edge of rocky bank
Common Myna*	<i>Sturnus tristis</i>	3	3	4/12/20	hot 32°C, lt NE	foraged in canal, concrete base revealed @ falling tide

<sup>CS</sup>conservation-significant (locally - within inner-western Sydney)

\*introduced species

Averaged total number of individual birds recorded at Site 7: 26.5



Plate 20: Site 7 showing different bird habitats present at falling tide - open water (with foraging Silver Gull), concrete canal base, rocky banks and good quality rush and samphire revegetation. Pomeroy Street bridge over upper Powell's Creek is in the background (InSight Ecology, 4/12/20).



Plate 21: Muddy rocks along the lower eastern banks of Powell's Creek on a falling tide provided resting habitat for Black-winged Stilt (InSight Ecology, 6/12/20).





Plate 22: A small population of the aquatic herbivore Dusky Moorhen moved between MPW Site 4 and Powell's Creek – shown on the well revegetated western bank of Powell's Creek at Site 7 at high tide (InSight Ecology, 2/12/20). A larger population occurs nearby at The Waterbird Refuge in Bicentennial Park.



Table 9: Bird species recorded at **Powell's Creek north - Site 8**. Habitats surveyed were open water, the creek's concrete base (exposed at low tide), Conway Avenue foot/cycle bridge and rocky and well revegetated banks.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Chestnut Teal	<i>Anas castanea</i>	6	6	9/12/20	calm full sun cool 18°C @ 0800	foraged in open water, falling tide
Grey Teal	<i>Anas gracilis</i>	2	2	7/12/20	sunny, 25°C @ 1000, calm	rested along muddy rocky banks, falling tide
Silver Gull	<i>Chroicocephalus novaehollandiae</i>	6	6	9/12/20	calm full sun cool 18°C @ 0800	rested, foraged in open water/concrete canal base

Total number of birds recorded at Site 7 during the survey: 14.



Plate 23: Site 8 showing eastern bank rush, sedge, kangaroo grass and samphire revegetation, grassy western bank, open water, rocky bank and concrete canal base habitats at falling tide with Conway Avenue bridge in the background (InSight Ecology, 9/12/20).



Table 10: Bird species recorded at **Main Track Revegetation - Site 9**. This site comprised c. 20-year-old plantings of paperbark tea-tree, acacia spp., swamp oak, grey ironbark and other eucalypts, figs, lilly-pilly, Weeping Grass *Microlaena stipoides*, *Lomandra longifolia* and other native species along the main walking track extending from the carpark and along the eastern bank of Saleyards Creek canal. This site was surveyed by InSight Ecology in 2016. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	2	1.5	7/12/20	sunny calm 26°C @ 1830	fed in flowering young grey ironbark trackside
		1		8/12/20	sunny, cool, 23°C @ 1545, lt SE	foraged in flowering eucalypts trackside
		1		9/12/20	warm 26°C @ 1630, sunny, lt-mod NE	foraged in flowering eucalypts trackside
		2		10/12/20	calm, cloud/sun 24°C	called, perched in she-oaks
Yellow Thornbill cs	<i>Acanthiza nana</i>	2	3.8	2/12/20	cool overcast SE 23°C @ 0900	foraged in swamp oak
		2		7/12/20	sunny calm 26°C @ 1830	foraged, called, in swamp oaks and acacias
		6		8/12/20	sunny, cool, 23°C @ 1545, lt SE	foraged high in Port Jackson Fig then flowering eucalypts trackside

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
		2		5/12/20	hot 30°C @ 1500, lt-mod W/NW	called, foraged in figs
		6		9/12/20	warm 26°C @ 1630, sunny, lt-mod NE	foraged in swamp oaks
		5		10/12/20	calm, cloud/sun 24°C	foraged, called in she-oaks
New Holland Honeyeater <sup>CS</sup>	<i>Phylidonyris novaehollandiae</i>	1	2	8/12/20	sunny, cool, 23°C @ 1545, lt SE	foraged in flowering eucalypts trackside
		2		9/12/20	calm full sun cool 18°C @ 0800	foraged in flowering eucalypts trackside
		1		9/12/20	warm 26°C @ 1630, sunny, lt-mod NE	foraged in flowering eucalypts trackside
		4		10/12/20	calm, cloud/sun 24°C	foraged in flowering eucalypts trackside
Scarlet Honeyeater <sup>CS</sup>	<i>Myzomela sanguinolenta</i>	2	2	5/12/20	hot 30°C @ 1500, lt-mod W/NW	males called, foraged in swamp oak and flowering eucalypts trackside
Red Wattlebird	<i>Anthochaera carunculata</i>	1	1.3	4/12/20	hot 32°C, lt NE	foraged in planted eucalypts trackside
		3		7/12/20	sunny calm 26°C @ 1830	fed in flowering young grey ironbark trackside
		1		8/12/20	sunny, cool, 23°C @ 1545, lt SE	foraged in flowering eucalypts trackside
Noisy Miner	<i>Manorina melanocephala</i>	1	1	9/12/20	warm 26°C @ 1630, sunny, lt-mod NE	foraged in flowering eucalypts trackside
Silvereye	<i>Zosterops lateralis</i>	1	1.25	4/12/20	hot 32°C, lt NE	called trackside acacia
		1		8/12/20	sunny, cool, 23°C @ 1545, lt SE	foraged, called trackside
		1		5/12/20	hot 30°C @ 1500, lt-mod W/NW	called in swamp oak
		2		12/12/20	calm, overcast 21°C @ 0900	called in she-oaks
Superb Fairy-wren <sup>CS</sup>	<i>Malurus cyaneus</i>	4	3.75	2/12/20	cool overcast SE 23°C @ 0900	foraged in <i>Lomandra longifolia</i> track verge
		2		4/12/20	hot 32°C, lt NE	foraged, called in lomandra
		3		5/12/20	hot 30°C @ 1500, lt-mod W/NW	foraged along track edge
		5		7/12/20	sunny calm 26°C @ 1830	foraged across track nr large figs
		5		8/12/20	sunny, cool, 23°C @ 1545, lt SE	foraged in lomandra trackside, flew across path
		3		9/12/20	hot 30°C @ 1500, lt-mod W/NW	foraged trackside
		5		9/12/20	warm 26°C @ 1630, sunny, lt-mod NE	foraged in lilly pilly and acacias
		3		12/12/20	calm, overcast 21°C @ 0900	foraged in lomandra and mangrove edge
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	1	1	2/12/20	cool overcast SE 23°C @ 0900	perched in swamp oak
Olive-backed Oriole	<i>Oriolus sagittatus</i>	1	1	2/12/20	cool overcast SE 23°C @ 0900	called in trackside fig

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Willie Wagtail	<i>Rhipidura leucophrys</i>	2	2	4/12/20	hot 32°C, lt NE	foraged, called at end of carpark/track entrance
Torresian Crow	<i>Corvus orru</i>	1	1	12/12/20	calm, overcast 21°C @ 0900	perched, called in canal-side she-oaks
Australian White Ibis	<i>Threskiornis molucca</i>	1	1	4/12/20	hot 32°C, lt NE	foraged along track
White-faced Heron	<i>Egretta novaehollandiae</i>	1	1	12/12/20	calm, overcast 21°C @ 0900	flew over from MPW
Eastern Koel	<i>Eudynamys orientalis</i>	1	3.5	12/12/20	calm, overcast 19°C @ 0730	called, perched in tall acacia N end
		6		13/12/20	calm, overcast, 20°C @ 0730	3 males, 3 females in mate pursuits in figs nr carpark

<sup>CS</sup>conservation-significant (locally - within inner-western Sydney)

\*introduced species

Averaged total number of individual birds recorded at Site 9: 27.1

Plate 24: Small, locally uncommon honeyeaters such as Scarlet Honeyeater (10-11 cm), a blossom-nomad around Sydney (Higgins et al. 2001), foraged on flowering ironbark and other eucalypts planted along the southern end of Site 9 (Greg Miles, commons.wikimedia.org).





Plate 25: New Holland Honeyeater (17-18 cm), a resident or sedentary species around Sydney (Higgins et al. 2001), was recorded foraging for nectar in flowering ironbark and other eucalypts near the southern end of Site 9 (Tom Skulander).



Plates 26-28: Site 9 featured a mix of c. 20-year-old planted Swamp Oak *Casuarina glauca* and River Oak *C. cunninghamiana*, Swamp Paperbark *Melaleuca ericifolia*, Spiny-headed Mat-rush *Lomandra longifolia*, Port Jackson Fig *Ficus rubiginosa*, Lilly Pilly *Syzygium smithii* and acacia species which provided foraging, shelter and potentially breeding habitat for Yellow Thornbill (upper inset - Lindsay Hansch), Superb Fairy-wren (lower inset - Trevor Bullock) and White-browed Scrubwren (InSight Ecology, 8/12/20). Surveyed in 2007-08 & 2016.





