Biodiversity Survey Priorities for DECCW Reserves in the Sydney Basin

Stage 2: 2009-2014

Information and Assessment Section
Metropolitan Branch,
Environmental Protection and Regulation Group
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NSW GOVERNMENT Environment, Climate Change & Water

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Bioregional Data Group
Information and Assessment Section
Metropolitan Branch
Environmental Protection and Regulation Group
Department of Environment, Climate Change & Water NSW (DECCW)

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Contents

CONTENTS I

SUMMARY 1

1. THE BIODIVERSITY SURVEY PRIORITIES PROGRAM 2

Introduction 2
Stage 1: 2003 – 2009 2
Stage 2: 2009 – 2014 2
Stage 3: 2014 – onwards 2

2. POLICY, STRATEGIES AND PLANS 3

NSW State Plan 3
DECCW Corporate Plan 3
NSW Biodiversity Strategy 4
State of the Environment (SoE) Reporting 5
DECCW Regulatory Responsibilities 5
Park Management 6

3. ASSESSMENT AREAS FOR THE SYDNEY BASIN RESERVES 7

Assessment Area 2003-2009 7
Assessment Area 2009-2010 7

4. METHODS FOR THE ASSESSMENT OF BIODIVERSITY DATA 10

Introduction 10
Reserve Units 10
Assessment of Fauna Data Adequacy 11
Assessment of Vegetation Data Adequacy 12

5. ACHIEVEMENTS OF STAGE 1:2003-2009 15

Introduction 15
Fauna Survey 2003-2009 15
Vegetation Mapping 2003-2009 20

6. RESERVE BIODIVERSITY DATA ASSESSMENT 2010 24

Introduction 25
Fauna Data on Reserves in 2010 25
Vegetation Mapping Data 29

7. SURVEY PRIORITIES FOR STAGE 2: 2009 – 2014 33

Introduction 33
Prioritisation Criteria for Vegetation Survey and Mapping 36
New Vegetation Survey and Mapping Priorities 36
Prioritisation Criteria for Fauna Survey and Reporting 33
New Fauna Survey Priorities 33
Annual Program 2010-2014 39

8. STAGE 3:REGION-WIDE BIODIVERSITY INFORMATION RESOURCES 44

Introduction 44
The Native Vegetation of the Hunter-Central Rivers CMA 44
The Native Vegetation of the GBMWHA 45
The Vertebrate Fauna of the GBMWHA 45
Vegetation Classification and Mapping of the Sydney Basin Region 46
The Fauna of Greater Northern Sydney Region 47

APPENDIX 1: 2010 FAUNA ASSESSMENT RESULTS FOR EACH RESERVE UNIT IN THE SYDNEY BASIN BIOREGION 48

APPENDIX 2: 2010 VEGETATION SURVEY AND MAPPING ASSESSMENT RESULTS FOR EACH RESERVE UNIT IN THE SYDNEY BASIN BIOREGION 55

APPENDIX 3: LIST OF REPORTS COMPLETED UNDER THE DATA PRIORITIES PROGRAM 48

VEGETATION MAPPING 48
FAUNA SURVEY 48

APPENDIX 4: METHODS USED TO PRIORITISE RESERVES FOR VEGETATION SURVEY & MAPPING 63

STEP 1: SCORING ATTRIBUTES 63
STEP 2: PRIORITY SELECTION CRITERIA AND CLASS 65
STEP 3: SORTING WITHIN PRIORITY CLASS 65

APPENDIX 5: METHODS USED TO PRIORITISE RESERVES FOR FAUNA SURVEY 61

STEP 1: SELECTING ATTRIBUTES 61
STEP 2: PRIORITY SELECTION CRITERIA AND CLASS 61
STEP 3: SORTING WITHIN PRIORITY CLASS 62

APPENDIX 6: FAUNA SURVEY PRIORITISATION RESULTS 66

APPENDIX 7: VEGETATION SURVEY AND MAPPING PRIORITISATION RESULTS 72

Summary

Information that describes the type, distribution and status of biodiversity in NSW is required by many arms of DECCW for regulatory, conservation assessment and land management purposes. Numerous state-wide policies and plans explicitly target the need for biodiversity data to assist with decision-making processes that confront land managers and regulators. However there are few documents that assess the adequacy of currently available information or guide managers on data collection and management priorities. Investment in biodiversity information is expensive, and if it is undertaken without an overarching strategy it can result in inefficiencies, duplication and lost effort.

In the Sydney Basin Bioregion over 60% of extant native vegetation occurs in DECCW reserves making it the largest individual custodian of native flora and fauna in the region. Since 2003, the former Central Branch of the Parks and Wildlife Group has funded a Biodiversity Survey Priorities Program (BSP) to address biodiversity data needs for all DECCW reserves in the branch. The aim of the program has been to provide all reserves with an equivalent level of information irrespective of size and location and to ensure that biodiversity data collection is approached in a strategic and systematic way. This includes the integration of reserve data into broader regional data resources that aim to produce seamless cross tenure data on the biodiversity values of the region.

In 2003 an initial report reviewed all reserves in the former Central Branch to identify those that were deficient in basic biodiversity data sets to support reserve management. It established a five year program to address the worst of the gaps. The outputs aimed to make data available in stand-alone, easily accessible reports and maps. As a result of the first five years of the program 28 reserves have been surveyed for fauna or flora or both covering almost 1 million hectares. This work has altered previous knowledge of the distribution of many threatened species and endangered ecological communities. These areas now hold a level of information for park managers that was not previously available. Over 75% of the reserves of the former Central Branch are covered by adequate standards of fauna data and over 60% are covered by adequate vegetation maps.

In 2009 this program was extended for a further five years across an expanded region to include all of the Sydney Basin Bioregion. As part of the extension, a review of progress and priorities has been completed. This report describes that review process and establishes new priorities for the next five years. This report:

- Describes the progress and outcomes of the first five years 2003-2009
- Revises the assessment of adequacy for fauna and vegetation data available on reserves across an expanded region. The expanded region includes 71 reserves not assessed in 2003, 30 of which are new acquisitions and 41 which are included from the South Coast and Southern Highlands areas
- Identifies an annual order of works that addresses the highest biodiversity survey priorities and meets dual objectives of park management and broader DECCW biodiversity strategies. This sees priority survey works focused on the Hunter-Central Rivers CMA, the Greater Blue Mountains World Heritage Area, northern Metropolitan Sydney and Central Coast.
- Establishes goals and objectives for the completion of a standardised coverage of vegetation mapping and fauna data across the Greater Blue Mountains World Heritage Area, vegetation classification and mapping in the Sydney Basin Bioregion and a comprehensive assessment of the fauna of the greater northern Sydney Region.

1. The Biodiversity Survey Priorities Program

This section briefly describes the Biodiversity Survey Priorities Program, its key directions and outputs.

Introduction

The former Central Branch of Parks and Wildlife Group (PWG) have funded Metropolitan Branch EPRG to implement a Biodiversity Survey Priorities Program for reserves in the region. This program has afforded an integrated approach to the way biodiversity data is collected and managed in the region so that efficiencies with the collection of data can be gained, skills retained and a strategy developed to prioritise the supply of information. The BSP program also recognises that biodiversity data collection on reserves is inextricably linked to data collection efforts occurring across all land tenures, and that ultimately seamless information resources are required by a wide variety of natural resource and land managers across the region.

The project is the first of its kind in NSW and relies on the contribution of in-kind support from the Metropolitan Branch, Environment Protection and Regulation Group to implement an array of survey programs arising from PWG or from other external funding sources. Over the life of the program, PWG has allocated resources to address the strategic development of reserve datasets using an annual order of works. This has been supplemented by additional funding identified by PWG Regional and Area managers to survey new park acquisitions and improve information for some local reserves.

Stage 1: 2003 – 2009

The first assessment in 2003 identified the largest data gaps in the region. The aim of the program was to introduce a strategic approach to the collection and reporting of biodiversity values. It implemented standard survey, data management and reporting protocols. It focused on work carried out in jointly managed areas with the Sydney Catchment Authority known as 'Special Areas' that delineate drinking water catchment protection zones. The program was also nested within several regional planning assessment processes that focused on private lands including the Illawarra Escarpment and Coastal Plain, Georges River Catchment, Cumberland Plain priority areas and broad regional mapping across the Southern Highland and South Coasts. The program has built on other investment in biodiversity data by working with local government in the Lower Hunter and Central Coast and with Catchment Management Authorities in the Hawkesbury-Nepean and Sydney Metropolitan areas.

Stage 2: 2009 – 2014 (this document)

New work described in this report proposes to continue the collection of biodiversity data to meet the joint needs of reserve managers and broader DECCW biodiversity survey objectives. An expanded region has been assessed to include all reserves of the Sydney Basin Bioregion. Initial priority is the completion of vegetation survey and mapping on poorly surveyed reserves within the region that falls within the Hunter Central Rivers CMA, identified as the number one DECCW mapping priority in the state. This stage also aims to complete the classification and mapping across the Greater Blue Mountains World Heritage Area. Fauna survey will continue in poorly surveyed reserves within the greater northern Sydney area including those in Sydney North and Central Coast and Hunter Range Regions.

Stage 3: 2014 – onwards

The purpose of this stage is to integrate reserves data into a cross-tenure, regional coverage of detailed vegetation mapping and fauna habitat mapping. The construction of these datasets will rely on a combination of external funding and in-kind support. These key fauna and flora data will provide the baseline data for natural resource managers in the region. Data collection priorities will shift to providing baseline biodiversity data for the Southern Highlands and South Coast areas to bring these areas up to an equivalent standard. Fauna survey should be a particular focus. Over this period survey effort will shift toward the biodiversity monitoring requirements for reserves including the commencement of repeat visits to selected areas.

2. Policy, Strategies and Plans

Policies, plans and strategies that are produced by the NSW government or by DECCW can help to identify and guide the direction and type of biodiversity survey effort. This section briefly outlines those that are relevant to this region and shows how the Biodiversity Survey Priorities Program aligns with these documents.

NSW State Plan

The NSW State Plan 2010 is a document produced by the current NSW government that establishes a series of broad targets which guide the investment of government resources and services. In it the Government has stated aims to meet State–wide targets for natural resource management to improve biodiversity and native vegetation, sensitive riverine and coastal ecosystems, soil condition and socio–economic wellbeing. There is a series of targets two of which state that, by 2015, the extent of native vegetation and its condition will increase and the sustainability of a range of native fauna populations will also increase. Each target is described in more detail within individual Catchment Action Plans for Catchment Management Areas known as CMAs. There are five CMAs within the Sydney Basin Bioregion including Sydney Metropolitan, Hunter Central Rivers, Hawkesbury-Nepean, Southern Rivers and Central West. DECCW reserves have a major role in helping meet biodiversity targets. In the case of the Hawkesbury-Nepean CMA over half of the remaining native vegetation lies within DECCW reserves. The assessment of biodiversity values retained within reserves guide the understanding of what is protected and highlight those values that remain at threat. The Biodiversity Survey Priorities Program has contributed substantially to the understanding of biodiversity values within a large number of the most poorly understood reserves.

The State Plan also commits to the continued development of a Comprehensive, Adequate and Representative (CAR) Reserve System. This commitment sees the reserve system as the core mechanism for biodiversity conservation. The BSP program delivers on this objective by providing the key data that underpins the assessment of biodiversity values on the reserves of the region. Stage 2 and 3 of the BSP program will continue to improve our knowledge of fauna and vegetation in the reserves of the Sydney Basin, and will provide monitoring data to inform adaptive management and measure progress towards the four biodiversity targets.

NSW Monitoring, Evaluation & Reporting (MER) Strategy

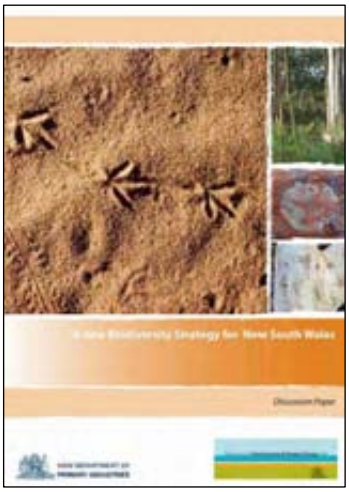
DECCW is one of the primary agencies responsible for monitoring, evaluating and reporting on progress toward the biodiversity targets listed under the State plan. The MER strategy relies on available information to generate indicators that track the trends in both resource condition and performance across individual catchment management areas and across the state. Biodiversity survey programs such as the BSP are critical to the ability of DECCW to report on the status of the vegetation and fauna. The work provides the initial baseline data from which future measurements can be made. In some instances, repeated visits to selected areas can be used to monitor the persistence of biodiversity values and to examine the effectiveness of management strategies.

DECCW Corporate Plan

The Corporate Plan 2008-2012 identifies that biodiversity information is required to meet its regulatory, conservation assessment, educational and land management responsibilities. In particular the plan promotes integrated landscape management for long term ecological, social and economic sustainability. Stated objectives explicitly describe the need to protect species of native flora and fauna and ensure they are conserved in healthy populations. The BSP program delivers critical data that allow such

assessments to be made on the status of many threatened and vulnerable species across the Sydney Basin. In addition the implementation of the BSP vegetation survey efforts contributes significant data and mapping products to ensure credible mapping to assist with compliance, monitoring and management of native vegetation in the region. Outputs also contribute to ensuring that there is improved information for the management of fire, pest animals and weeds for park management.

NSW Biodiversity Strategy

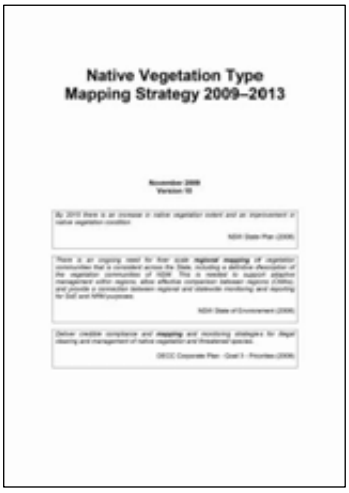


The NSW Biodiversity Strategy is a document that provides a framework for NSW government agencies and the community to conserve biodiversity in NSW. The initial strategy 1999-2003 identified that improving biodiversity knowledge and information systems was critical to the success of biodiversity management outcomes. The BSP program contributed significantly to this strategy by providing data on regional vegetation classification, threatened species prioritisation and improving information for the most poorly understood landscapes of the region.

Preparation of the new Biodiversity strategy is currently underway, and the supporting discussion paper (2009) continues to emphasise the need for biodiversity information. It highlights the importance of the reserve system and the need for knowledge and information to guide decision making and management.

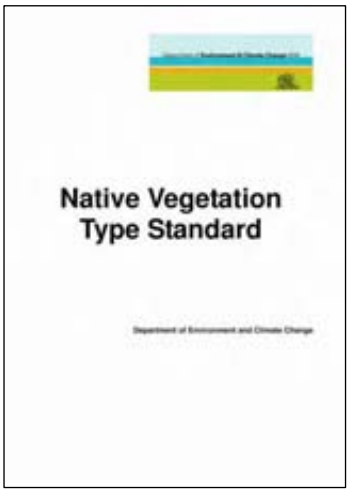
Stage 1 of the BSP program has vastly improved the knowledge base and availability of biodiversity information for many reserves in the Sydney Basin. Stage 2 and 3 of the BSP will continue to build on this knowledge base and make it accessible for land managers.

DECCW Vegetation Mapping Strategy and Standards



The DECCW Vegetation Mapping Strategy is one of few documents that identify areas which have a high demand for biodiversity data. In November 2009 a state-wide vegetation type mapping strategy was developed by the Science and Policy Division to guide the investment of vegetation survey and effort in a co-ordinated and cohesive manner. The strategy aims to deliver a seamless, full floristic vegetation map across all tenures in NSW using consistent classifications. The strategy indicates that vegetation mapping is an expensive investment for the agency. The success of any integrated mapping program requires that the primary outputs of survey and mapping are stored in a comprehensive and accessible corporate database system. The strategy also describes a hierarchy of vegetation products that may be developed across the agency to meet the range of user needs.

The strategy sets out a series of actions that are required by different Divisional Groups within DECCW. Parks and Wildlife Group are expected to provide a three year priority mapping schedule to assist with the mapping program. The strategy provides a list of CMAs which represent the priority mapping areas for NSW. The order of priority is set out below with those highlighted in bold relevant to the Sydney Basin Bioregion.



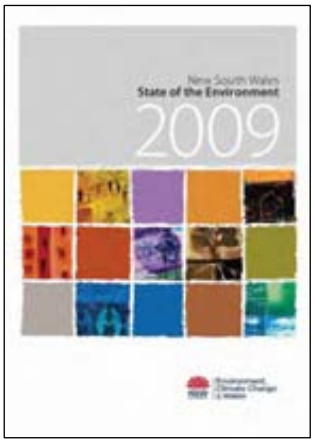
1. **Hunter CMA**
2. Murrumbidgee CMA
3. **Central West CMA**
4. Lachlan CMA
5. Northern Rivers CMA
6. **Hawkesbury-Nepean CMA**
7. **Southern Rivers CMA**

To assist with the implementation of the strategy a series of technical standards of have been developed to ensure that data and its derived products are collected in a standard and systematic way. By doing this data from a number of projects can be integrated at any stage of mapping and classification development for the state.

The BSP program already meets many of the requirements set out in the standards document. There are some additional costs that are likely to arise as a result of the new standard, particularly around assessment of map accuracy, which up until now has not been an explicit requirement of mapping projects.

To date the BSP program has contributed over 1000 systematic survey sites to the classification of native vegetation in the Sydney Basin bioregion and detailed mapping across 500 000 hectares. This data is accessible in corporate databases and has already contributed substantially to regional classification and mapping projects in the Southern Highlands and South Coast (SCIVI, Tozer et al, 2007), the Hunter–Central Rivers CMA (2009) and Sydney Metropolitan CMA (2009).

State of the Environment (SoE) Reporting



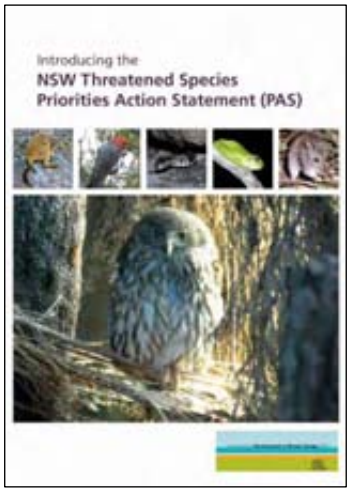
DECCW is responsible for producing the State of the Environment Report every 3 years. The document reports on key themes associated with the status of biodiversity in NSW. The 2009 report recognises short comings associated with available vegetation data that describe vegetation communities in a consistent manner and maps them across all land tenures. The BSP program has contributed significant survey and mapping data to the development of regional vegetation classification and mapping systems. Similar problems are recognised with the assessment of the status of fauna, with large areas of the state without any evidence of dedicated survey effort. The BSP program has addressed the largest gaps in fauna knowledge within reserves of the Central Branch over the last five years. This data is now used to provide catchment wide report cards on the sustainability of fauna. The continued collection of data will continue to improve the availability of high quality information to feed these review processes.

DECCW Regulatory Responsibilities

NSW Vegetation Act

DECCW is responsible for ensuring the sustainable management of native vegetation in NSW. It meets these objectives by undertaking regulation and compliance activities to protect native vegetation. Importantly it also manages native vegetation that is found in over 6.6 million hectares of land in NSW. This role is important in the Sydney Basin region as DECCW is the largest custodian of native vegetation in the region. The BSP program provides baseline data that describes the composition, distribution and conservation status of extensive areas of native vegetation in the reserves of the region. This sort of data is fundamental to demonstrating sustainable land management practices and priorities across the region. New data collected under the program also assists with the development of state-wide vegetation classification and mapping systems that underpin the regulatory frameworks for native vegetation in NSW.

The NSW Threatened Species Conservation Act and Priorities Action Statement (PAS)



Amendments to the *NSW Threatened Species Conservation Act, 1995* resulted in the implementation of a Priority Action Statement (PAS). The PAS sets out a range of generic strategies and actions that together tackle the threats that face species or communities listed under the *NSW TSC Act, 1995.* The PAS identifies that new information on the distribution and ecology of species or communities lies at the heart of efforts to recover species.

The BSP program has provided new data that challenges or confirms patterns in distribution and communities for many endangered communities and species. Over 3 000 new locations of threatened fauna species have been recorded some and some newly identified sites of the Brush-tailed Rock Wallaby are now the focus of recovery actions. A series of priority fauna

habitats for the southern Sydney Area have been identified based on data provided by the BSP program. This new data has reassessed the conservation status of many fauna species.

Park Management

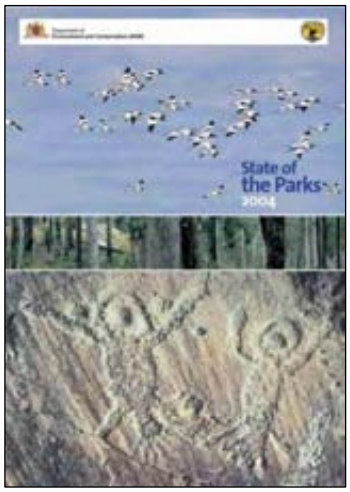
Plans of Management

Each reserve designated under the NPW Act, 1974 is required to develop a Plan of Management every 5 years. The Plan of management explains how the park will be managed. Amongst other things the natural history values are identified and described and values requiring particular management actions are developed. The BSP program contributes a wealth of data to this process, with new information identifying threatened species, endangered ecosystems, vegetation maps, pest and weeds and disturbance data. Conservation priorities for flora and fauna are assessed and a revision of the status of species known to occur on each reserve is provided.

Fire Management Strategies

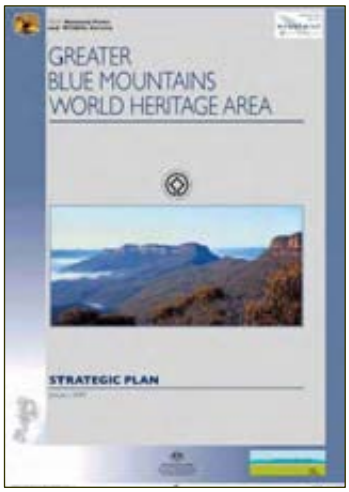
Fire Management Strategies for reserves are required under the Rural Fires Act, 1997. Each strategy provides a summary of the bushfire environment and provides amongst other values an index of natural heritage assets present. Success of fire management strategies for these values depends on reliable data that describes their distribution. The BSP has undertaken new survey work across 500 000 ha of reserve the results of which are included in revisions to fire management strategies and plans. In addition new vegetation maps provide new data on the environment and vegetation composition of the reserves to help fire fuel assessments and fire spread models.

State of the Parks Reporting



A review of the state of the NSW reserves was initially undertaken in 2001, with a revised report produced in 2005. The purpose of the reports was to review the management of reserves. One of the assessment criteria addressed whether information on biodiversity was adequate. While the responses were limited by individual perceptions of adequacy, there was a demonstrable need to address information gaps and to target research in a strategic way. The BSP has been addressing some of these for the least well understood parts of the reserve system in the Sydney Basin. Future State of Parks reporting can now integrate the standardised assessment of biodiversity data stemming from this report to help report on changes in available data.

Greater Blue Mountains World Heritage



The dedication of the Greater Blue Mountains World Heritage Area has resulted in a range of reporting requirements and data to be submitted to the IUCN at periodic intervals. One of the key values that led to the inscription is the extremely high diversity of eucalypts and other plants. Reporting is required by the IUCN to assess whether the outstanding universal values are being maintained over time and to provide up to date information to record changing circumstances and changing state of conservation. A part of the reporting program is the development and monitoring of key indicators to inform the measure of the state of conservation. Vegetation and fauna survey arising from the BSP program provide the baseline data set which assists in describing the universal values and supports the development of indicators that can be tracked over time.

3. Assessment Areas for the Sydney Basin Reserves

This section describes the study area used in the 2003 assessment and identifies the new region defined for the purposes of the current assessment. The size and configuration of DECCW managed estate found within the new region is described

Assessment Area 2003-2009

The first assessment area was described in the initial assessment report completed in 2003. This region covered the former Central Branch of PWG and included all reserves that were managed within the branch boundaries or were managed under agreement with adjoining PWG branches. The area included approximately 100 reserves covering over 1.1 million hectares (ha). Map 1 illustrates the extent of the area.

Assessment Area 2009-2010

For the purposes of this report we have identified a new assessment area that has amalgamated the boundaries of the former Central Branch PWD and that of the Sydney Basin Bioregion as defined by the Interim Bioregional Regionalisation of Australia (IBRA version 6.1) (Thackway and Creswell, 1995). In this way consistency between the first assessment is retained while expanding the extent of the geographic area to meet a sensible ecological boundary in the face of changing administrative boundaries within PWG.

The new Sydney Basin assessment area covers more than 5.19 million hectares of land, which is about 6.5% of NSW (see Map 1). The Sydney Basin consists of the sandstone country which extends west to the Blue Mountains from the coast. It extends along 350 kilometres of coastline from Newcastle in the north to Batemans Bay in the south. The Sydney Basin covers 6 different CMAs (or part thereof), including Sydney Metro (all), Hawkesbury-Nepean (most), the southern areas of Hunter Central Rivers CMA and small parts of Southern Rivers, Central West and Lachlan CMAs. The Sydney Basin intersects 66 LGAs (Local Government Areas), many of which are in the Sydney Metropolitan Area.

Approximately 2.91 million ha of the Sydney Basin Bioregion is vegetated, and of that, about 1.74 million ha (approx. 60%) is protected in the formal reserve system, as shown in Map 1. Sydney Basin Bioregion includes the following sub-regions: Kerrabee, Hunter, Capertee, Wollemi, Yengo, Wyong, Pittwater, Cumberland, Burragorang, Sydney Cataract, Moss Vale, Illawarra, Ettrema and Jervis.

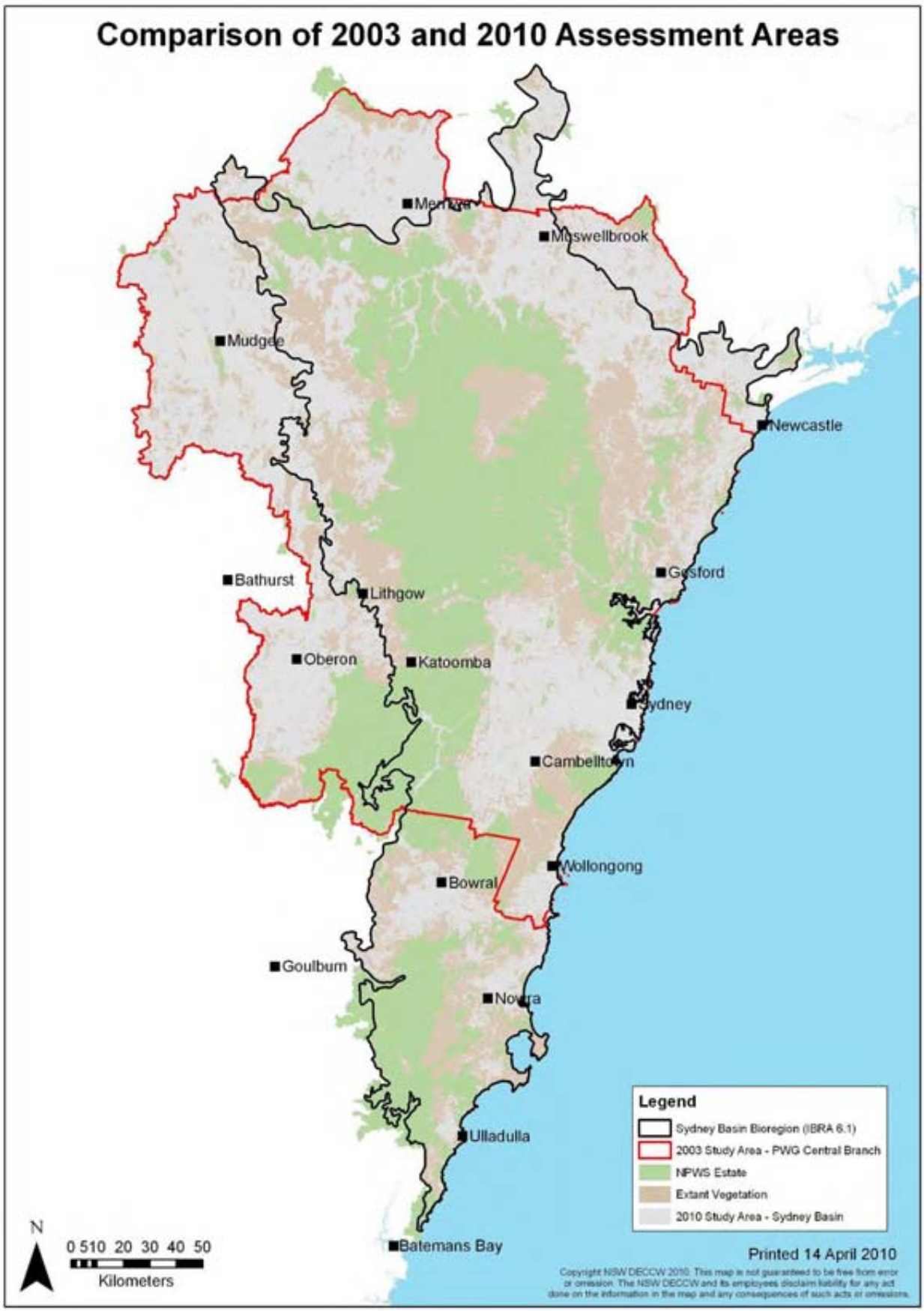
DECCW Reserves

There are 171 DECCW managed reserves covering more than 1.7 million ha in the new assessment area. This represents an increase of 71% in the number of parks assessed over those reviewed in 2003. Thirty of these have been new acquisitions to the DECCW estate. These cover new reserves in the Central Coast and Lower Hunter Valley, Western Sydney, Central Western NSW and the Woronora Plateau. An additional 41 reserves have been included from the South Coast and Highlands as a result of the expansion of the assessment area. The size, location and management pressures facing reserves in the region are highly variable. Table 1 indicates that reserves dedicated as national parks cover the greatest area though there are more individual nature reserves than national parks.

Table 1: Type of Reserves Present in the 2009 Assessment Area

Reserve Type	No. of reserves	Sum of total area (ha)
National Park	48	1548281.02
State Conservation Area	29	145108.71
Nature Reserve	68	37159.91
Regional Park	12	5063.63
Karst Conservation Reserve	2	3657.28
Historic Site	6	277.44
Aboriginal Area	6	85.70

Map 1: Comparison of study areas in 2003 and 2010



For the purposes of this assessment we divided DECCW managed estate into five size classes. Table 2 describes the number of reserves that fit these categories. Over half of the reserves are less than 1000 ha in size and comprise less than 2% of the area of the estate. By contrast there are just six reserves above 50 000 ha which together cover over 73% of the total area of DECCW estate. Figure 1 compares the proportion of reserves in each size class against the proportion of land area they cover.