Table 11: Bird species recorded at **Saleyards Creek canal and revegetation - Site 10**. This site included open water, revegetated western bank from the carpark to Underwood Road and artificial habitats - concrete channel base and banks, fences and bridges. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Chestnut Teal	<i>Anas castanea</i>	8	4.3	4/12/20	hot 32°C, lt NE	family of 2 adults and 6 ducklings walked along exposed canal base
		3		2/12/20	cool overcast SE 23°C @ 0900	foraged in open water of canal
		2		5/12/20	hot 30°C @ 1500, lt-mod W/NW	perched near footbridge, high tide
Grey Teal	<i>Anas gracilis</i>	4	4	4/12/20	hot 32°C, lt NE	foraged in canal, falling tide
Pacific Black Duck	<i>Anas superciliosa</i>	1	1	2/12/20	cool overcast SE 23°C @ 0900	foraged in canal, falling tide
Masked Lapwing	<i>Vanellus miles</i>	2	2	4/12/20	hot 32°C, lt NE	foraged in canal, falling tide
White-faced Heron	<i>Egretta novaehollandiae</i>	1	1	4/12/20	hot 32°C, lt NE	foraged in canal pools at falling tide
		1		2/12/20	cool overcast SE 23°C @ 0900	foraged in upper canal's pooled sections
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	1	1	2/12/20	cool overcast SE 23°C @ 0900	foraged in open water, lower canal section
Silver Gull	<i>Chroicocephalus novaehollandiae</i>	15	15	4/12/20	hot 32°C, lt NE	rested, foraged in open water/concrete canal base

Averaged total number of individual birds recorded at Site 10: 28.3

Plate 29: A family Of 8 Chestnut Teal moved along the upper section of Saleyards Creek canal at falling tide on 4/12/20 (InSight Ecology) - also likely recorded traversing Mason Park Wetland at Site 4 on 12/12/20.



Plate 30: Saleyards Creek canal provided open water, concrete base and banks, fences and established revegetation habitats that connected on its eastern side with Site 9. Silver Gull, Chestnut Teal, Grey Teal, Masked Lapwing and White-faced Heron foraged at low tide in the canal – the footbridge from Mason Park Wetland to Site 11 and onto Bicentennial Park is in the background (InSight Ecology, 4/12/20).

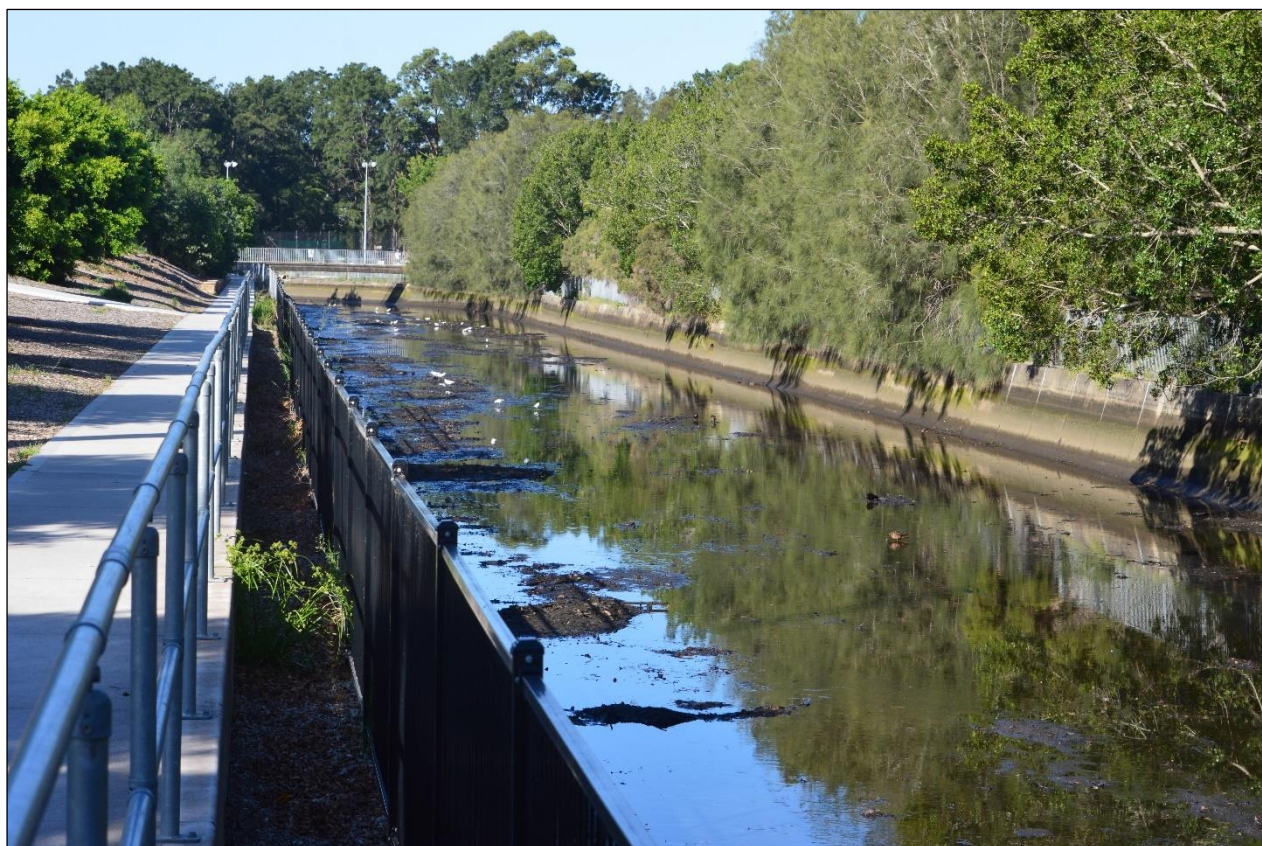


Table 12: Bird species recorded at **Powell's Creek revegetation (north) - Site 11**. Bird habitats included planted acacia, eucalypts, swamp oak, Australian Blackthorn *Bursaria spinosa*, *Lomandra longifolia*, lantana/other weeds and fringing mangrove forest along Powell's Creek. The site connects well to the footbridge across lower Saleyards Creek and adjacent Mason Park Wetland (north). Surveyed by InSight Ecology in 2016. The averaged total number of individual birds recorded at the site during the survey is shown at the table's base together with conservation status (where applicable) and if the species was introduced to Australia.

Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
White-browed Scrubwren <sup>CS</sup>	<i>Sericornis frontalis</i>	2	3.5	2/12/20	cool overcast SE 23°C @ 0900	adult pair foraged, territory called, likely with young in dense weedy patch with Aust. Blackthorn, acacias, eucalypts trackside
		4		5/12/20	hot 30°C @ 1500, lt-mod W/NW	2 adults with 2 juveniles, foraged in lantana, lomandra below track
		4		7/12/20	sunny calm 26°C @ 1830	adults & juveniles foraged in thick weedy section
		4		12/12/20	calm, humid, 20°C @ 0800	adults & juveniles foraged, called, flew in exotic vines and lantana nr underpass



Common name	Scientific name	No. birds	Average no. birds at site	Date surveyed	Weather conditions	Field notes
Superb Fairy-wren <sup>CS</sup>	<i>Malurus cyaneus</i>	2	4	2/12/20	cool overcast SE 23°C @ 0900	adult pair foraged in thick lantana and lomandra trackside
		7		4/12/20	hot, 29°C @ 1700 calm	foraged, called in blackthorn and lomandra
		3		5/12/20	hot 30°C @ 1500, lt-mod W/NW	foraged below track
Yellow Thornbill <sup>CS</sup>	<i>Acanthiza nana</i>	2	2	4/12/20	hot, 29°C @ 1700 calm	foraged in swamp oak
		2		5/12/20	hot 30°C @ 1500, lt-mod W/NW	foraged in swamp oak and acacias
Crested Pigeon	<i>Ocyphaps lophotes</i>	5	5	4/12/20	hot, 29°C @ 1700 calm	foraged trackside, perched in swamp oaks
Magpie-lark	<i>Grallina cyanoleuca</i>	2	2	4/12/20	hot, 29°C @ 1700 calm	foraged in mangroves
		2		12/12/20	calm, humid, 20°C @ 0800	foraged below track nr mangroves (likely nesting)
Australian Magpie	<i>Cracticus tibicen</i>	1	1	12/12/20	calm, humid, 20°C @ 0800	foraged trackside and into lomandra
Red-rumped Parrot <sup>CS</sup>	<i>Psephotus haematonotus</i>	2	2	12/12/20	calm, humid, 20°C @ 0800	pair flew over to Bicentennial Park
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	3	3	12/12/20	calm, humid, 20°C @ 0800	called, flew over mangroves
Australian White Ibis	<i>Threskiornis molucca</i>	1	1	12/12/20	calm, humid, 20°C @ 0800	foraged in mangroves
Torresian Crow	<i>Corvus orru</i>	2	2	12/12/20	calm, humid, 20°C @ 0800	perched, called in eucalypts trackside

<sup>CS</sup>conservation-significant (locally - within inner-western Sydney)

\*introduced species

Averaged total number of individual birds recorded at Site 11: 25.5

Plate 31: Dense revegetation at Site 11 viewed from the south-east along the walking path showing the northern end of Bressington Park revegetation at left of path (InSight Ecology, 2/12/20).