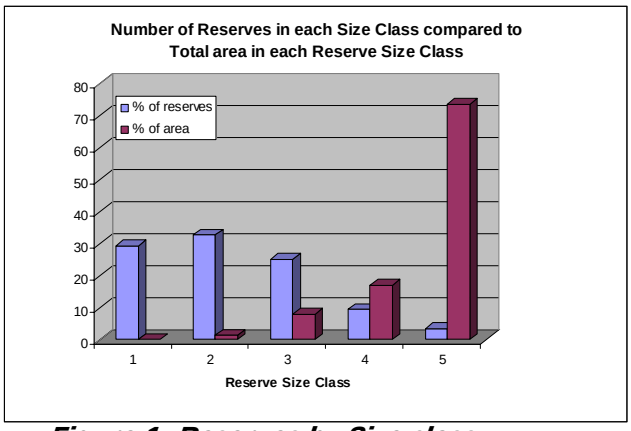


Figure 1: Reserves by Size class

Table 2 Size Class of Reserves in the 2009 Assessment Area

Reserve size class	No. of reserves	Sum of total area (ha)	% of reserves	% of area
1 (<100ha)	50	1535	29.24	0.09
2 (100-1000ha)	56	23091	32.75	1.33
3 (1000-10000ha)	43	139592	25.15	8.02
4 (10000-50000ha)	16	295013	9.36	16.96
5 (>50000ha)	6	1280406	3.51	73.60
TOTALS	**171**	**1739637**	**100**	**100**

Greater Blue Mountains World Heritage Area (GBMWHA)

These reserves were inscribed on the World Heritage list in 2000, due to their 'outstanding natural universal values', including its extremely high diversity of eucalypts and other higher plants (the area contains almost 10% of Australia's vascular plant species). The area covers more than 1.05 million ha and provides vast habitat for a wide range of flora and fauna, including rare and endemic species like the Wollemi Pine.

The GBMWHA includes the following protected areas: Blue Mountains NP, Wollemi NP, Yengo NP, Nattai NP & SCA, Kanangra-Boyd NP, Gardens of Stone NP, Thirlmere Lakes NP and Jenolan Karst Conservation Reserve. Map 2 illustrates the extent of GBMWHA

Map 2: The Greater Blue Mountains World Heritage Area

4. Methods for the Assessment of Biodiversity Data

This section describes the methods we used to determine the adequacy of biodiversity information available for each reserve.

Introduction

There are no corporate documents that can be used to assess the adequacy of biodiversity information. There are however standards on methods that should be used to collect data, but none that tell us how much data is enough. For the first assessment completed in 2003 we allocated a value to describe a range of data qualities, labelled as adequate, medium and poor. These scales reflected a range of survey effort classes against the size of the reserve. In general we considered biodiversity data should contribute substantially to the information that underpins the Plans of Management and Fire management Strategies. To this end we considered that all reserves should be:

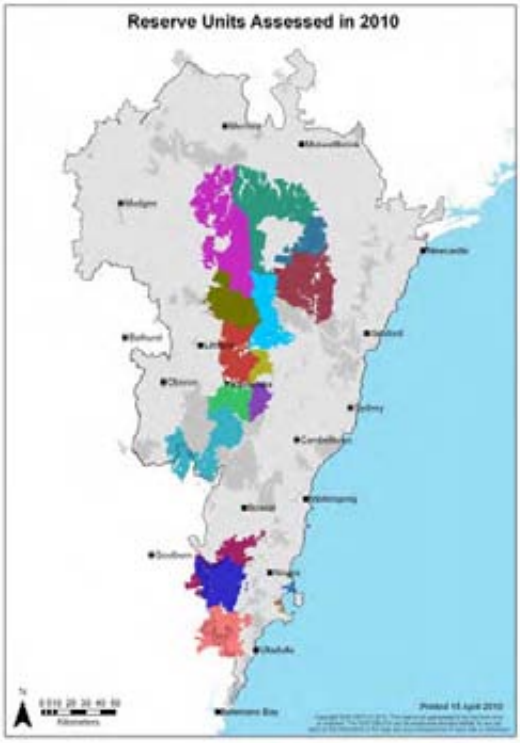
1. Covered by vegetation mapping that is based on the classification of systematically collected field data. Mapped products should be useable at a scale of at least 1:25 000 so that it is commensurate with topographic maps used by field staff. Mapping should be based on relationships between field data, remotely detected vegetation patterns and biophysical variables.

2. Surveyed to identify an inventory of vertebrate fauna found or likely to be found on the reserve. This should include an assessment of current data held within corporate databases or other available data. Important sites and habitats should be described and a discussion of the conservation status for each threatened species should be provided. A summary of prioritised management actions for threatened species should also be presented.

There are lots of different types of information that describe biodiversity values about the reserves. These vary from written descriptions through to field data and observations made from an incredible variety of sources. While libraries house the information held by the former, corporate databases are the central point for data. Problems arise when neither of these systems capture the data and information held on each reserve. This presents serious inefficiencies and potential duplication and limits efforts to ensure data is re-useable for the widest number of purposes.

Reserve Units

The size of reserves varies considerably in the region. In the case of the largest reserves we chose to split them into their component management partitions so that biodiversity survey efforts could be aligned with current management structures. In all there are 171 reserves, and these were further divided into a total of 182 areas for the assessment of fauna and 206 patches for vegetation. The assessed reserve unit boundaries are shown in Map 3. Each reserve unit was then allocated to a size class against which different survey effort could be ranked as either Low, Moderate or Adequate



Map 3: Larger reserves were split into smaller units to reflect management areas. Here coloured areas denote units identified in larger reserves for the fauna assessment

Assessment of Fauna Data Adequacy

There are currently no DECCW documents that provide guidelines in assessing the adequacy of fauna survey effort or the level of data required for park management. In the absence of this information fauna information was assessed by reviewing three different types of information.

1. Systematic survey effort
2. Observation data held in the Atlas of NSW Wildlife
3. Descriptive reports of fauna present

Systematic Fauna Survey Effort

Systematic survey effort is the most powerful way of recording field survey effort. The term systematic refers to the implementation of standard survey methods, with a conscious effort of recording the results even if nothing was observed. Importantly it tells us where people have been and what they have looked for. By doing this the data becomes reusable and becomes very powerful as a way of setting up monitoring programs or for building picture of where animals do or don't occur. For endangered species this is very important as one of the critical tasks is the ongoing review of conservation status. Similarly, it provides the opportunity for further work to target those areas that have not been surveyed before.

In DECCW there is a specific fauna survey database that allows users to record survey effort systematically, known as the Biodiversity Survey Subsystem (BSS) add on to the Atlas of NSW Wildlife. We extracted all systematic survey data from this database and plotted the location of sites and survey methods across all reserves in the study area. There is no single survey method that is appropriate for all fauna species. There are over ten different standard methods depending on whether you are surveying for frogs, birds, bats, reptiles, owls and nocturnal mammals. To simplify the assessment we chose to review the sampling effort allocated to birds, bats, reptiles and nocturnal mammals. We considered these to be good surrogates for surveys conducted in terrestrial forested reserves. The total number of surveys completed across these four survey techniques was summed and divided by four to provide a mean survey effort score.

Table 3 sets out the survey effort threshold applied for each reserve size class. It shows the minimum amount of survey effort required to reach each survey effort category. There are no corporate criteria for assessing survey effort adequacy. These criteria reflect our experience with systematic survey in the Sydney Basin.

Table 3 Fauna Survey Effort Thresholds by Reserve Size Class

Reserve Size	Survey Effort		
	Poor	Moderate	Adequate
<100ha	0 sites	<2 sites	3+ sites
100-1000ha	<2 sites	Between 2 and 4 sites	5+ sites
1000-10000ha	<1 site per 750ha	between 1 site per 300ha & 1 site per 750ha	>1 site per 300ha
10000-50000ha	<1 site per 2000ha	between 1 site per 1000ha & 1 site per 2000ha	>1 site per 1000ha
>50000ha	<1 site per 3000ha	between 1 site per 2000ha & 1 site per 3000ha	>1 site per 2000ha

Fauna Observation data held in the Atlas of NSW Wildlife

We recognise that for many reserves, considerable effort has gone into fauna survey without those surveys using or recording systematic survey effort. This is particularly the case for older studies where there was no means of storing this sort of information. Assessment of fauna survey effort is also limited for the assessment of those reserves for which terrestrial ecosystems do not occur. For example many estuarine and aquatic habitats are protected on islands which protect large number of roosts for migratory waders and shore birds. In response we assessed the number of species and observations recorded on each reserve to give an indication of how much information is known.

We extracted all observation data for the study area from the Wildlife Atlas. Initially we excluded all bird location data associated with the Royal Australian Ornithologists Union as the spatial accuracy of such data is not suitable for use at the reserve scale. We used the remaining observations stored in this database to calculate the Fauna Atlas Index (FAI), which is simply the number of records of vertebrate fauna species divided by the number of vertebrate fauna species known for the reserve. Thresholds were then applied to describe low, medium and high scores irrespective of reserve size. These classes are presented in Table 4.

Table 4: Fauna Atlas Index Classes

Fauna Atlas Index Class		
Low	Medium	High
<4.5	4.5 - 7.5	>7.5

Reserve Reports

Written reports are another information resource that may provide useful inventories of fauna and habitats found on reserves. They provide information that is not easily stored in database systems and can highlight the existence of survey effort, threatened species and pest data that is not yet centrally stored in corporate systems. We assessed DECCW libraries and on the internet to identify the existence of reserve based fauna reports. The list of reserves of the region was annotated to identify those supporting reports. No further assessment was made of their quality

Assessment of Vegetation Data Adequacy

For the purposes of this document our focus for the assessment of vegetation data was to ensure that reserves were supported by adequate vegetation mapping that described the structure and floristic composition of vegetation communities at a scale commensurate with 1:25 000 topographic maps.

The assessment of adequacy for vegetation survey and mapping is a little more advanced than fauna following the release of the DECCW type mapping strategy and standard. The strategy recognises that protected areas require fine scale classification and mapping efforts to meet user needs. These are described as Product Class 5 maps (DECCW, 2009) and are derived from quantitative survey data and analysis and detailed mapping captured at a scale between 1: 5 000 to 1:25 000. However no measure of survey effort guides the compilation of the map.

We developed a single score (see Appendix 5) that assessed the adequacy of vegetation mapping against

1. Systematic survey effort.
2. Remote sensing effort and scale.
3. Descriptive reports of vegetation communities and their distribution.

Systematic vegetation survey effort

Systematic vegetation survey effort describes the listing of all vascular plant species and their cover found within a fixed survey area and is accompanied by accurate location grid data. This information is stored in the DECCW systematic vegetation survey database known informally as YETI. The data is fundamental to the robust development of the vegetation classification for a reserve and enables broader regional and

state-wide classifications to make use of the data. It is data that provides a transparent understanding of relationships between vegetation communities and the underlying environmental characteristics.

We extracted all systematically collected data held in YETI that was supported by full floristic inventories, a standard cover score system and a positional accuracy of 100 meters or less. These were then plotted across all reserves of the study area. A set of criteria were developed to apply a relative survey effort score for each reserve size class. These criteria reflect poor, medium and adequate survey effort based on the number of sites per hectare found in the reserve. Table 5 sets out the survey effort classes for each reserve size category.

Table 5: Vegetation Survey Effort Class by Reserve Size Category

Reserve Size	Survey Effort		
	Poor	Moderate	Adequate
<100ha	<2 sites	2-4 sites	>4 sites
100-1000ha	<1 site per 300ha	Between 1 site per 100ha & 1 site per 300ha	>1 site per 100ha
1000-10000ha	<1 site per 400ha	Between 1 site per 200ha & 1 site per 400ha	>1 site per 200ha
10000-50000ha	<1 site per 700ha	Between 1 site per 300ha & 1 site per 700ha	>1 site per 300ha
>50000ha	<1 site per 1000ha	Between 1 site per 500ha & 1 site per 1000ha	>1 site per 500ha

Remote Sensing Effort and Scale

The mapping of vegetation communities relies at least in part on some type of remotely sensed data to help inform the delineation of distribution patterns. Methods used across the region are diverse and difficult to assess without reviewing the individual mapping efforts. Instead we reviewed the effort allocated to the collection of this information and used the new Vegetation Type Standard as a guide to determine whether standard remote sensing attributes were collected. Typically, interpretation of patterns visible in aerial photography is used to produce vegetation maps, although satellite imagery has been used in some instances. Table 6 sets out a five point scoring system where one represents lower effort and five represents higher effort.

Table 6: Remote Sensing Effort Score

Score	Criteria
5	Stereoscopic interpretation of 1:25k aerial photography or finer supported by >30% time allocated to stratified field survey effort. Multi attributes collected to standard to describe cover, confidence and floristic patterns. Data corrected for spatial distortions to present a two-dimensional GIS layer. Typical polygon development for special features to 1ha.
4	As above, but not supported by multi attributes required by the standard.
3	As above, however supported by lower field work effort (<30%), typical polygon development >5ha and multi-attribution to standard not present
2	As above, based on imagery >1:25k scale without multi-attribution required by the standard OR <1:25k stereo interpretation of floristic and structural patterns not supported by fieldwork.
1	Interpretation of two-dimensional imagery to identify broad structural vegetation patterns such as Tall Forest/Rainforest/Heath classes OR unsupervised/supervised classification of multi-spectral satellite imagery. No field work component.

Reserve Reports

Reports that describe the native vegetation attributes of a reserve are another way in which corporate knowledge is retained. Reports for individual reserves are important for reserve managers if they are to know the local compositional and distributional patterns that are found. Many reserves are covered by older studies that provide very good documentation of the vegetation but were not surveyed or mapped using today's standards. We felt that these should not be overlooked as a resource. Across the region, some reserves have comprehensive reports, while others are covered by regional mapping, but have no stand alone information from which to reference local patterns.

We reviewed each reserve to see whether a stand-alone report accompanied vegetation mapping or survey effort. If there was an existing report, the source of the report whether from the BSP program 2003-2009, Special Areas (SCA) or other sources was also noted.

5. Achievements of Stage 1:2003-2009

This section describes the results of Stage 1 of the Biodiversity Survey Priorities Program across the reserves of the former Central Branch PWG. It documents the changing knowledge base of the reserves and highlights the uses and applications of the data collected.

Introduction

The initial 2003 assessment of flora and fauna information across reserves highlighted that:

- The standard and adequacy of fauna data within reserves was at a much lower level than for vegetation;
- Smaller reserves had disproportionately high levels of survey effort, mapping and existing reports; and,
- Conversely, the lowest levels of survey effort were present in the largest reserves.

Since then 28 reports on the native vegetation or fauna have been produced along with five new vegetation maps for large reserves of the region. A list of reports is presented in Appendix 1. These have improved biodiversity information across almost 1 million hectares of reserve and have addressed some of the largest gaps in biodiversity data.