Plate 32: Well revegetated track and canal verge from Site 11 along Powell's Creek to Saleyards Creek canal footbridge provided connectivity to facilitate the movement of small populations of Superb Fairy-wren and probably White-browed Scrubwren. Dense planted strips of Australian Blackthorn, ironbarks, *Lomandra longifolia* and Kangaroo Grass *Themeda triandra* comprise this link which could be enhanced by similar plantings on the western side of the path adjoining Bressington Park (InSight Ecology, 4/12/20).



## 5.2 Opportunistic records

During the December 2020 survey period some opportunistic records of birds were obtained. These occurred mostly at and near an artificial feeding and watering station and shelter at the junction of Saleyards Creek and Powell's Creek canals. Some people were observed delivering fresh water and food to exotic and native waterfowl and other aquatic species at this location. A large concrete bank near the shelter/feeding station was used as a high tide drying roost by Great Cormorant *Phalacrocorax carbo*, Little Black Cormorant, Australasian Darter *Anhinga novaehollandiae*, Dusky Moorhen and Chestnut Teal (Plate 33).

## 5.3 Birds of conservation significance

A total of 14 bird species of conservation significance were recorded at surveyed sites during the project. Two of these species were shorebirds – the intercontinental migrant Latham's Snipe and the resident Black-winged Stilt. The third species was Eastern Great Egret, a resident aquatic species usually detected as a single bird or in a small group in the breeding season.

The remaining 11 species were birds that have significantly declined in abundance in inner-western Sydney, their preferred bushland habitats lost long ago to urban development. Three of these species – White-browed Scrubwren (see Plate 18), Superb Fairy-wren (see Plate 28) and Yellow Thornbill (see Plate 27) – were recorded in small breeding populations in c. 20-year-old revegetated



woodland at 'The Hill', along the main track from the carpark near Saleyards Creek and along lower Powell's Creek near the northern end of Bressington Park. These birds were recorded in the first of the InSight Ecology surveys 14 years ago when these planted areas were younger but still linked to mangrove forest and other vegetation along Powell's Creek and to Bicentennial Park (InSight Ecology 2008). Their persistence and breeding status at these sites around MPW is of local conservation significance and indicative of the importance and quality of the original planting program. The remaining 8 species include 3 honeyeaters (Brown, Scarlet and New Holland), the summer migrant Leaden Flycatcher, Yellow-tailed Black-Cockatoo and Brown Goshawk.

#### 5.4 Community field events

Both community field events were enthusiastically attended by members of the local community as well as 3 representatives of BirdLife Australia. A total of 22 people attended both events – 8 at the first event (5/12/20) and 14 at the second event (13/12/20). One participant travelled from Sydney's eastern suburbs to attend the second event while others attended following discussions while walking along the eastern side of MPW and either reading the publicity signs or meeting the surveyor (InSight Ecology) during fieldwork. All used Eventbrite effectively and efficiently to register for either or both events. A list of all participants is available to Strathfield Council from InSight Ecology if required.

At the first event, participants were provided with an overview of the birds of Mason Park Wetland, their habitats and conservation requirements, presented by Judy Harrington (BirdLife Australia and ex-SOPA ranger) and Andrew Huggett (InSight Ecology). Andrew Huggett repeated this overview for participants at the second event.

Alison Ellis (BirdLife Australia) provided participants at both events with an overview of BirdLife Australia's mangrove removal/reduction work at MPW and SOPA's benthic invertebrate sampling project at the wetland. The latter work has shown that there is a lack of species diversity and lowered abundance of invertebrate prey that is currently available to shorebirds. In addition to other impacts such as prolonged drought conditions and inadequate tidal flow, this could help explain the limited diversity of shorebird species recorded at MPW in the current survey (see Section 6.4).

A booklet 'Experience the birds of Mason Park Wetland and their habitats' prepared specifically for these events (Appendix 2) was distributed to each participant and binoculars loaned from BirdLife Australia for their use on a guided walk around the wetland. This included surveyed Sites 1-4 at the wetland and Site 9 (main track revegetation) on the return route to the carpark. Some participants used the booklet to record birds they were confident identifying during the morning events. All records were checked by Andrew prior to acceptance.

Feedback obtained from field event participants was highly supportive of the opportunity to acquire knowledge of the birds of MPW and their conservation needs from experienced field knowledge holders. A recurrent feedback theme raised by participants was the diversity of different bird species still present at MPW despite the level of historical land use impact. A second theme was a request for ongoing community events at MPW to continue developing their knowledge of wetland and terrestrial bird species and contribute to the protection and restoration of their habitats.

Plate 33: Australasian Darter (above) and Great Cormorant (below, in breeding plumage) move on the surface of creeks, canals and rivers searching for fish and other prey, diving quickly and agilely to snatch prey before re-surfacing. A concrete bank suitably smooth for fleshy-footed birds such as cormorants and ducks and a metal fence at the junction of Saleyards Creek and Powell's Creek canals provided a drying and resting station for these and other native aquatic species, often at high tide (InSight Ecology, 9/12/20).



## 6. Discussion

### 6.1 Overview

Mason Park Wetland bears the heavy footprint of its industrial past and its recreational and residential present. Its hydrology has been significantly altered and native vegetation and faunal communities lost with the remainder adversely impacted by past infilling for rubbish dumping and to create sporting fields, the loss of natural stream function through channelisation of Powell's Creek and Saleyards Creek, stormwater inflows from surrounding urban areas and the reduction of tidal influence from Parramatta River. However, the results of this study and the two previous avifaunal investigations have demonstrated that Mason Park Wetland remains a regionally and

nationally important semi-natural ecosystem. Within a carefully planned and implemented conservation management program Mason Park Wetland is capable of being repaired and restored for shorebirds and other fauna and flora.

The next section presents the key impacts on shorebird populations and their habitat in Australia and locally at Mason Park Wetland. These underpin widespread and significant shorebird declines that have occurred since the 1940-50s across the Sydney region (see, for example, Sydney Olympic Park Authority and NPWS, 2003) as well as nationally (see, for example, Australian Government 2015). This information also sets the context and foundation for recommendations to protect and restore shorebird habitat at Mason Park Wetland (Section 7).

## 6.2 Key impacts on shorebirds and their habitat

In Australia, migratory shorebirds are particularly susceptible to impacts associated with land and water-based development and recreation activities because of their high site fidelity, tendency for most species to aggregate in mixed species foraging groups, very high energy demands and need for connected habitat comprising both foraging and roosting sites (Clemens et al. 2010). Activities resulting in habitat loss or degradation, disturbance or direct mortality are most likely to cause significant adverse impacts to migratory shorebirds (Australian Government 2017). Climate change and variability are also implicated in the global trend of decline in shorebird population abundance including along the important East Asian-Australasian Flyway (Murray and Fuller 2015; EAAF 2018a, b).

Direct loss of shorebird foraging and roosting habitat can occur through clearing, inundation, infilling or draining to construct harbours, marinas, ports, jetties, parks or housing areas (Piersma 2012; Sutherland et al. 2012; Studds et al. 2017). Indirect habitat loss may occur through changes to hydrology, water quality or vegetation structural changes near roosting sites such as weed invasion or building encroachment (Piersma 2012; Sutherland et al. 2012; BirdLife Australia 2017). Loss of key shorebird habitat reduces the amount and availability of foraging and roosting sites which reduces the ability of birds to accumulate energy needed for successful migration and breeding (BirdLife Australia 2017). Incremental loss of smaller shorebird sites such as Mason Park Wetland and other small urban sites affects the total amount of shorebird habitat available at the broader landscape scale.

Reduction in the quality of habitat can make areas unavailable or less attractive to shorebirds which are sensitive to small changes in invertebrate prey availability and foraging environments (Australian Government 2015). This can occur through reduced food availability, loss of high tide roosting sites, increased weed incursion, changes in water depth affecting food productivity, water pollution (including microplastics) and altered chemical balance of foraging substrates resulting from, for instance, disturbance of acid sulphate soils (Piersma 2012; CT Environmental 2016).

Disturbance of shorebird foraging, roosting and breeding sites have major adverse impacts on migratory and resident shorebirds and the habitats globally. This is because they often occur during critical life cycle stages for shorebirds such as during their limited foraging periods in Australia prior to their departure on their long-distance journeys to the breeding grounds in the northern hemisphere (Australian Government 2015, 2017). This is a time when shorebirds are feeding intensively to accumulate sufficient energy reserves for these incredible trips - one Bar-tailed Godwit was recorded flying 11,680 km non-stop flying from Alaska to New Zealand in 9 days (<http://www.abc.net.au/news/science/2016-06-17/flying-for-your-life-ann-iones/7459288>).

Activities such as power boating, water- and jet-skiing, fishing including harvesting of pipis and invertebrates, commercial ferries generating noise and wave energy to cause beach, mangrove and riverbank erosion, walking dogs, people and/or dogs entering wetlands, noise and shoreline lighting can all degrade shorebird habitat and disturb shorebirds (InSight Ecology 2017b). These activities commonly occur along Parramatta River foreshore. Shorebirds are particularly sensitive to sudden loud noises such as from construction sites and water-based approaches including boats and ferries (Australian Government 2017). If the level of disturbance is high and prolonged shorebirds can avoid all or parts of suitable foraging and/or roosting habitat. The use of 4WD vehicles on beaches has been responsible for the crushing of eggs and death of nestlings of Australian Pied Oystercatcher and Little Tern (InSight Ecology 2017b). Avian predators of resident shorebird species – mostly corvids (crows and ravens) and gulls – also account for the death of chicks and loss of eggs of these species.

Direct mortality is a major factor implicated in shorebird decline and loss of access to suitable habitat (Kirby et al. 2008; Piersma 2012). Actions that can lead to increased risk of shorebird mortality such as boat collision, strike caused by cables and towers, predation by fox, cat and/or dog, poor waste management and chemical or oil spills all adversely impact on shorebirds and their foraging, roosting and nesting habitats (Kirby et al. 2008; Murray and Fuller 2015).

### 6.3 The decline of shorebirds in the Sydney region

Aerial photographs of Homebush Bay in the 1930s show extensive areas of tidal mudflats and saltmarsh which would have provided rich foraging grounds for a diverse assemblage of migratory and resident shorebirds (Phil Straw in Sydney Olympic Park Authority and NPWS, 2003). Keith Hindwood and Ernie Hoskin, renowned Sydney ornithologists of the 1940s and 1950s, reported “several thousand” shorebirds of 10 to 11 species in tidal mudflats that once occurred at the entry of Cooks River into Botany Bay (Phil Straw in Sydney Olympic Park Authority and NPWS, 2003). The loss of these tidal flats has been a key driver of this decline together with broader scale impacts such as the loss of critical stopover habitat for intercontinental migratory waders along the East Asian-Australasian Flyway (see Murray and Fuller 2015; Studds et al. 2017 and Section 6.4).

Unfortunately, today’s shorebird populations have sharply declined at Botany Bay and particularly Parramatta River Estuary. Total summer counts of less than 100 birds from 4-5 species at 3-4 sites in Parramatta River Estuary are now commonplace (Sydney Olympic Park Authority [SOPA] and NPWS 2003; CT Environmental 2016; SOPA 2019; InSight Ecology 2021a). For example, counts conducted for the February 2021 National Shorebird Monitoring Program recorded 60 Bar-tailed Godwit, a once common summer long-distance migrant in Parramatta River Estuary, on the western side of Hen and Chicken Bay (Birddata, 27/2/21) and 1 bird at The Waterbird Refuge (Birddata, 27/2/21). At Kissing Point Bay (Putney), only 1-2 birds have been recorded in recent years (InSight Ecology 2021a). This trend has been reflected in surveys at Mason Park Wetland in 2007-08 and 2016 where Bar-tailed Godwit, Pacific Golden Plover and Curlew Sandpiper were not recorded (InSight Ecology 2008; 2017a). A total of 21 Red-necked Avocet was recorded at The Waterbird Refuge, Bicentennial Park recently (Birddata, 27/2/21) but not at Mason Park Wetland.

### 6.4 Changes in shorebird abundance and composition at Mason Park Wetland

Over the past two decades there has been a significant decline in shorebird abundance and species richness at Mason Park Wetland. A richer assemblage of shorebird species has been replaced by fewer species from a narrower suite of families. Ambrose reported 11 species of intercontinental



migratory shorebirds that foraged and rested in saltmarsh and pooled sections and on muddy banks of the wetland in his December 2008 survey (Ambrose Ecological Services Pty Ltd 2009). These included, without indication of the numbers of individual birds present, Pacific Golden Plover, Grey Plover, the threatened Curlew Sandpiper, Red-necked Avocet, Latham's Snipe, Wood Sandpiper, Marsh Sandpiper, Pectoral Sandpiper, Ruddy Turnstone, Ruff and Sharp-tailed Sandpiper (Ambrose Ecological Services Pty Ltd 2009).

A smaller suite of shorebird species was recorded by InSight Ecology in November 2007. These included 55 Sharp-tailed Sandpiper, 4 Marsh Sandpiper and 25 (nesting, November 2007) and 37 (with 11 young birds, March 2008) Black-winged Stilt (InSight Ecology 2008). Two local shorebird species – Red-kneed Dotterel and Black-fronted Dotterel were recorded in low numbers (InSight Ecology 2008).

Today, Mason Park Wetland's shorebird community, as intensively surveyed in December 2020, comprised just 3 species – Latham's Snipe (1-2 birds), Black-winged Stilt (31 birds) and Masked Lapwing (10 birds). A fourth species, Black-fronted Dotterel, has been recently recorded at MPW by BirdLife Australia volunteers (J. Harrington and A. Ellis, pers. comm.) but was not detected during the December 2020 survey. Of these, Latham's Snipe may be the last remaining intercontinental migratory shorebird species at Mason Park Wetland, at least during the latest Austral summer. Latham's Snipe and its habitat is protected under CAMBA, JAMBA and ROKAMBA provisions.

In contrast, Black-winged Stilt numbers have remained relatively stable at 25-37 individuals with at least 5 breeding pairs since at least 2007. This could be because of the stilt's ability to meet its food requirements from a taxonomically simpler suite of benthic invertebrate prey than preferred by long-distance migratory shorebird species but this would need further investigation. Also, Black-winged Stilt breed collaboratively in colonies utilising a sentry system of breeding and non-breeding birds to detect and ward off potential predators of eggs and young. This was clearly evident during the recent survey and included stilts mobbing Torresian Crow, Australian Raven, Brown Goshawk, egrets, White-faced Heron and Common Myna.

Plausible site-scale reasons for the decline of particularly long-distance migratory shorebirds at Mason Park Wetland include reduced quantity, availability and diversity of preferred benthic invertebrate food supplies, inadequate tidal flush from Parramatta River via Powell's Creek – the northern section receives a degree of tidal flush but the southern section is dependent on surface water inflows only, and less diversity/availability of muddy foraging substrates and roost sites. Small changes in the quality, quantity, diversity and availability of benthic invertebrates on which shorebirds feed can result from changes in water depth, stormwater pollution and altered chemical balance of foraging substrates (see Piersma 2012). These can significantly reduce the foraging value of a site such as MPW to long-distance migratory shorebirds which have high energy needs for their arduous journeys. Other factors may include disturbance of wetland foraging and roost sites by human and dog ingress to the mostly unfenced site, predation of birds by fox, dog and/or cat, drought conditions prevalent at time of survey affecting the southern and central lagoons and weed encroachment of foraging and roosting habitat.

At the broader scale, the loss or degradation of feeding and roosting habitat usually due to urban development at other foraging sites along Australia's east coast, at staging points for migration such as estuaries in Queensland, and at stopover sites (e. g. Vietnam, Malaysia, Thailand) where birds refuel before flying to their winter breeding grounds in the Arctic, China, Korea and Japan is a likely driver of shorebird decline. Other drivers include the effects of climate change on shorebird

population levels including in the EAAF, loss of habitat connectivity along migration routes and the cumulative impacts of land reclamation, pollution and wetland drainage for agriculture that occur across shorebird summer and winter ranges (reviewed in Sutherland et al. 2012; Studds et al. 2017).

## 6.5 Changes in other aquatic and terrestrial bird communities of the study area

The size of some resident populations of other aquatic bird species remained relatively stable between the 2007-08, 2016 and 2020 surveys of MPW. These included Chestnut Teal (14-22 birds, noting that 35 birds were recorded by BirdLife Australia volunteers on 27/2/21), Little Black Cormorant (2-4 birds), White-faced Heron (2 birds) and Dusky Moorhen (1-3 birds). Other species recorded increases in numbers over these periods – Australian White Ibis (5-24 birds), Eastern Great Egret (0-3 birds) and Silver Gull (12-21 birds). Some decreases in numbers of bird species recorded also occurred – Purple Swamphen (2 birds in 2007-08, 2 in 2016, 0 in 2020) and Grey Teal (22-32 birds to 6 birds in 2020). Predation by fox and cat could be implicated in the reduction of numbers of these species at MPW.