Fauna Survey 2003-2009

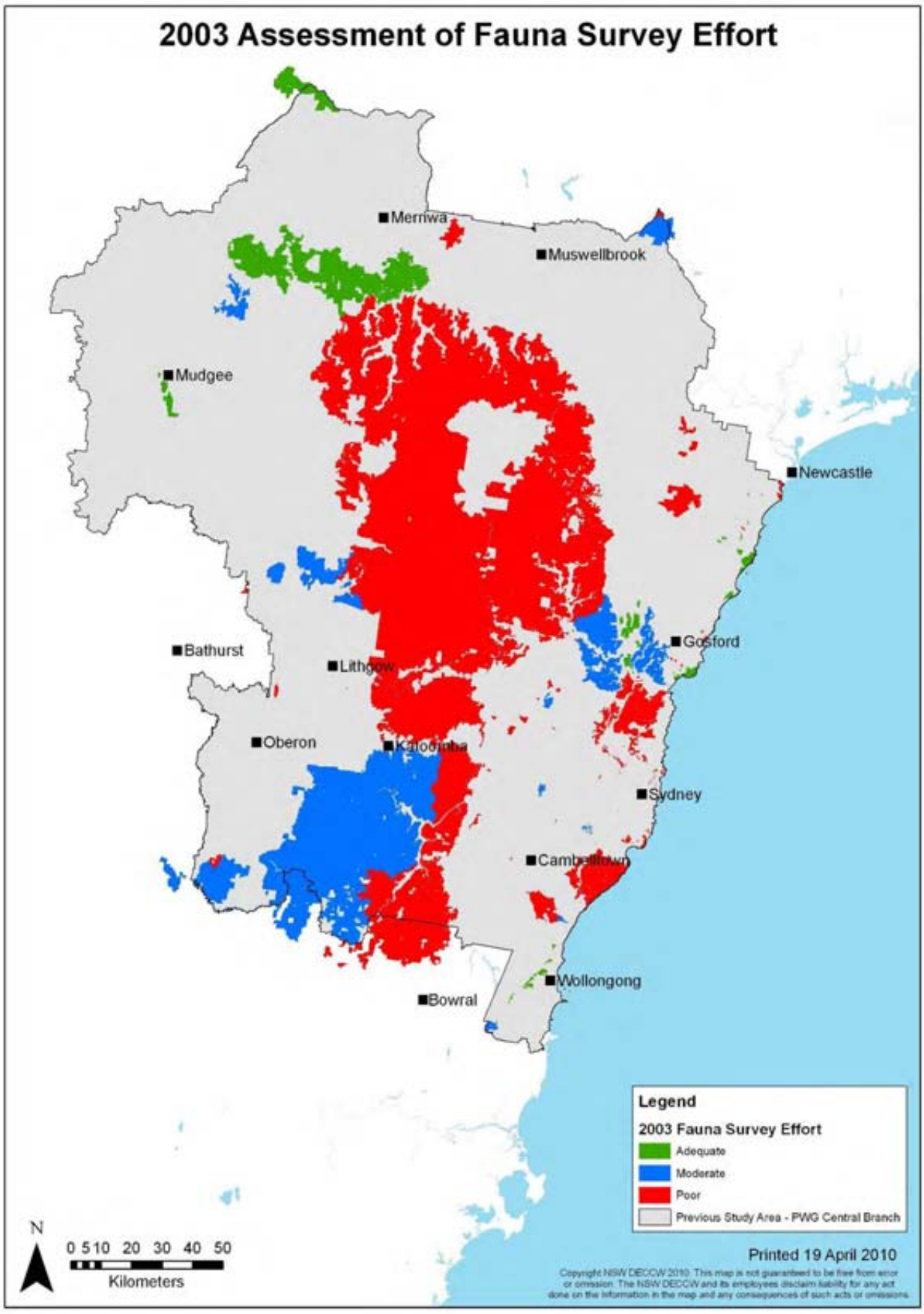
One of the main aims of Stage 1 of the BSP was to increase the number of DECCW managed reserves that had adequate levels of baseline fauna data. That is to provide an inventory of what species occur and in what habitats.

At the commencement of the program the level of fauna information was strongly biased towards small coastal reserves that attracted larger numbers of amateur naturalists and community biodiversity studies. The largest reserves were actually the most poorly understood and supported very limited and erroneous inventories of fauna. The 2003 report generated two maps to describe the patterns in available fauna data across the reserves at that time. The first of these is shown in Map 4, and illustrates the amount of recorded systematic fauna survey effort in all reserves. Over 65% of the total area of reserves held limited systematic fauna data, with many gaps across the Greater Blue Mountains World Heritage Area. This included much of Wollemi, Yengo, Parr and Nattai reserves. By the end of 2009 these data gaps have been addressed by the implementation of a systematic survey program (Map 5). The increase in survey effort has arisen from the BSP program and from surveys in western Sydney that are part of threatened species works and PWG Sydney Region surveys. Map 5 also shows that only the upper part of the Blue Mountains NP remains to be sampled within the Greater Blue Mountains World Heritage Area, with the fauna of Wollemi and Yengo and Southern Blue Mountains now described in a range of reports and habitat maps. In all, over 75% of the total land area of reserves has been surveyed to an adequate level, with less than 20% considered to be poorly surveyed.

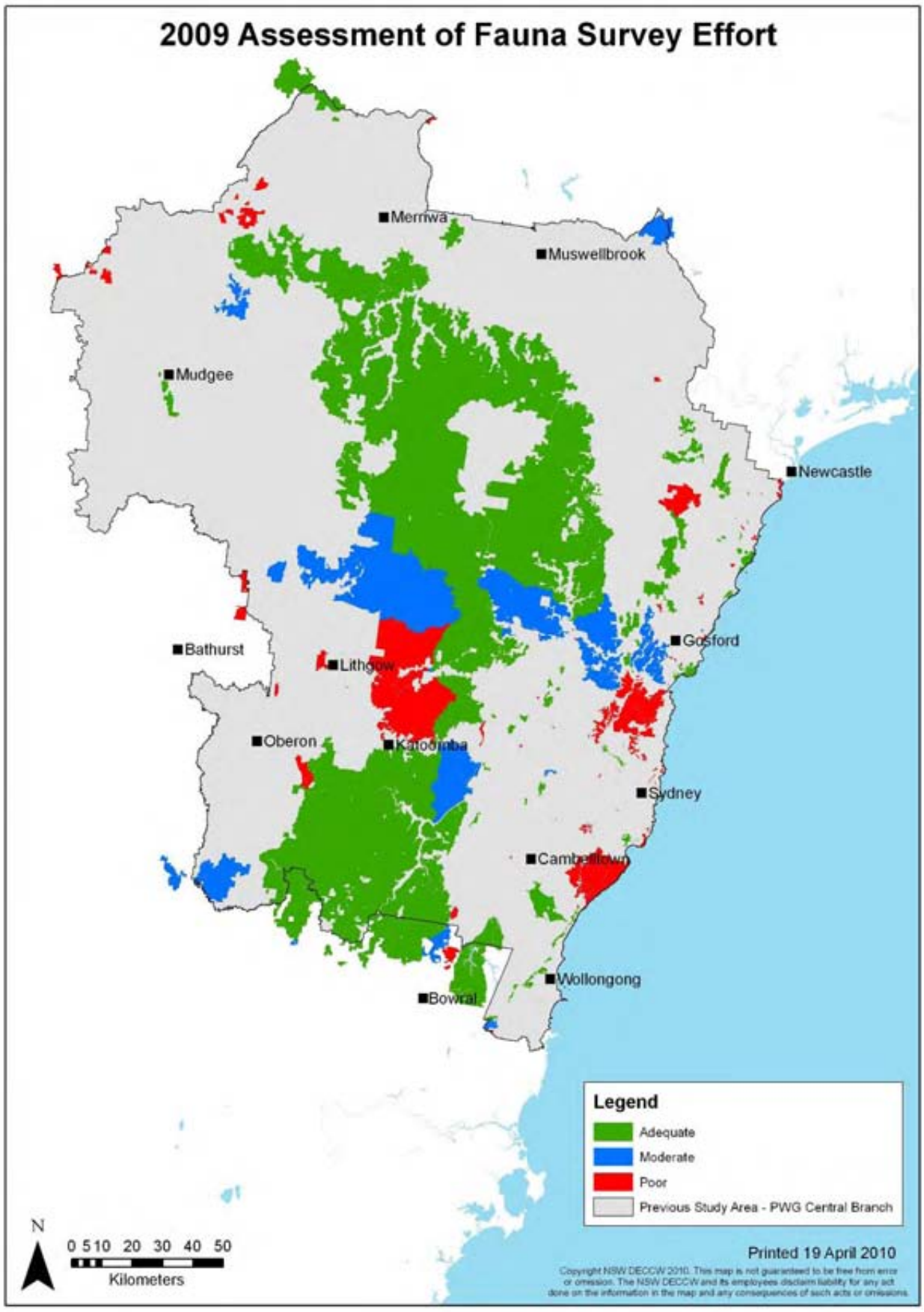
A second index of fauna information adequacy is described by the Fauna Atlas Index (FAI). Map 6 produced in 2003 illustrates that some reserves held a high amount of observational data but low formal survey effort (as seen in Map 4). This was particularly the case for some smaller reserves in Western Sydney, and for well visited coastal reserves such as Ku-ring-gai and Royal NP. Map 7 shows that at the end of 2009 there is a far more even distribution of information across reserves, although many small metropolitan reserves and some sandstone reserves retain relatively sparse datasets. When examined in combination with the fauna survey effort maps, less than 5% of the total area of reserves is supported by poor fauna data.

Stage 1 of the program directed new fauna survey effort to 17 different reserves covering 916,000 ha, including larger inland reserves such as Wollemi and Yengo National Parks. These reserves now have greatly improved levels of fauna knowledge as shown in the 2009 assessments of Fauna Survey Effort and FAI (Maps 5 & 7), and also now have stand-alone reports describing the fauna occurring in the reserves.

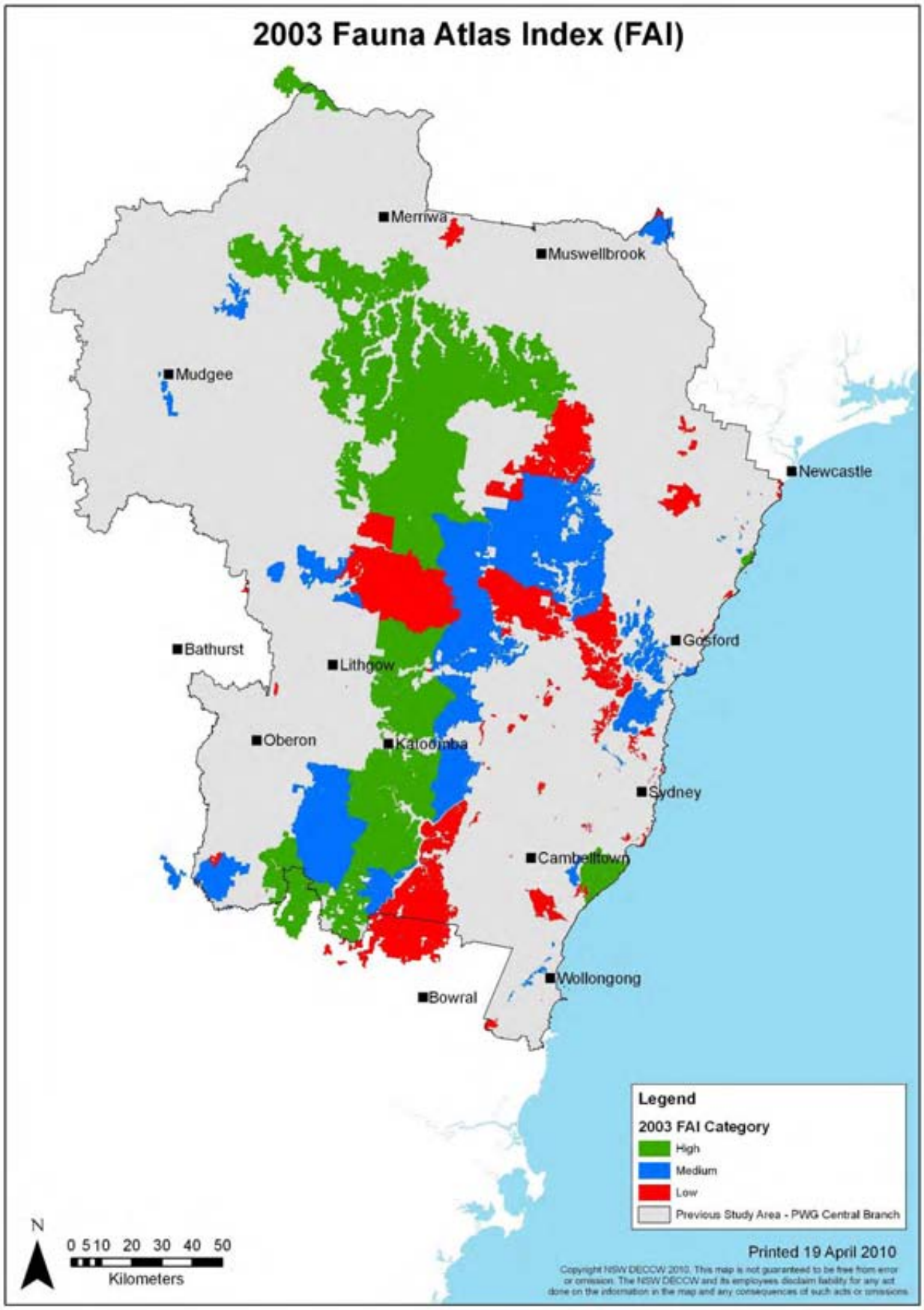
Map 4: 2003 Fauna Survey Effort Map



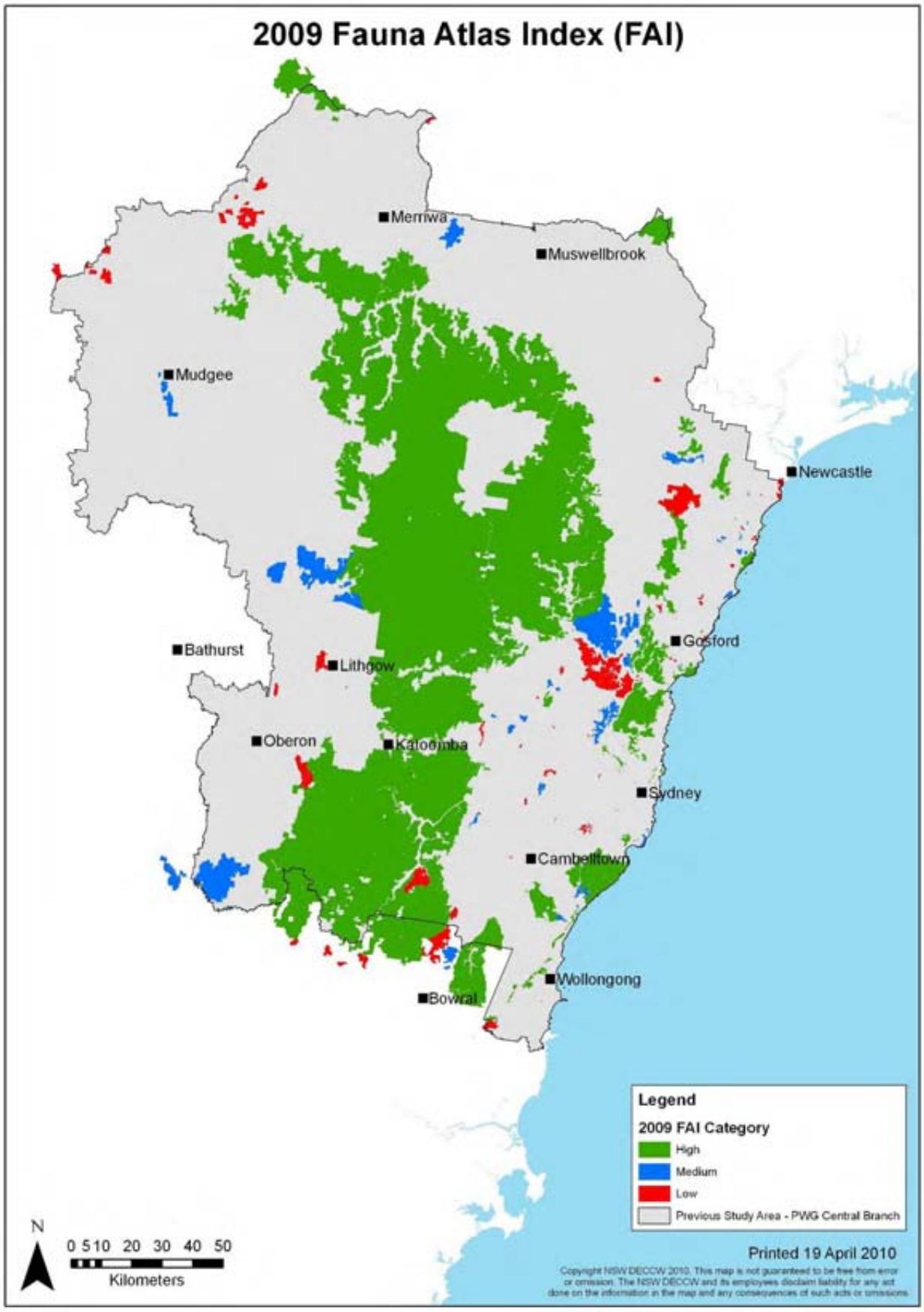
Map 5: 2009 Fauna Survey Effort Map



Map 6: 2003 Fauna Atlas Index (FAI)