The significance of some of these observed changes is fairly low given the seasonal responses of wetland bird species to favourable or unfavourable conditions and supplies of food, water and shelter, the small size of MPW, and its proximity to The Waterbird Refuge at nearby Bicentennial Park. December 2020 was a dry time during which the area of pooled water in the wetland decreased by about 70-80% at the central section and part of the southern section. Previous surveys were conducted during mostly wetter conditions when both water depth and surface area were greater than present in the December 2020 survey. However, noticeable fluctuations occurred for Australian White Ibis and Grey Teal which may have reflected other factors such as variation in reproductive success and greater availability of food elsewhere (Australian White Ibis) or presence of alternative roosting and foraging sites within close proximity such as The Waterbird Refuge (Grey Teal).

Among the terrestrial bird species surveyed, the locally conservation-significant White-browed Scrubwren and Yellow Thornbill recorded small increases in their population sizes at the revegetation sites (Sites 6, 9 and 11) from 2007-08 to 2020. This was most likely due to the reproductive success of these small birds in dense revegetation and woody weeds (at Site 6) that was about 20 years old at the time of the 2020 survey. The size of the locally conservation-significant Superb Fairy-wren population remained relatively stable over this time (11-14 birds) as did small populations of New Holland Honeyeater (3-4 birds) and Red Wattlebird (3-4 birds). Ongoing population monitoring of these species would be needed to confirm these trends over time.

## 7. Recommendations

### 7.1 Overview

This section provides a set of practical recommendations to help protect, conserve and restore Mason Park Wetland for shorebirds and other fauna and flora and their habitat. These are based on the results of this study, previous MPW avifaunal surveys, and Council's MPW 2008 management plan. Each recommended action is prioritised according to the assessed degree of urgency of implementation at the wetland. This is determined by the need to address current key threats to wetland ecological condition and function particularly as viable shorebird habitat, manage threatening processes, repair and restore existing ecological damage, provide opportunities for local community engagement, education and participation in the protection and on-ground conservation

management of Mason Park Wetland, and implement effective shorebird population monitoring and surveying.

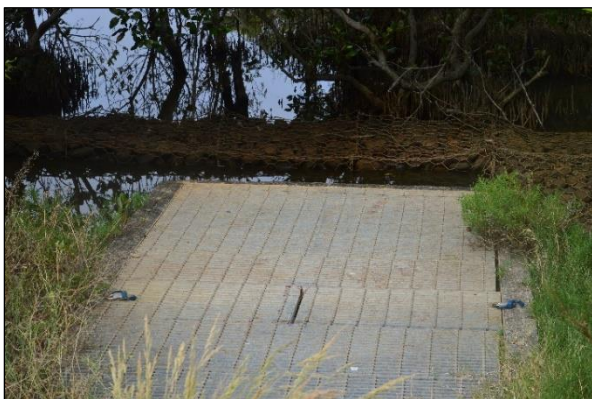
Recommendations contained in this section should be included in Strathfield Council's new Plan of Management for Mason Park Wetland. This document is currently being prepared utilising information contained in the original plan (Sainty and Associates 2008) and new knowledge and data that has emerged since that time.

Consideration should be given to securing appropriate levels of funding to undertake the following recommended environmental protection, restoration and monitoring actions at Mason Park Wetland. For example, the NSW Environmental Trust (Restoration and Rehabilitation Program) provides grants for projects of up to 3 years' duration to help protect and restore important sites including wetlands and their fauna and flora. There may also be funding available from Greater Sydney Local Land Services and the Federal Department of Agriculture, Water and the Environment.

#### 7.1.1 Restore adequate tidal influence to Mason Park Wetland

Issue: Lack of adequate tidal ingress to and egress from all of the wetland. Current tidal influence is confined to mostly the northern end of the wetland via a rock gabion and gridded concrete underpass emplacement that connects with Powell's Creek canal via a small gated inlet/outlet (Plates 34-35). Berms or small artificial ridges across the central and southern sections prevent salt water reaching these parts of the wetland.

Plates 34-35: An existing gabion-protected concrete box and channel structure under the walking/cycling path - the red circle indicates the small opening of the channel to Powell's Creek (InSight Ecology, 2/12/20).



Actions: Investigate viable options to allow tidal waters to fully circulate through the entire wetland system from Powell's Creek at the existing northern site and via a new tidal entry/exit point of sufficient size at the wetland's southern end. A proposed bridge over Powell's Creek at Warsaw Street for walking and cycling access to the main path along the eastern edge of MPW could be an opportunity to create this southern tidal access point. The current northern structure should be increased in size to improve tidal flush performance. These options need to consider best-practice ecological solutions rather than solely engineering ones. The tidal gate structures currently operating at Badu Mangroves and The Waterbird Refuge at Bicentennial Park could be used as a basis for design of the two recommended MPW tidal gates or entry points (see Plates 36-38). Consultation with Sydney Olympic Park Authority is advised. Also, investigation of inserting and stabilising openings in the berms or ridges across the central part of the wetland is recommended.



Plates 36-38: The tidal gate system currently operating at Bicentennial Park. Salt water from Powell's Creek and Homebush Bay flows into and exists from Badu Mangroves via a gridded concrete channel under the main walking path (left – Plate 36). A similar structure operates further north to allow adequate tidal flushing of The Waterbird Refuge wetland (upper right – Plate 37 and lower right – Plate 38) and includes a solar-powered pump (InSight Ecology, 14/12/20).



Priority: High.

#### 7.1.2 Improve the quality of surface water entering Mason Park Wetland

Issue: Stormwater runoff from urban areas to the south and south-west of MPW is reducing water quality in the southern lagoon. This is likely to have contributed to a reduction in the species diversity and abundance of benthic invertebrates and thus the quality of foraging habitat for shorebird species sensitive to these impacts such as Red-necked Avocet, Sharp-tailed Sandpiper and the threatened Curlew Sandpiper.

Actions: Investigate design and site installation options for sediment retention and erosion control measures on the southern side of the existing unsealed track from Mason Park playing fields to near 'The Hill' revegetation site. Installation of a small sediment interception pond and associated silt-stop fencing could occur just south of this track, i. e. between the track and the boundary with the electricity substation and pumping station complex. Engagement and consultation with Ausgrid and Sydney Water is advised, together with appropriate community signage in this area.



Priority: High.

### 7.1.3 Protect and restore threatened wetland plant communities

Issue: Significant areas of the threatened ecological community of coastal saltmarsh occur across MPW. A population of the threatened plant, Narrow-leaved *Wilsonia wilsonia backhousei*, occurs near the southern corner of the wetland (GPS location details held by InSight Ecology). Patches of the locally and regionally significant Saltmarsh Rush *Juncus kraussii* occur in the central and northern parts of MPW. Each of these plant communities/populations are threatened by inadequate tidal flow (saltmarsh species particularly) weed encroachment, mangrove incursion and trampling by humans, dogs and bicycles, particularly in the eastern and south-eastern sectors of MPW.

Actions:

1. Progressively restore adequate tidal flow to all of the wetland as recommended in Section 7.1.1. Map, photograph and protect the existing *Wilsonia wilsonia backhousei* population from damage – a fenced area with interpretive signage around the population is recommended.
2. The erection and maintenance of fencing along the readily accessible southern and eastern boundaries of MPW is highly recommended to protect these plant communities and ensure breeding populations of Black-winged Stilt are not disturbed by preventing human, dog, fox and cat ingress to these zones. The fencing could include bays where interpretive signage and, potentially, a small community bird hide is provided for local community engagement and education (see Section 7.1.5).
3. The current mangrove reduction program by BirdLife Australia is recommended with the retention of patches of piles of mangrove branches for bird perching and potentially nesting habitat (see Section 7.1.4).
4. Best-practice revegetation of bare ground with local native saltmarsh species is also recommended, over time.

Priorities: High – Action 1; medium-high (over the longer-term, ie. the next 12 months) – Action 2; medium-high – Action 3, with downgrading to low once a clearing threshold is reached. Note that sufficient areas of existing mangrove forest should be retained undisturbed as fauna habitat along the northern and north-western flanks of the wetland – the aim is to mitigate or prevent the encroachment of mangroves into saltmarsh and muddy shoreline habitats. Action 4 - medium.

### 7.1.4 Increase the amount and availability of foraging and roosting habitat

Issues:

1. Only relatively small areas of suitable foraging substrates such as mudflats and shorelines used by shorebirds currently exist at MPW. Improving tidal flow through the wetland will help to increase this amount but, in the interim, there is a need to provide more available foraging space distributed around the wetland for species that once occurred there such as Curlew Sandpiper, Marsh Sandpiper, Sharp-tailed Sandpiper and Pacific Golden Plover.
2. Very few (currently 3-4 fallen she-oak branches and stumps on the western shore) roost sites are available for shorebird and other aquatic bird use at MPW.

The regrowth of small isolated clumps of swamp oak on the eastern flank of MPW is not considered an obstruction to shorebirds approaching the wetland from this direction and in fact provides shelter for other bird species in summer.

Actions:

1. Continue with the current mangrove reduction program to help provide eventual open muddy sites for shorebird foraging and roosting use.
2. Investigate the potential for creating and maintaining other open areas as muddy foraging and high tide roosting space for shorebirds along the southern, eastern and western parts of MPW. Liaison with an experienced ornithologist and BirdLife Australia is recommended to identify and help manage these sites.
3. Provide artificial roosting habitat for shorebirds and other aquatic birds along the western, southern and northern flanks of MPW. These would comprise wooden branches and small poles installed in or over shorelines where possible and without disturbing threatened plant communities or nesting birds or causing erosion. Work with BirdLife Australia and other groups including NPWS (and potentially Environment, Energy and Science Group within Department of Planning, Industry and Environment) to obtain advice on the design and installation of this artificial roosting habitat. There is potential for the inclusion of local community volunteers (see Section 7.1.5) in helping to undertake this work.
4. Retain existing and new piles of mangrove branches removed during Action 1 as roosting and potentially nesting or refuge sites for some bird species, e. g. Superb Fairy-wren, Black-winged Stilt and Latham's Snipe (refuge only).

Priorities: High – Actions 1 and 2; medium – Action 3; high – Action 4.

#### 7.1.5 Engage and educate the local community

Issue: Aside from earlier revegetation efforts that included Bushcare volunteers, there has been a generally low level of community engagement and education conducted at Mason Park Wetland over the past two decades. Recently, this has changed through Council's engagement with BirdLife Australia, SOPA and others. There is a need to build on this progress and particularly the 2020 community field events to engage and educate the local community and increase their participation in helping to protect and restore Mason Park Wetland for shorebirds and other biodiversity.

Actions:

1. Develop practical opportunities for local community participation in ongoing wetland bird surveying and monitoring (Section 7.1.6), ideally through the formation of a Friends of Mason Park Wetland group. The basis for this group already exists in the people who supported both recent community field events. Activities that could be supported by Council may include, for example, wetland bird identification and monitoring workshops that build on the success of the recent 'starter' events, shorebird food assessment field trips – the benthic invertebrate sampling work currently occurring at MPW and run by SOPA, mangrove removal/reduction work being undertaken currently by BirdLife Australia, and installation of artificial shorebird roost sites around the wetland.
2. Support the design and installation of a community bird hide for use by interested members of the local community, school groups and Friends of Mason Park Wetland group. This could be installed at the existing waterbird identification metal sign adjoining the wetland's south-east corner or at or near an existing seat at the southern wetland edge.
3. Encourage the re-formation of Mason Park Bushcare Group. This group could assist with implementing Actions 1 and 2 and help with removing coarse waste that is deposited along the eastern bank of Powell's Creek – noting City of Canada Bay Bushcare Team were observed during the recent MPW bird surveys removing rubbish from the eastern bank of Powell's Creek. There is also a need for Bushcare group re-engagement to help regenerate

established but very weedy revegetation sites at 'The Hill' adjoining the south-east edge of MPW as well as along Powell's Creek below Saleyards Creek footbridge. In addition, they could assist the Council/contractor effort to revegetate and re-connect fragmented parts of MPW's saltbush community.

4. Promote Mason Park Wetland and dryland habitats as an educational and scientific resource for local and regional communities, including schools and universities.

Priorities: High – Action 1; medium – Actions 2 and 3.

#### 7.1.6 Continue systematic surveying of wetland and bushland birds

Issue: Currently, we have obtained 4 samples of the composition and ecological health of MPW's bird community, namely in 2007-08 (2 surveys), 2016 and 2020. Only one of these – the December 2020 study – has focused entirely on surveying the birds of MPW and surrounding sites. Three of these surveys have obtained measures of the relative abundance of shorebird populations present at MPW. There is a need to ensure surveying and monitoring of the health of shorebird and other aquatic bird populations occurs regularly and the results are added to the MPW avifaunal database. This should include verified records from BirdLife Australia's volunteer-based counts since about 2000. In this way, the ecological health (using shorebirds as indicators) and hopefully recovery of the wetland as habitat for shorebirds and other species can be tracked, rehabilitation and restoration actions reviewed and adjusted where necessary to increase their effectiveness, and funds invested in the work can be assessed against conservation progress achieved and used to secure further funding.

#### Actions:

1. Establish a regular summer program of surveying and monitoring wetland and bushland bird populations at and around Mason Park Wetland. This should be undertaken by an experienced professional ornithologist working in collaboration with trained community volunteers including BirdLife Australia members. Sites surveyed in December 2020 should be repeatedly monitored using the same method, timing and survey effort as undertaken in the 2020 work. Data should be recorded, checked and uploaded to the MPW avifaunal project database with conservation-significant species contributed to NSW Wildlife Atlas (BioNet). Reports should be provided by the consultant ornithologist to Council and other key stakeholders.
2. Schedule further local community field events into each summer survey program. These should focus on developing the skills and knowledge of local community members to accurately survey and record wetland bird species and their habitat. These events need to be advertised well in advance to give people enough time to book ahead and be able to attend. Ideally, two events could be held during each December-January survey period. Increased participation by these attendees in the actual survey sessions would be a goal.
3. Review the results of previous bird surveys of MPW undertaken by BirdLife Australia volunteers and others including Macquarie University and University of Sydney and particularly in the 1970s-2000 to assess their suitability for inclusion in the MPW avifaunal project database. One key early work is the Homebush Bay Bird Study which was discussed in the Western Suburbs Courier on 2 June 1976 (Jones 2005). Include these data in the avifaunal database for Mason Park Wetland. This work should be undertaken by an experienced ornithologist contracted to run the annual summer surveys at MPW.

Priorities: High – Actions 1 and 2; medium-high – Action 3.



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## Appendices

### Appendix 1: Mason Park Wetland's listing on the Register of the National Estate

This is a copy of the archived listing of Mason Park Wetland on the Register of the National Estate on 27 October 1998 from the Australian Heritage Database, accessed 23 February 2021.

 Department of Sustainability, Environment, Water, Population and Communities

Australian Heritage Database

You are here: [Environment home](#) » [Heritage](#) » [Australian Heritage Database](#)

#### Place Details

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#### Mason Park Wetland, Underwood Rd, Homebush, NSW, Australia

<b>Photographs</b>	None
<b>List</b>	Register of the National Estate (Non-statutory archive)
<b>Class</b>	Natural
<b>Legal Status</b>	<a href="#">Registered</a> (27/10/1998)
<b>Place ID</b>	19261
<b>Place File No</b>	1/17/034/0006

#### Statement of Significance

The wetlands of Mason Park are one of eight significant remnant wetlands (Ermington Bay/Mud Flats, Meadowbank Park Foreshore, Yarralla Bay, Majors Bay, Homebush Bay, Lower Duck River and Haslems Creek) which were once part of an extensive wetland system bordering the Parramatta River. Mangroves of the Parramatta River area represent a significant proportion of the mangroves remaining in the Sydney Region. The saltmarsh communities of the place are significant due to their high proportion of chenopod species which is unusual in southern New South Wales. Mason Park supports one of the largest remaining populations of *WILSONIA BACKHOUSEI* and the restricted saltmarsh species, *LAMPRANTHUS TEGENS* (small pig face). The remnant wetlands of the Upper Parramatta River area provide habitat for a diverse bird community, and have been ranked sixth in importance for waders in New South Wales. The place is of significance for migratory waders, providing habitat for species listed in the Japan Australia Migratory Bird Agreement (JAMBA) (twenty species) and the China Australia Migratory Bird Agreement (CAMBA) (nineteen species). Two species, which occur in the area, the little tern (*STERNA ALBIFRONS*), and the black tailed godwit (*LIMOSA LIMOSA*), are listed under Schedule 12 (Endangered Fauna) of the New South Wales National Parks and Wildlife Act (1974). The remnant wetlands support one of the two Sydney colonies of the white fronted chat, (*EPHHTIANURA ALBIFRONS*) and contribute habitat for one of the largest populations of chestnut teal (*ANAS CASTANEA*), in New South Wales. The remnant wetlands are an important research site for environmental studies.

#### Official Values Not Available

#### Description

Mason Park is situated on the floodplains of Powells Creek. The soils are predominantly silt and clay sized alluvium derived from sedimentary parent material of Triassic origin, particularly the Wianamatta Group shales. Sections of the Park also include disturbed terrain comprising artificial fill of dredged estuarine sand and mud, demolition rubble, waste materials, rock and local soil material. The vegetation of the park includes grey mangroves (*AVICENNIA MARINA*), saltmarsh, rushland and a brackish pond. The saltmarsh communities are diverse and include two species which are uncommon in the Sydney Region, *WILSONIA BACKHOUSEI* and *LAMPRANTHUS TEGENS*. The rushland includes an important stand of the native rush (*JUNCUS KRAUSSII*). The wetlands of the upper Parramatta River provide habitat for a diverse bird population and have significance for species listed under International Agreements. Seventy five species have been recorded for the area which include migratory waders, waterhen, coot and wildfowl.