Map 7: 2009 Fauna Atlas Index (FAI)



Summary of Achievements

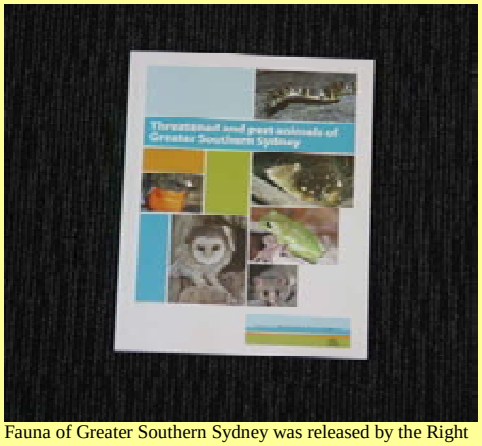
Over the five years, standard survey methods for vertebrate fauna were implemented across a wide variety of habitats. In summary:

- Over 150 person weeks were spent surveying
- Over 1 400 new survey sites were established on reserves
- Over 100 000 new fauna records have been added to the Atlas of NSW Wildlife
- Over 3 000 new locations of threatened fauna species have been recorded
- Over 55 different threatened species have been recorded, and
- Over 5 species were observed that had never been recorded in the region before.
- Significant finds for priority endangered species include: Giant Barred Frog *Mixophyes balbus*, Brush-tailed Rock-wallaby *Petrogale penicillata,* Broad-headed Snake *Hoplecaphalus bungaroides* and Regent Honeyeater *Xanthomyza Phrygia.*
- 17 stand alone reports have been produced for park management staff and the community
- All reports and data are available through the DECCW website and the Atlas of NSW Wildlife.

Integration of Fauna Data with Regional Programs

Amongst the successes of the BSP Program has been the integration of the reserve fauna data into regional conservation and planning initiatives and threatened species management. In 2007 the work completed within the reserves under the BSP was combined with regional biodiversity studies to produce habitat maps for 80 threatened fauna species and 12 pest species. For the first time in the Southern Sydney Region, a cross tenure information resource was available for all land managers. The work identified:

- Ranked species conservation priorities based on comprehensive scientific survey and threat analysis;
- Primary key threatening processes impacting on species of the region;
- Priority habitats in the region that maximise the protection of species of conservation concern;
- Key corridors that link the major landscapes of the region and local corridors that support faunal movement.



Fauna of Greater Southern Sydney was released by the Right Hon Philip Costa 2007. Data collected for the Central Branch PWG BSP program was fundamental to the success of the project

These products are now used by wide range of management documents and conservation programs in the region. This includes:

- Catchment Action Plan Biodiversity Investment in the Hawkesbury-Nepean and Sydney Metropolitan CMAs
- Threatened Species Priority Action Statements
- NPWS Reserve Plans of Management, Pest Management and Fire Management Documents
- Supporting biodiversity evidence for regulations of the Southern Coal Fields
- Supporting conservation prioritisation for the Sydney Growth Centres and Cumberland Plain Protected Areas strategy
- Illawarra Escarpment Management Plan
- Monitoring Evaluation and Reporting (MER) in the Sydney Basin
- Regional Environmental Plans

Vegetation Mapping 2003-2009

Vegetation community maps remain one of the primary management resources for park managers and conservation planners. Maps are used for a myriad of management tasks ranging from fire management to reserve establishment (Map 8). At the commencement of the BSP Program, the region was characterised by vegetation mapping that used a variety of methods and mapping scales. One of the confounding problems was that few maps were produced with a scale and accuracy to identify the location of Endangered Ecological Communities listed under the NSW *Threatened Species Conservation Act, 1995* or the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*.

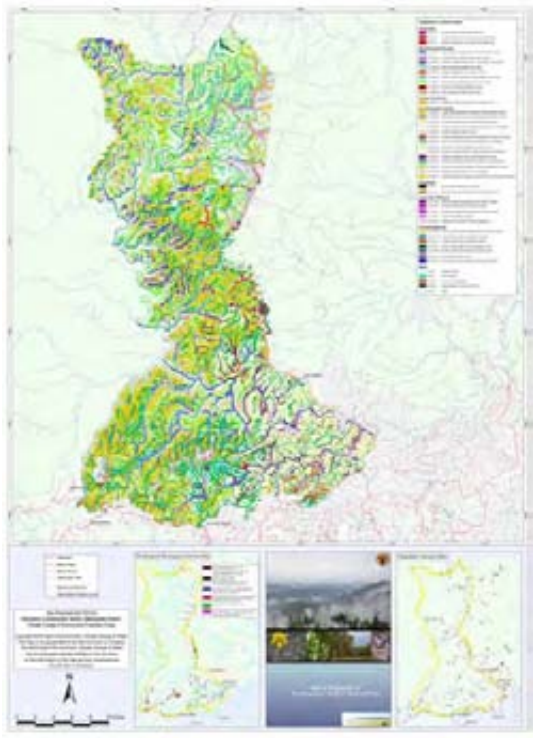
The 2003 assessment of available vegetation mapping data revealed a substantial deficiency in systematic survey effort across the larger reserves. However, in comparison to fauna data at that time, vegetation mapping effort was higher for a greater number of reserves. As a result, vegetation survey and mapping was allocated less resources during Stage 1 of the BSP.

Map 9 generated in 2003 illustrated that around 40% of the total area of reserves in the region had poor vegetation data. This included Wollemi and Yengo NPs despite several coarse maps and classifications being produced in the past. By contrast many of the coastal reserves have been adequately addressed. Using the same assessment criteria in 2009 (Map 10), it is evident that several of these large gaps have been addressed. This is a direct result of the BSP program, with new survey and mapping work completed for Yengo and Parr reserves, South-eastern and North-western Wollemi and the Blue Mountains National Park. As a result of this work a standard classification and mapping system for the entire Greater Blue Mountains World Heritage Area is getting closer to completion. In all, 60% of the total land area of reserves is covered by adequate vegetation maps. Large gaps remain across parts of the Greater Blue Mountains World Heritage Area.

Summary of Achievements

Over the last five years standard survey and mapping criteria have been employed. In summary:

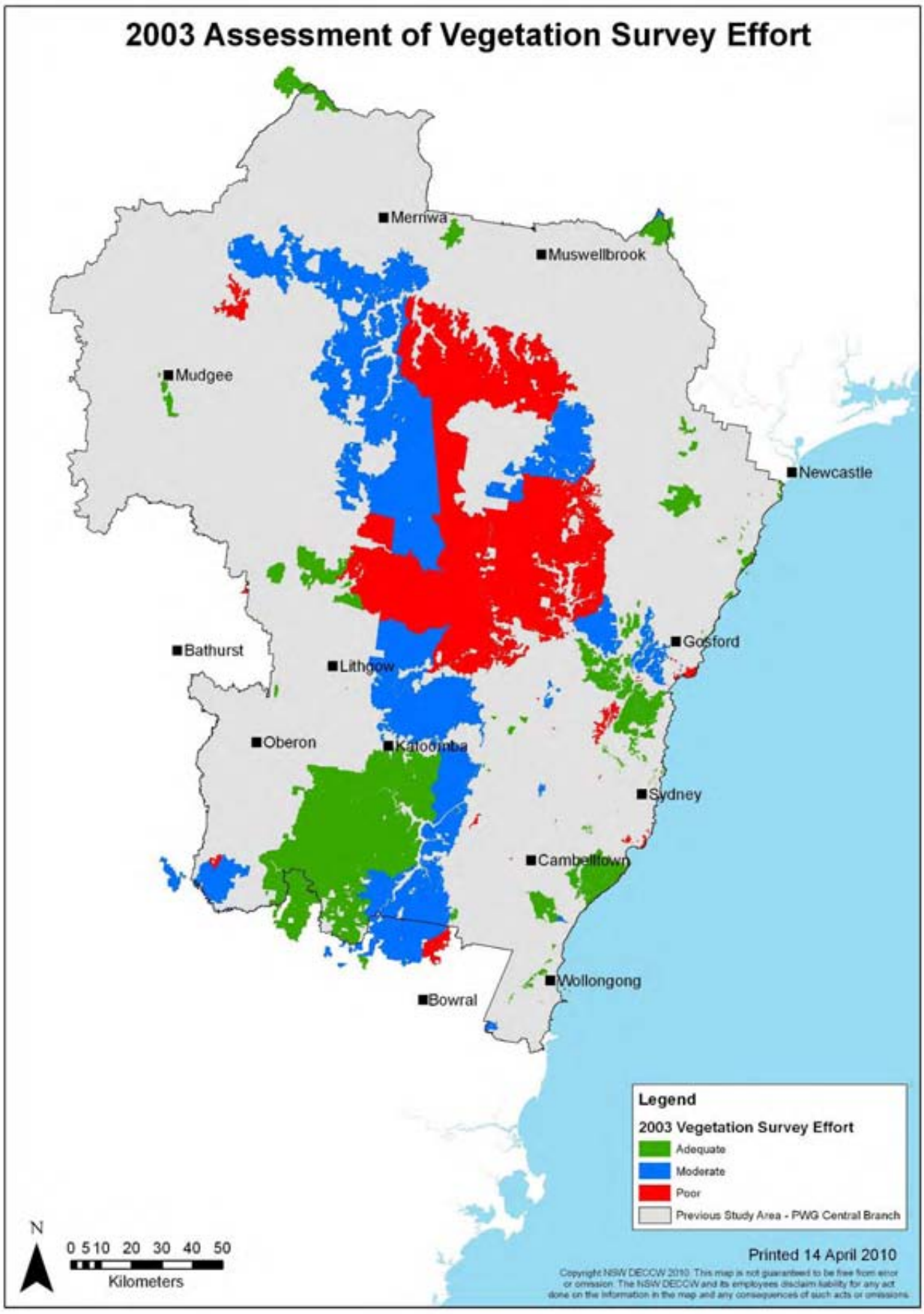
- Almost 500 000 hectares of DECCW reserves have been mapped along with adjoining private lands and in-holdings. This mapping has targeted those reserves with poor and moderate levels of data
- Standard 1:25 000 mapping has been applied using a combination of aerial photograph interpretation and systematically collected floristic data. These methods meet the new DECCW vegetation mapping standards
- Over 350 systematic plots have been completed on reserves
- Over 160 field person weeks was spent surveying
- Data were collected on disturbance patterns across reserves for the first time
- 15 endangered ecological communities have now been described and mapped
- 230 new threatened plant localities have been identified
- 17 600 plant locality records for reserves have been added to the Atlas of NSW Wildlife.



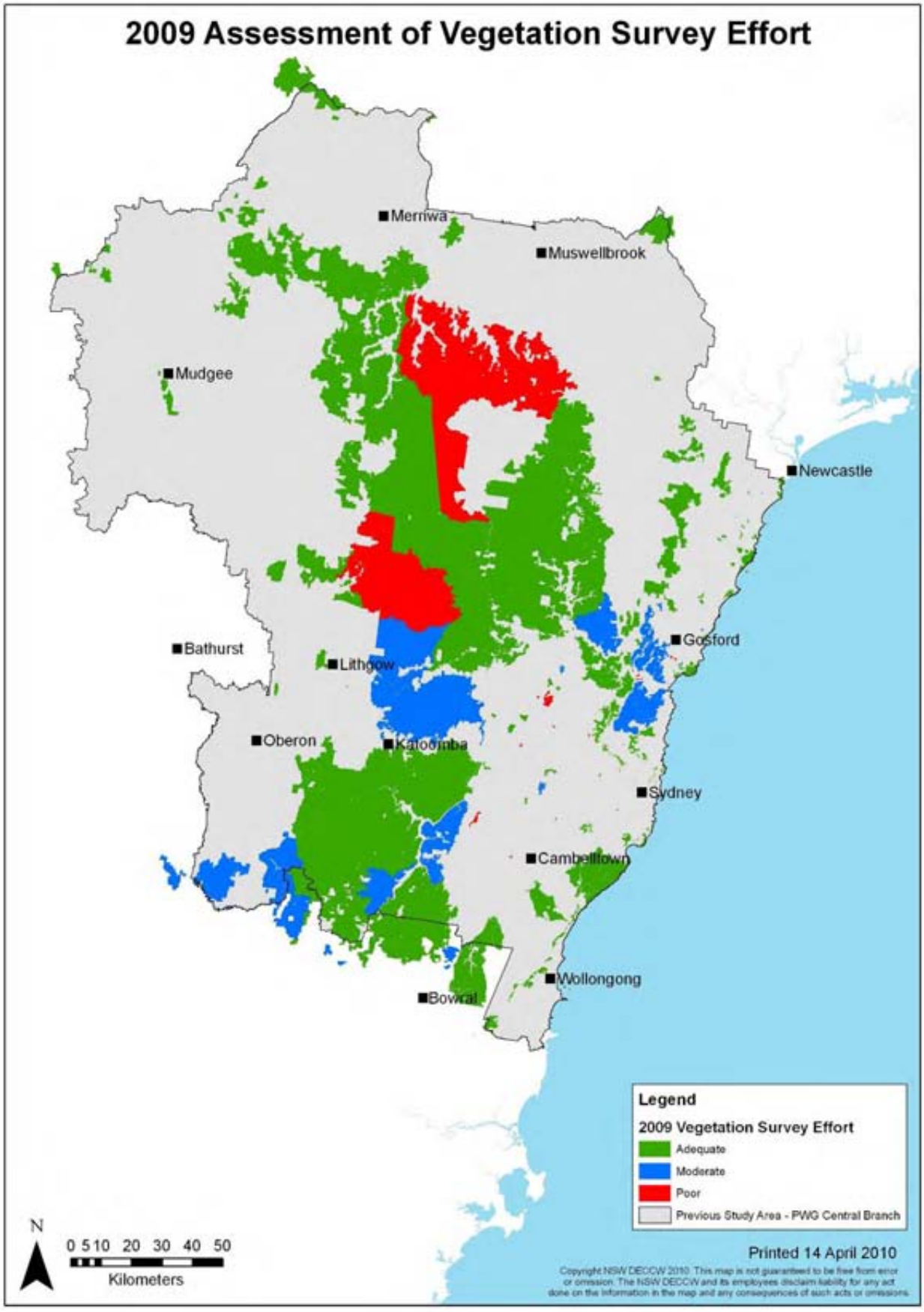
Map 8: South-east Wollemi NP Vegetation Community Map

New vegetation community mapping, such as this example in South-east Wollemi NP, covers over 450 000 ha. It identifies a range of values including EECs and disturbance impacts across the reserve and adjoining private lands

Map 9: 2003 Assessment of Vegetation Survey Effort



Map 10: 2009 Assessment of Vegetation Survey Effort



Integration of Vegetation Data with Regional Programs

Metropolitan Branch EPRG has adopted a sequential approach to the development of a region wide vegetation map. Work continues toward a single seamless vegetation map of the Sydney Basin by developing a standard vegetation classification for all land managers and conservation planners. The work carried out under the BSP has been fundamental to the success of this program. Over the last five years Metropolitan Branch EPRG have integrated the BSP program with new vegetation mapping works carried out under Catchment Management Authority (CMA) funding. This has included:

- Integrating CMA mapping across private and crown land tenures in the Putty Valley and Northern Hawkesbury LGA with BSP funded work in Yengo, Parr and South-east Wollemi Reserves
- Integrating CMA funded mapping on private, state forest and other crown lands in the Capertee, Lithgow and Oberon Areas
- Integrating reserves data into new vegetation mapping across all land tenures within the Sydney Metropolitan Catchment Area on behalf of the CMA

New vegetation mapping by Metropolitan Branch EPRG in the Sydney Metropolitan Catchment Management Authority Region lands included many metropolitan reserves of Sydney. These draft reports are now available with maps for park managers.