#### History Not Available

#### Condition and Integrity

Much of the original wetlands of Mason Park have been lost due to reclamation. The existing wetlands in the park have been cut off to some extent from normal tidal circulation due to the use of concrete containment channels in Powell's and Saleyard Creeks; this has resulted in fluctuating salinity levels, for example, between rains. A drop log weir and channel have been constructed to manage the area according to seasonal water requirements. Other impacts have occurred due to disturbance associated with maintenance work in Saleyard Creek causing increased fresh water input, sewer construction and the dumping of rubble on the north-east margins of the area of wetland. The areas of saltmarsh are generally in healthy condition and the stand of *WILSONIA BACKHOUSEI* at Mason Park is relatively large and healthy. Mason Park has been subject to some weed invasion with areas most affected including disturbed sites. Weed invasion at the margins of the stand of *JUNCUS KRAUSSII* particularly involves the weed species *JUNCUS ACUTUS*.

#### Location

About 8ha, along Powells Creek, Homebush, comprising the area identified as Environmental Conservation Area Wetland lying south of the north-western alignment of Homebush Bay Drive in Sydney Region Environmental Plan No 24, Map 2, page 21.

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Appendix 2: The booklet produced for the community field events

Experience the birds of Mason Park Wetland and their habitats  
**Identifying and surveying birds in the field**  
**– an introduction for the local community**



This project is a partnership between Strathfield Council and InSight Ecology, working with volunteers from BirdLife Australia. It has been funded by Strathfield Council. This booklet was produced by InSight Ecology for two local community bird events at Mason Park Wetland held as part of the project in December 2020.



## Bird habitats at Mason Park Wetland

### Open water

Royal Spoonbill foraging and resting in the southern end of wetland (April 2016)



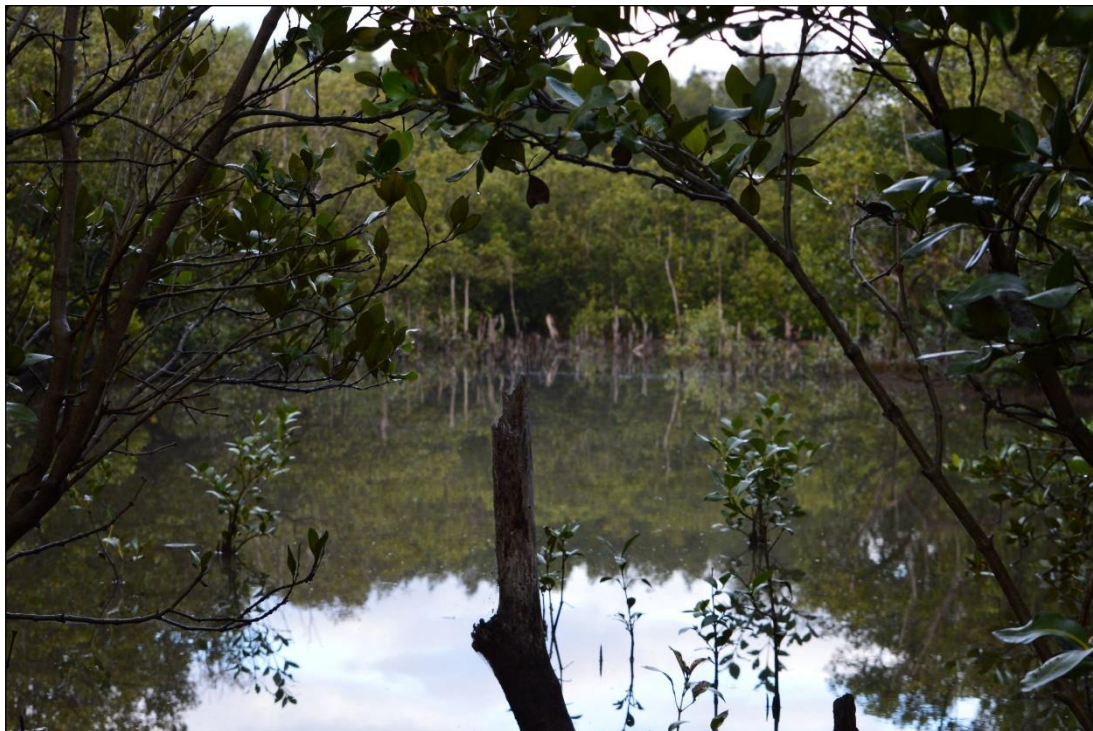
### Shallow water with muddy banks



Black-winged Stilt foraging in the shallows with mud banks at rear (December 2016)



## Mangrove forest



## Mixed mangrove forest, open water and revegetation\*



\*Includes swamp oak and lilly pilly plantings with Homebush Bay apartments in background (April 2016)



### Saltmarsh\* with sedgeland



### Mixed saltmarsh\*, sedgeland and open water



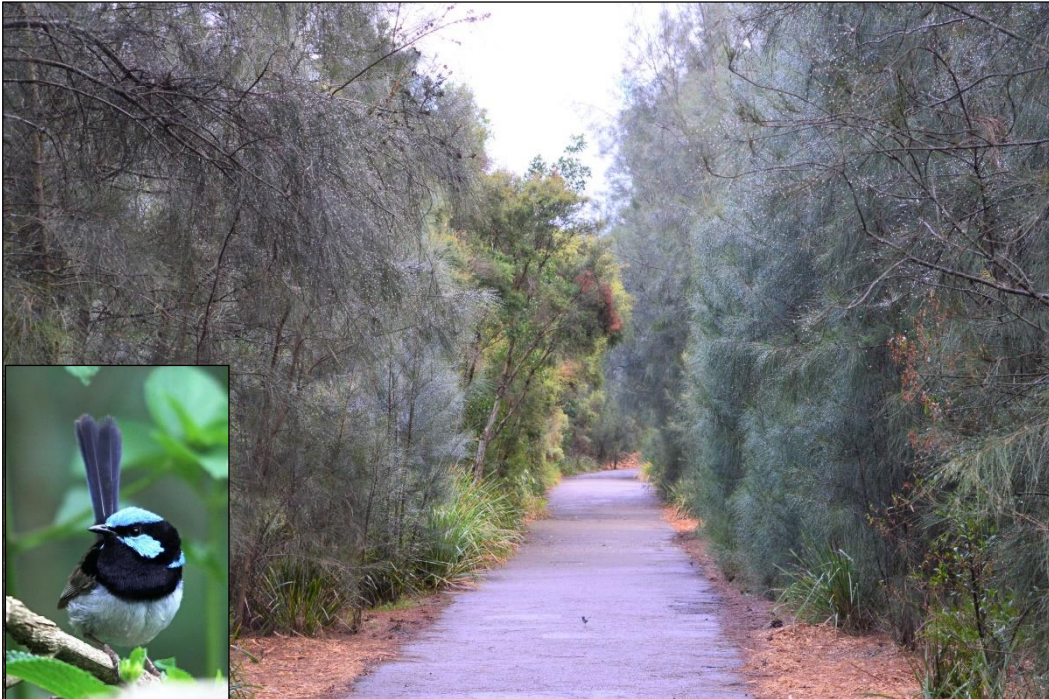
Saltmarsh patch looking south to bushland revegetation area (April 2016)

\*Coastal saltmarsh is a Threatened Ecological Community in NSW under Biodiversity Conservation Act 2016