Regional Vegetation Mapping

Vegetation mapping undertaken by the BSP has contributed a significant amount of field data and mapping to three large scale regional mapping projects. Without such data the extensive reserves of the Sydney Basin would be poorly described and mapped. These regional maps underpin many of the new NRM reforms and processes.

1. The **South Coast** Inventory of Vegetation Information (SCIVI) has produced the first seamless regional scale vegetation map and classification between the Victorian border and Sydney across all land tenures.

2. The **Hunter and Central Rivers CMA** has relied upon data collected within Central Branch PWG reserves for the completion a revised regional vegetation classification of the entire CMA between Gosford and Taree. This CMA now is identified as the number one mapping priority in the state and funding is being sought to map the new classification system cross all land tenures

3. **The Sydney Metropolitan CMA** is now supported by a standard classification and mapping system across all land tenures following new work by Metropolitan Branch EPRG. This work relied on data collected on reserves to help construct the classification and map.

6. Reserve Biodiversity Data Assessment 2010

This section describes the results of the assessment of biodiversity data found on reserves of the new region using the criteria set out in Section 2.

Introduction

In contrast to 2003, the region assessed in 2010 has been expanded to encompass all of the Sydney Basin Bioregion as mapped by IBRA version 6.1. This means an extensive area of reserves not previously assessed or included under Stage 1 of the program has now been included in the 2010 assessment. This includes the Morton reserves and those associated with the coastal plain and escarpment between Ulladulla and Shellharbour. There are an additional 71 reserves covering a further 350 000 hectares (see Map 1).

Fauna Data on Reserves in 2010

Three new maps have been generated to describe the relative levels of fauna information available in the reserves of the new region. Map 11 illustrates the remaining gaps. Following the efforts during Stage 1 (2003-2009), there are few large parks that require work in the former Central PWG region with the Upper Blue Mountains NP and Ku-ring-gai NP still outstanding. Numerous small reserves across the Central Coast and Northern Metropolitan Sydney remain under-sampled. The addition of the Southern Highlands and southern coastal reserves to the new region illustrates that these have not been the focus of systematic surveys similar to those in the BSP program. Instead this region has focused on single species surveys associated with priority action statements and threatened species recovery planning processes. As a result there are fewer generalist surveys describing the fauna values of the reserves as a whole, but greater detail on individual species and sites within reserves. A complete list of systematic survey effort by reserve is provided in Appendix 2.

Map 12 illustrates the results of the Fauna Atlas Index (FAI) for the expanded region. This suggests that a large proportion of the area covered by reserves is now supported by a much improved coverage of observation data. However, low levels of data are found in the central areas of Morton NP, Marramarra NP and several smaller reserves across the region. A complete list of FAI scores for each reserve is presented in Appendix 2.

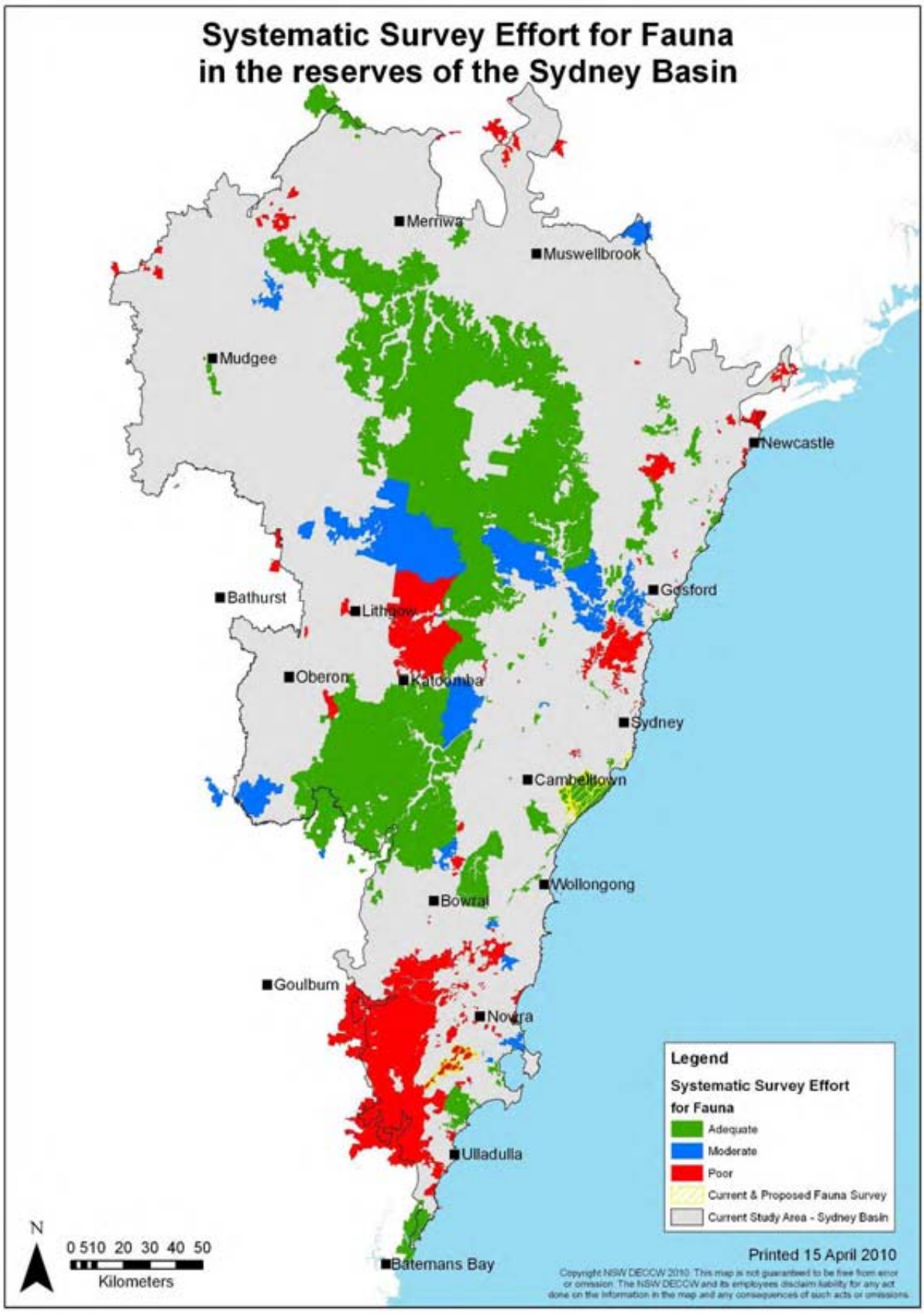
Map 13 displays those reserves that are covered by a stand alone report that describes the fauna values of the reserve. There is a strong correlation between the absence of survey effort and the absence of a comprehensive stand alone report. The Central Coast, Upper Blue Mountains, Gardens of Stone, South Coast and Highlands all support a high number of reserves without stand alone reports. Irrespective of how data rich reserves are, stand alone reports are one of the few ways that reserve managers can easily access and digest the fauna values of the reserves. Often there are a large number of different types of data that can be confusing and impenetrable to users. A report reflecting local values is one way of overcoming these issues. A complete list of reserves covered by stand alone reports is presented in Appendix 2.

New Fauna Survey Effort Needed

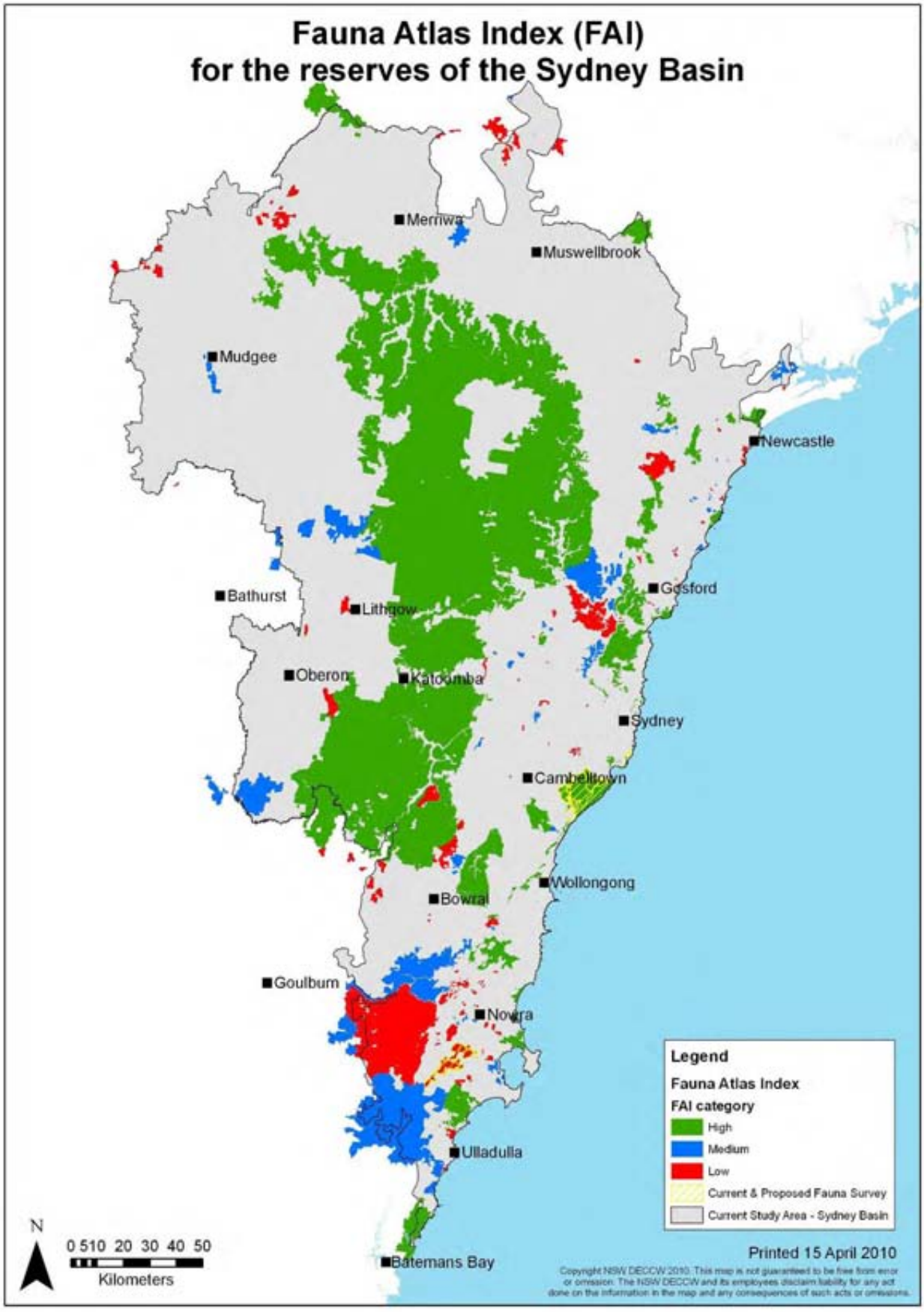
Appendix 2 also provides an indication of the amount of survey effort required to bring fauna data held on individual reserves to an adequate standard. The table shows that some reserves such as Abercrombie River NP, Brisbane Water and Dharug NP need relatively lower effort to reach the standard as there is already some degree of existing fauna survey data. Others such as Upper Blue Mountains NP and Morton NP require significantly more effort across larger areas.

A costing formula for the fauna effort required for each reserve has been developed and is available from Metropolitan Branch EPRG upon request.

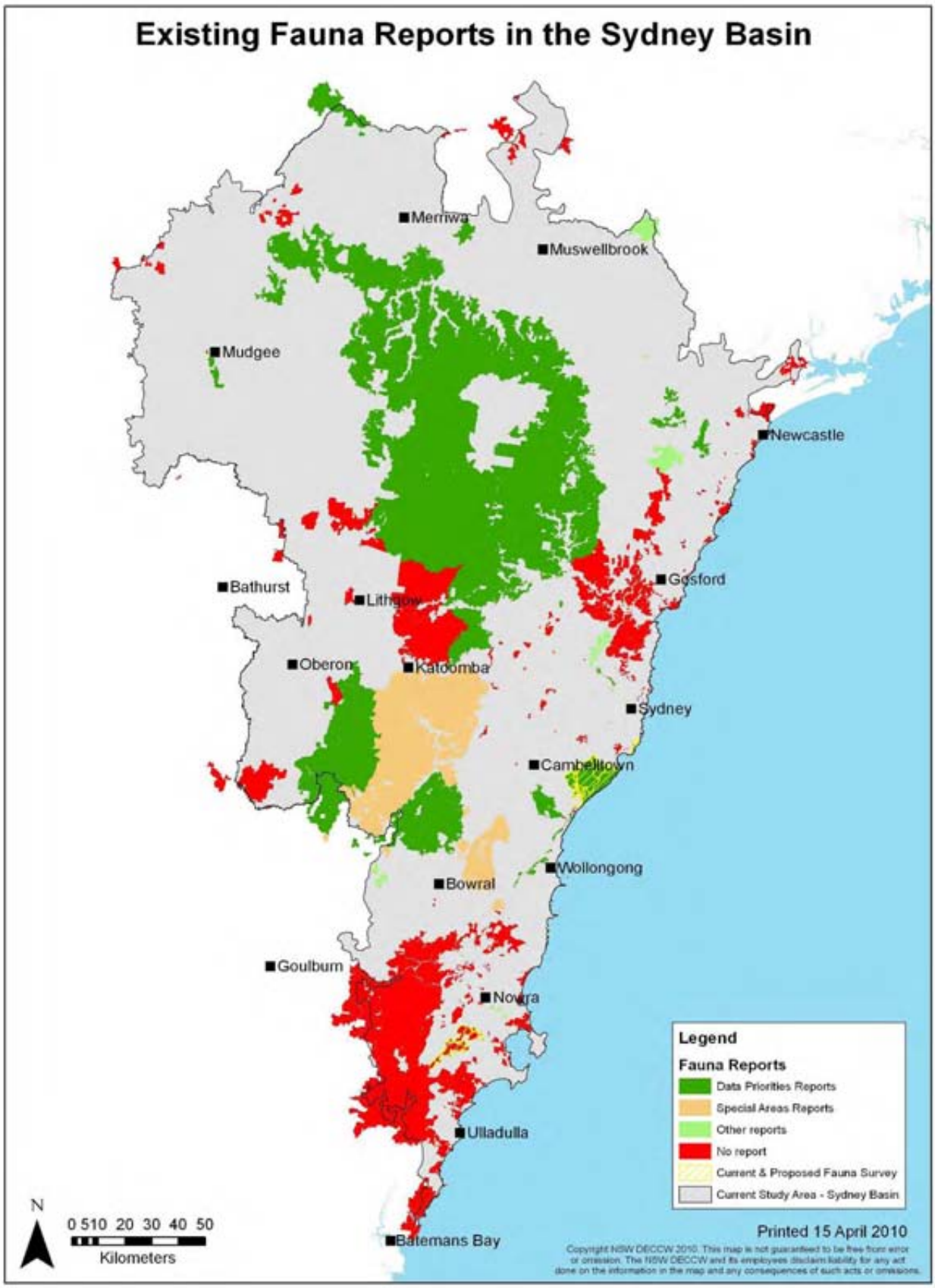
Map 11: 2010 Assessment of Systematic Fauna Survey Effort



Map 12: 2010 Assessment of Fauna Atlas Index



Map 13: 2010 Assessment of Fauna Reporting



Vegetation Mapping Data on Reserves

Three separate indices (outlined in Section 4) have been generated to describe the type and quality of vegetation data present across the new region. The first of these, describing the distribution of systematic survey effort, is presented in Map 14. Scores for each individual reserve are listed in Appendix 3. Overall vegetation survey effort is far higher and more evenly distributed than for fauna. There has been a greater collective effort toward surveying vegetation in the region including the implementation of regional vegetation mapping projects across the southern Sydney Basin, the Comprehensive Regional Assessment process of the late 1990s and the former Department of Natural Resources state-wide mapping programs in the early 2000s. More recently CMAs have invested resources into region-wide data. On-park, large gaps in sampling effort remain in Wollemi and Blue Mountains NPs. In contrast many reserves need smaller additional effort in surveying to raise the class from moderate to adequate. This is the case for medium sized reserve such as Dharug, Ku-ring-gai and Brisbane Water NPs.