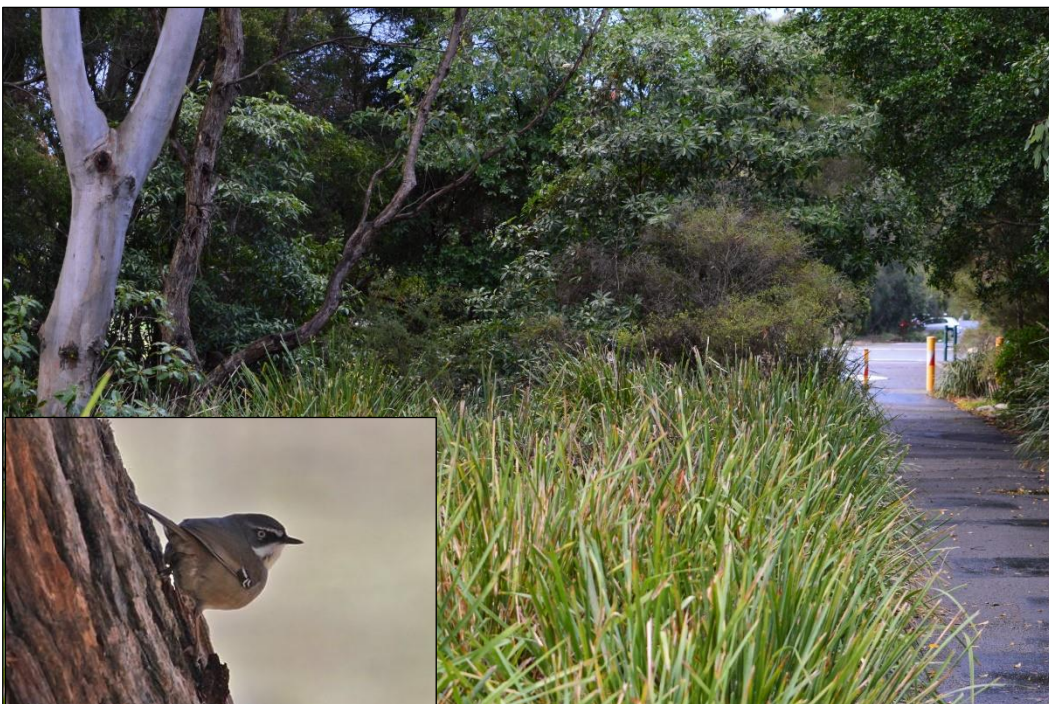


## Revegetation fringing the wetland

Swamp oak, lilly pilly, paperbark tea-tree and Lomandra strips along main trail on the western side of the wetland (December 2016)



Established strip plantings of Lomandra, eucalypts and tea-tree along the main walking trail provide foraging and nesting habitat for small bush birds such as Superb Fairy-wren (above) and White-browed Scrubwren



## Shorebirds you may see at Mason Park Wetland

### Black-winged Stilt

*Himantopus himantopus*



- Widespread resident shorebird
- 37 cm, black nape, very long slender pink legs
- Wades in shallows, nests in Mason Park Wetland (MPW)
- Forages in swamps, mudflats, tidal estuaries, saltmarsh, dams

Image: InSight Ecology at Mason Park Wetland, 8 December 2016

### Red-necked Avocet

*Recurvirostra novaehollandiae*



- Resident shorebird
- 44 cm, long upturned black bill, rusty head, pale legs
- Forages in shallow water, quickly sweeping bill from side to side
- Freshwater wetlands, saline lakes, coasts – occurs at Sydney Olympic Park, rare visitor to MPW

Image: JJ Harrison, at Sydney Olympic Park, 4 January 2019,  
<https://commons.wikimedia.org>



## Sharp-tailed Sandpiper

### *Calidris acuminata*



- Small (20 cm) long-distance migratory wader
- Protected under CAMBA, JAMBA and ROKAMBA\*
- Short bill, grey-brown streaks on upperparts, rufous on crown (non-breeding)
- Forages in tidal mudflats, saltmarsh, mangroves, shallow wetlands
- Previously recorded in low numbers at MPW

Image: JJ Harrison at Hexham Swamp, 8 February 2014,  
<https://commons.wikimedia.org>

\*China and Australia Migratory Bird Protection Agreement (CAMBA), Japan and Australia Migratory Bird Protection Agreement (JAMBA), Republic of Korea and Australia Migratory Bird Protection Agreement (ROKAMBA)

## Curlew Sandpiper <sup>E,CE</sup>

### *Calidris ferruginea*



- Small (20 cm) long-distance wader
- Threatened species in NSW and nationally
- Protected under JAMBA, CAMBA, ROKAMBA
- Long down-curved bill, uniformly grey (non-breeding)
- Tidal mudflats, saltmarsh, wetlands
- Previously recorded in low numbers at MPW

Image: Tom Tarrant, Museum of Victoria,  
[biodiversitysnapshots.net.au](http://biodiversitysnapshots.net.au)

E Endangered in NSW (Biodiversity Conservation Act 2016)  
 CE Critically Endangered nationally (EPBC Act 1999)

Pacific Golden Plover  
*Pluvialis fulva*



- Medium-sized (25 cm) long-distance wader
- Previously recorded at MPW
- Brownish, yellow-buff plumage, gold speckles (non-breeding)
- Coastal mudflats, mangroves, roosts in short saltmarsh or paddocks
- Protected under ROKAMBA

Image: Dick Daniels, 15 February 2012,  
<https://commons.wikimedia.org>

Bar-tailed Godwit <sup>V</sup>  
*Limosa lapponica baueri*



- Large (42 cm), pale, brown-streaked (non-breeding) wader with long bill pink at base with blackish tip
- Forages on mudflats and in estuaries, sandy intertidal zones, brackish/saline lakes
- Occurs in flocks of 30-40 birds at Hen and Chicken Bay; old records at MPW
- Protected under CAMBA, JAMBA and ROKAMBA

Image: Andy Doldissen, France Bay, 27 July 2006

<sup>V</sup> Vulnerable nationally (EPBC Act 1999)



## Other aquatic bird species you may see

### Royal Spoonbill

*Platalea regia*



- Large (77 cm) white bird, black legs and spoon-shaped bill
- Forages by moving bill from side to side while walking in shallows
- Shallow waters, mangroves, tidal mudflats, saltmarsh
- Usually seen as lone birds or small flocks

Image: InSight Ecology at MPW, 19 April 2016

### Eastern Great Egret

*Ardea modesta*



- Tall, slender waterbird, 76 cm-1 m, yellow bill (non-breeding), black legs
- Usually solitary, forages slowly in shallows, freezes motionless before rapidly striking for fish
- Shallow water in rivers, estuaries, tidal mudflats, wetlands, large dams
- Recorded in MPW, Sydney Olympic Park, Hen and Chicken Bay
- Protected under CAMBA and JAMBA

Image: Kclama, <https://commons.wikimedia.org>



## White-faced Heron

### *Egretta novaehollandiae*



- Common, small (68 cm), grey heron, white face, yellow legs
- Forages in shallow wetlands, tidal mudflats, saltmarsh, dams, ovals, garden fishponds, drains
- Well adapted to urban life

Image: InSight Ecology, 3 August 2018

## Purple Swamphen

### *Porphyrio porphyrio*



- Large (46 cm) waterhen with scarlet bill and forehead shield, deep blue head and breast, flicks tail exposing white undertail-coverts
- Forages for water plants in wetlands, lagoons, vegetated river margins, drains, golf courses
- Predated by fox, cat, dog; needs refugia

Image: Glen Fergus, <https://commons.wikimedia.org>

## Dusky Moorhen

### *Gallinula tenebrosa*



- Common waterhen (37 cm), yellow-tipped scarlet bill and bill shield, dark brown-black body
- Forages on aquatic plants and on land, flicks tail, pairs, groups
- Well vegetated wetlands, urban lakes, parks, mangroves, drains

Image: Helenabella, <https://commons.wikimedia.org>

## Chestnut Teal

### *Anas castanea*



- Small (44 cm) duck, male has iridescent green head with white flank mark, female is mottled dark brown, dark head
- Saline, brackish and fresh coastal swamps, mudflats, saltmarsh, dams, estuaries
- Uses earthen banks, logs, saltmarsh to rest

Image: <https://wetlandinfo.des.qld.gov.au>

## Grey Teal

### *Anas gracilis*



- Common small (43 cm) duck
- Both sexes mottled grey-brown, whitish throat
- Forages by dabbling in most water bodies – mudflats, mangroves, creeks, dams
- Perches on dead timber over water, mudbanks

Image: Glen Fergus,  
<https://commons.wikimedia.org>

## Pacific Black Duck

### *Anas superciliosa*



- Very common dabbling duck (60 cm)
- Both sexes have identical plumage
- Forages in any suitable water body, urban-adapted, nests in tree hollows
- Perches on logs, dead trees over water

Image: Dick Daniels, <https://commons.wikimedia.org>





Species (common name)	Number of individuals	Habitat use, behaviour, breeding, foraging, interaction with other species, threats

Habitat type, topography, main tree and shrub species present, degree of disturbance by feral animals and plants, fire, inadequate tidal entry/exit, other human impacts:

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Data management: data checked and entered into project database (ornithologist/supervisor to sign and date) \_\_\_\_\_

**Field notes (including further survey data)**

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Front page image credits: main – Google Earth 2020, lower panel left to right: Black-winged Stilt (InSight Ecology at MPW, 8 December 2016), saltmarsh community at MPW (InSight Ecology, April 2016) and Sharp-tailed Sandpiper (JJ Harrison <https://commons.wikimedia.org>). All bird habitat photographs were taken by InSight Ecology at MPW in April and December 2016. Superb Fairy-wren – Trevor Bullock, Birdlife Australia, [birdlifephotography.org.au](http://birdlifephotography.org.au) and White-browed Scrubwren – Iestyn Taylor. All other bird images used are as credited.

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