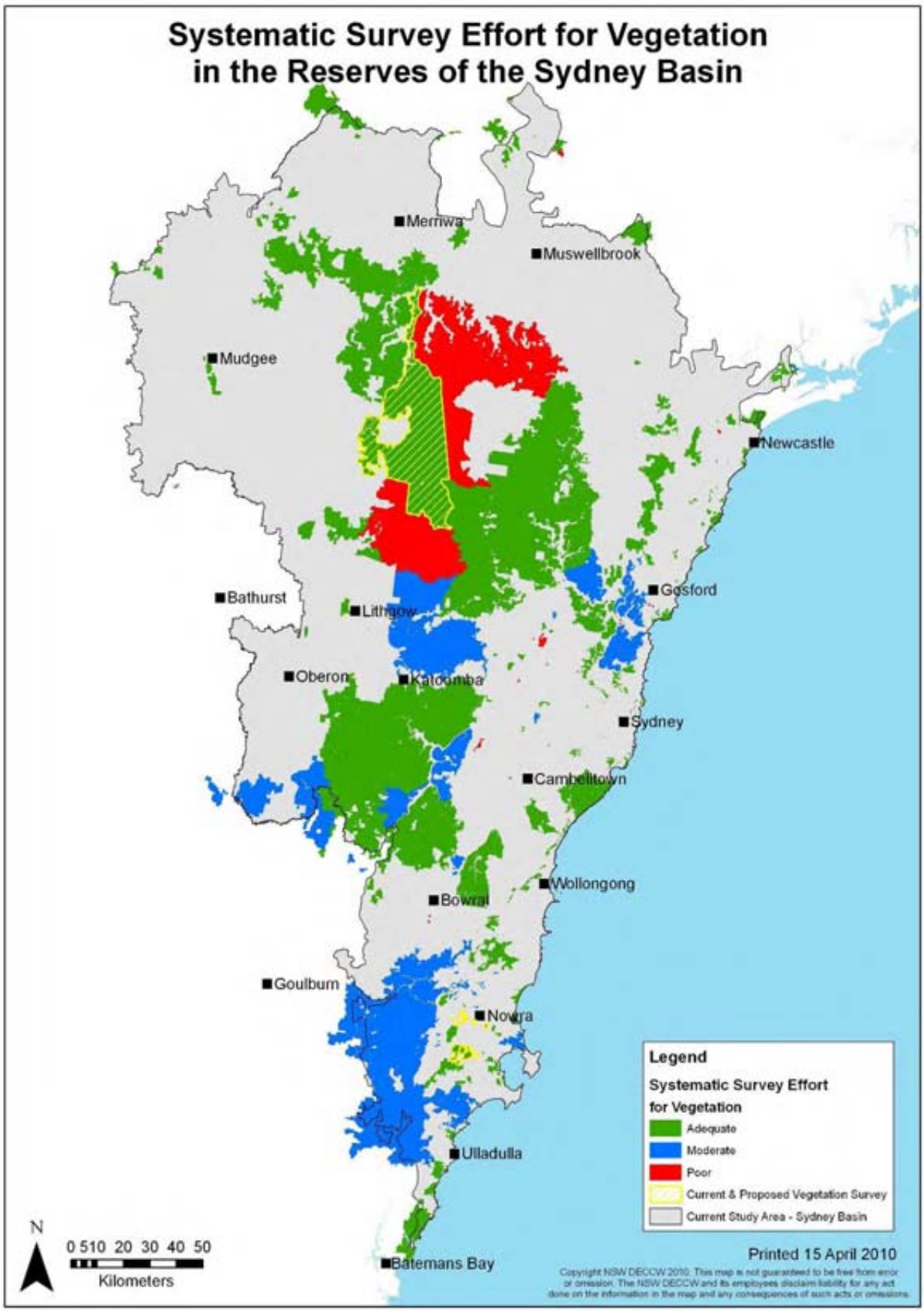
The assessment of remote sensing effort is presented in Map 15 and the score for each individual reserve is presented in Appendix 3. This index was not generated in the 2003 assessment. It illustrates that remote sensing data that underpins mapping for large portions of the Blue Mountains World Heritage Area, including Wollemi NP and the Grose Valley in Blue Mountains NP is at a coarse scale. Other vegetation maps on reserves have been derived from greater effort in remotely sensed data. However, the derived digital line-work collected at that time is no longer likely to retain a spatial accuracy commensurate with modern digital imagery. This is the case for parts of Ku-ring-gai, Dharug and Morton NPs

The third map (Map 16) shows the coverage of stand alone vegetation reports for all reserves in the region. Results for individual reserves are presented in Appendix 3. There is a wide variety of standards associated with this reporting. Some reports are generated from high levels of field data, while others are dependent on coarse datasets and consequently are less informative. Nevertheless the existence of any report that documents the variation in plant communities and the type of species encountered is a valuable information source that can be used to guide management actions.

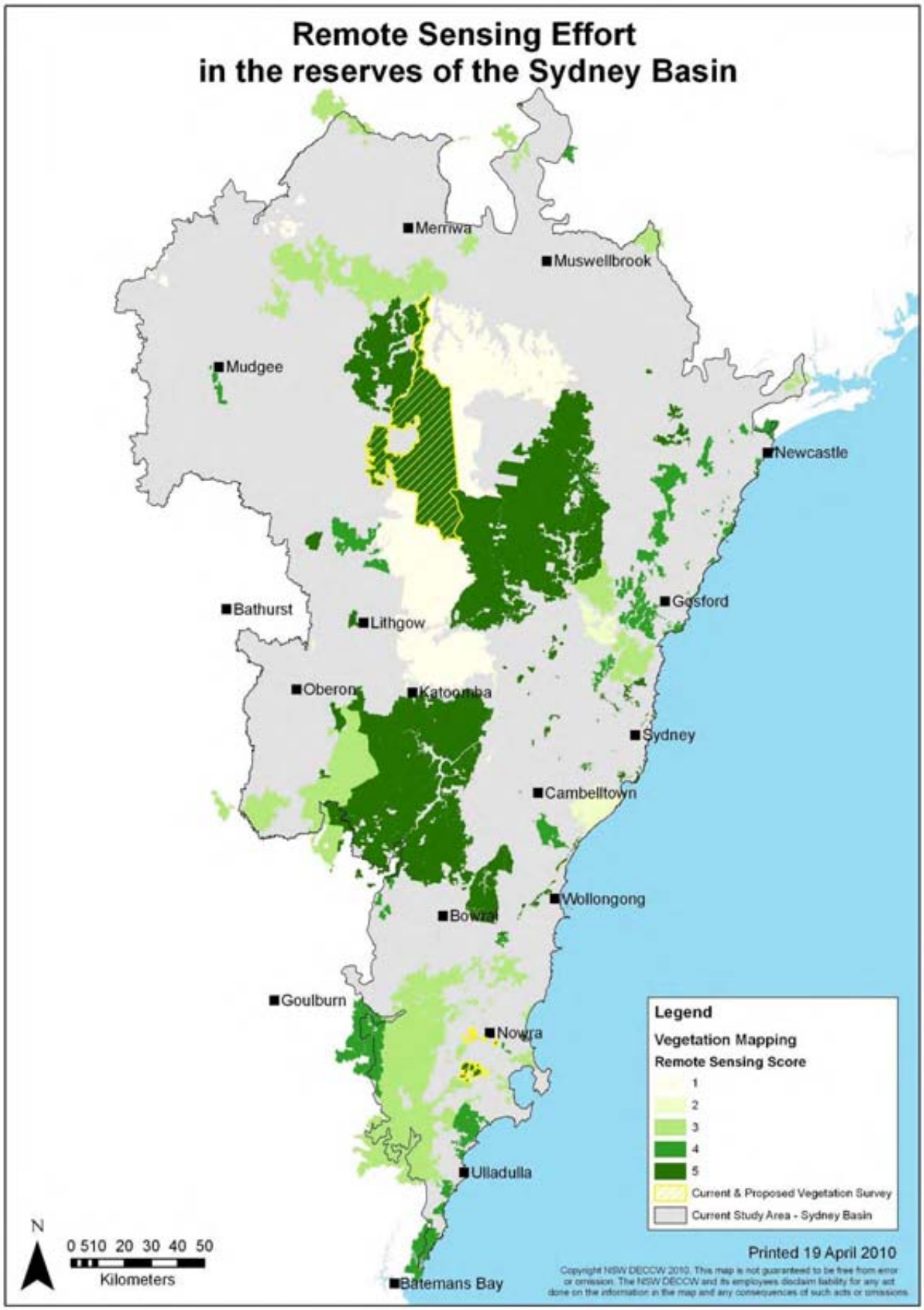
New Vegetation Survey and Mapping Effort Needed

Appendix 3 also indicates the amount of new flora survey effort required for each individual reserve to reach an adequate standard. For many of the small reserves, less than a few days field work will result in a more comprehensive baseline dataset. Larger reserve units will obviously require more effort. Remote sensing on the other hand is more disjointed in both method and effort. New DECCW standards mean that many older datasets are unlikely to retain the attributes that are now required and are considered mandatory for any new work. In addition the spatial accuracy of older work is far less likely to be commensurate with new high resolution imagery that is becoming widely available. We aim to have the reserves of region covered with a remote sensing score of 4 or greater. This means for some areas remotely sensed data may only need up-dating to improve resolution of mapping features, ensuring attribution reaches DECCW standard and improves spatial accuracy. This will be a significant investment for larger reserves.

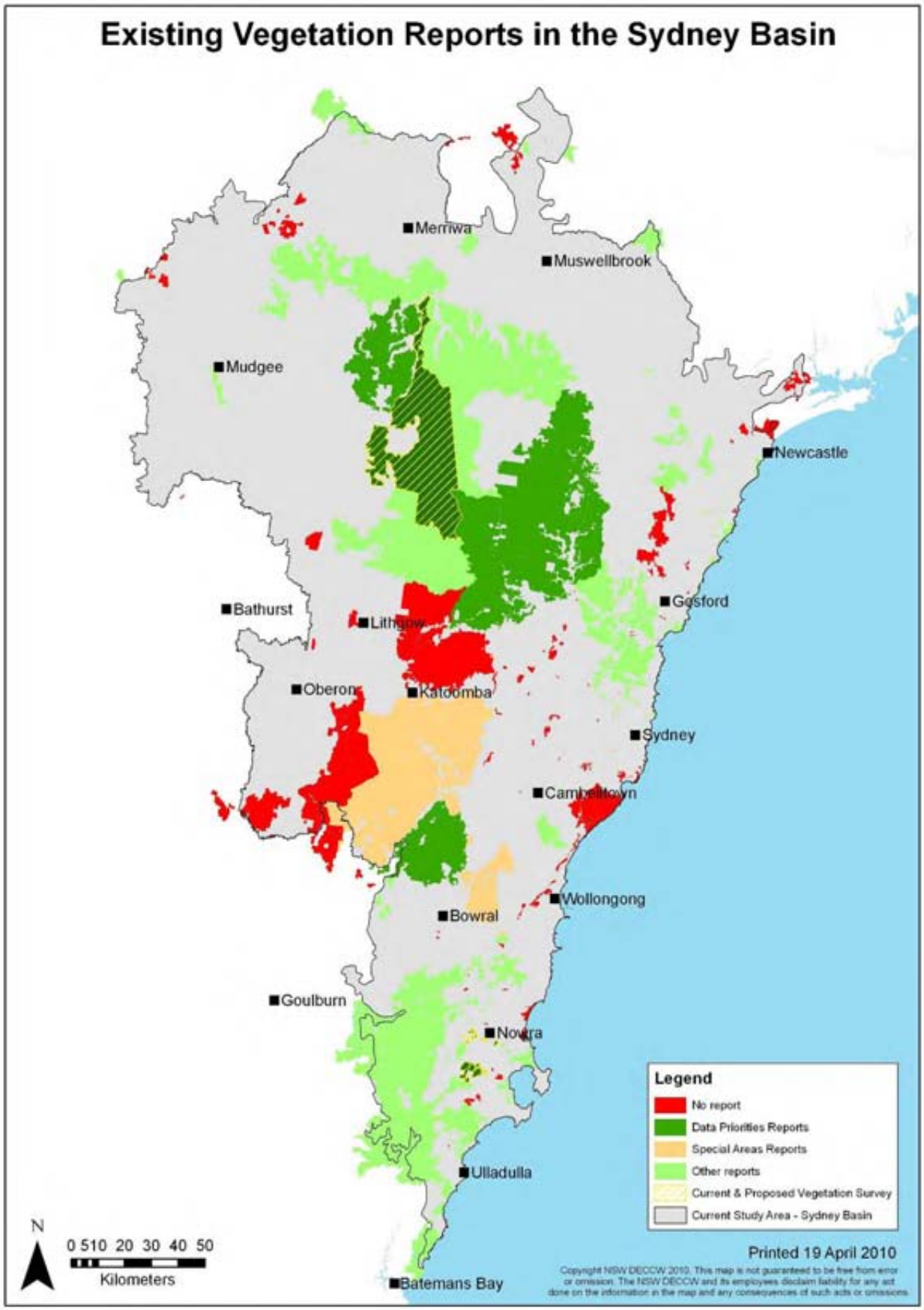
Map 14: 2010 Assessment of Systematic Vegetation Survey Effort



Map 15: 2010 Assessment of Remote Sensing Effort



Map 16: 2010 Assessment of Vegetation Reports



7. Survey Priorities for Stage 2: 2009 – 2014

This section describes the methods used to prioritise new survey work across the reserves of the region. It presents the results of the prioritisation and provides an annual program of works to address the priorities.

Introduction

Separate criteria were developed to prioritise works for vegetation mapping and fauna survey. The criteria integrated the results of the adequacy assessment with any overarching corporate priorities and strategies.

Prioritisation Criteria for Fauna Survey and Reporting

Each of the reserve units was assessed using a priority ranking system based on the following attributes:

1. systematic fauna survey effort
2. the comprehensiveness of fauna data in the Atlas of NSW Wildlife (FAI score)
3. the size of the reserve
4. the region in which the reserve occurs (GBMWHA/Greater Northern Sydney/South Coast)
5. the primary conservation purpose of the reserve and its habitat attributes

Full details are provided in Appendix 4.

Twenty selection categories were generated to reflect different levels of fauna information across the reserves of the region. These twenty categories were then amalgamated into five survey priority classes to describe very high, high, medium, low and no further work required. Each reserve was allocated to a priority class based on its performance against the selection category.

Higher priority was given to those reserve units which:

1. were situated within the GBMWHA or Greater Northern Sydney region
2. were larger in area
3. had low to moderate levels of survey effort

Reserves within a class were prioritised if fauna survey effort was required for a Plan of Management over the next 5 years.

Unlike vegetation mapping there are no explicit regional priorities for fauna survey described by any corporate documents. However, there are recognised demands for information. At the top of these is the need to develop a comprehensive documentation of the fauna values of the Greater Blue Mountains World Heritage Area. There are further internal priorities to work towards the documentation of the fauna values of the Greater Northern Sydney area, a complementary fauna study to that completed for the Greater Southern Sydney Area in 2007. Other regional priorities include those reserves that are new inclusions to the BSP program such as the South Coast region reserves

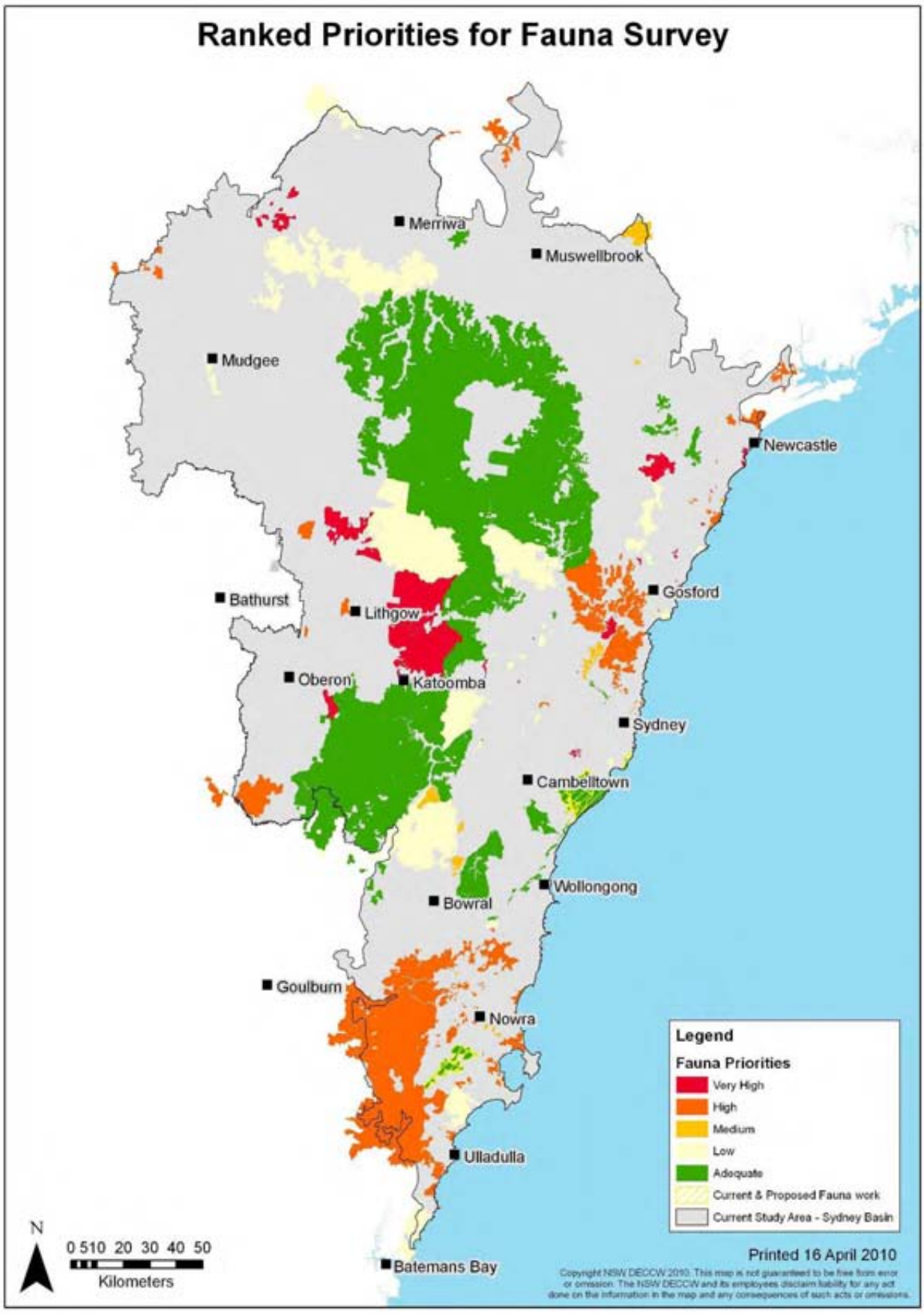
New Fauna Survey Priorities

Appendix 6 lists the reserves that fell within each of the 20 selection categories. These are colour coded into five priority classes.

Map 17 illustrates the priority rank categories allocated to the reserve units. Nineteen reserves are considered a very high survey priority and are listed in Table 7. These are characterised by low systematic survey effort, low levels of observational data and are mostly situated in the GBMWHA or Greater Northern Sydney Region.

The ‘high priority’ category covers 56 reserves. This includes many of the reserves assessed for the first time in the extended Sydney Basin Bioregion, particularly in the South Coast region.

Map 17: Identified Fauna Survey Priorities



There are 13 reserves in the 'medium priority' category. These reserves are typified by low levels of systematic fauna survey effort though generally have some observation data and a descriptive report.

The 'low priority' category includes over 60 reserves. These are either larger reserves that have already had a resourced fauna survey effort but because of access or other constraints fall marginally below the 'adequate', thresholds for survey effort. The category also includes very small reserves that support areas less than 30 hectares in size

Thirty-three reserve units (20%) are considered to have adequate data. These reserves however cover 60% of the total reserve area in the region. The largest of these reserves were targeted in Stage 1 of the BSP program.

A total of 20 reserves were not assessed for fauna as they are not primarily managed for nature conservation or have very restricted terrestrial fauna habitat.

We suggest that reserves falling into the adequate, low priority or 'not assessed' categories are no longer a focus of the BSP program.

Table 7: Reserves with Very High Fauna Survey Priority

Reserve	Area (ha)
Blue Mountains National Park (Upper Mountains North)	45183.24
Jenolan Karst Conservation Reserve	3092.97
Gardens of Stone National Park	15130.25
Georges River National Park & SCA	532.58
Wamberal Lagoon Nature Reserve	142.50
Tuggerah Nature Reserve	133.59
Tuggerah State Conservation Area	126.43
Durridgere CCA Zone 3 State Conservation Area	5615.32
Awabakal Nature Reserve	244.75
Palm Grove Nature Reserve	238.85
Colongra Swamp Nature Reserve	118.91
Glenrock State Conservation Area	536.87
Watagans National Park	7790.57
Dural Nature Reserve	35.56
Muogamarra Nature Reserve	2575.34
Pitt Town Nature Reserve	46.83
Pulbah Island Nature Reserve	66.13
Yellomundee Regional Park	482.84

Prioritisation Criteria for Vegetation Survey and Mapping

Each of the 206 reserve units were assessed using a priority ranking system that is based on the following attributes:

1. The VSMR (Vegetation Survey, Mapping and Report) Score, a metric that accounts for survey, remote sensing and reporting effort
2. Assessment of vegetation survey adequacy
3. The size of the reserve
4. The CMA area in which the reserve is found
5. The primary conservation purpose of the reserve and its vegetation attributes

Full details are provided in Appendix 5. Nine selection categories were generated to reflect the different status of vegetation information present across the region. Each reserve was assessed against the criteria. These nine categories were amalgamated into five survey priority classes of very high, high, medium, low and no further work required. Each reserve was then allocated to a priority class based on its assessment against the selection criteria.

Higher priority was allocated to those reserve units which

1. had a low VSMR score
2. were below adequate levels of survey effort
3. were larger in area
4. occurred within a CMA priority mapping area as identified by the DECCW vegetation mapping strategy (in the following order: Hunter-Central Rivers/Central West/Hawkesbury-Nepean/Southern Rivers)

5 are managed for natural heritage conservation values

Once allocated to a priority class, reserves were then prioritised within each class according to if and when new vegetation mapping was required for a Plan of Management over the next 5 years.

New Vegetation Survey and Mapping Priorities

Appendix 7 lists the reserves that fall within each of the nine selection categories. These are colour coded into the five survey priority classes.

Eleven reserves are considered a very high priority. This is shown in Map 18. This covers a range of works from survey to mapping or both. These high priority reserves fall within the Hunter-Central Rivers and Hawkesbury-Nepean CMAs and include areas within the GBMWHA. Table 8 lists the very high priority reserves requiring new vegetation survey and or mapping.

A further 25 reserves in the region fall into the high priority class. This group is characterised by small reserves that have poor survey effort and larger reserves that have moderate effort and require further survey and mapping to ensure a consistent standard across the region. Extensive areas of the South Coast reserves are included in this priority class.

Over 50% of reserve units (99 units) are considered low priority or adequate and a further 10% (20 units) were not considered as they are either not managed for nature conservation or are managed for a biodiversity value other than vegetation (e.g. Offshore islands).

Map 18: Ranked Vegetation Survey and Mapping Priorities

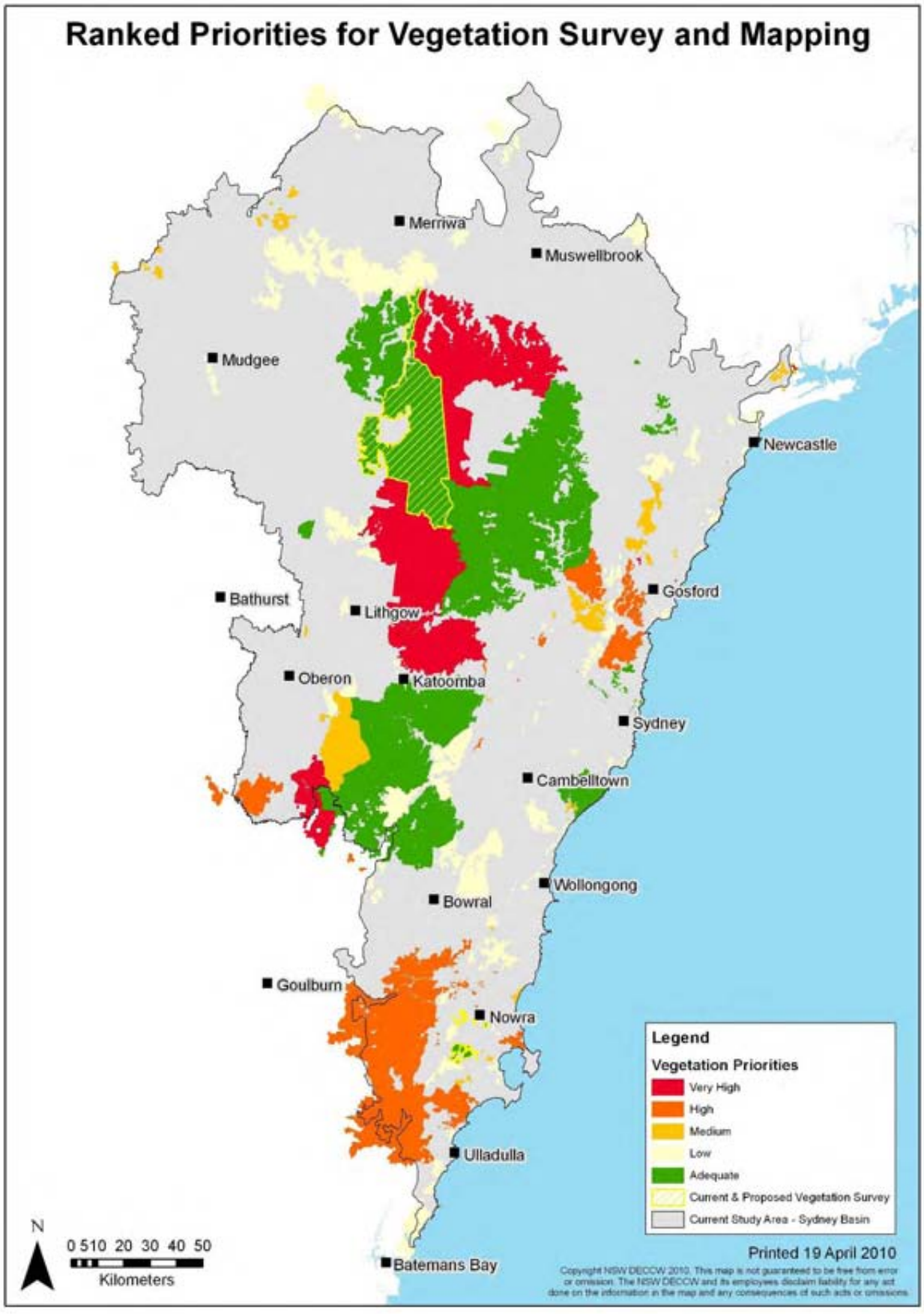


Table 8: Reserves with Very High Vegetation Mapping Priority

Reserve	Area (ha)
Wollemi National Park (Hunter Range)	156386.71
Wambina Nature Reserve	54.43
Palm Grove Nature Reserve	238.85
Tingira Heights Nature Reserve	17.69
Wollemi National Park (Upper Mountains)	75770.92
Blue Mountains National Park (Upper Mountains Nth)	45183.24
Blue Mountains National Park (Hawkesbury Richmond)	19006.89
Blue Mountains National Park (Kanangra West)	34888.37

Annual Program 2009-2014

An annual program has been developed to address the prioritised survey needs on reserves over the next five years. The annual program strives to meet the needs of the reserve survey program as well as timelines of external priorities. Annual allocation of works matches the indicative annual funding arrangements between PWG and Metropolitan EPRG. Table 9 lists the flora and fauna survey projects proposed over the next 4 years. The priorities for vegetation are shown by year in Map 19 and for fauna in Map 20.

Vegetation survey and mapping has been weighted above fauna survey needs in any given year, the aim being to complete vegetation mapping by 2013 for all of the Greater Blue Mountains World Heritage Area. In each year an achievable mapping area has been selected and costed, with the remainder of the annual funding allocation apportioned to fauna survey projects classified as very high priority. The fauna projects were selected sequentially from the priority list, although in some instances a reserve was overlooked if the expected budget was too large to fit within the financial year. In these circumstances, the fauna project was deferred to the next financial year, and a smaller project from the very high priority category was chosen instead.

Detailed project costs have been calculated for flora and fauna survey requirements for each reserve in the region ranked as very high, high and medium priority. These are available from Biodiversity Survey and Assessment Section, Metropolitan Branch.

Table 9: Proposed Annual Program 2009-2014

Financial Year	Survey Area	Work required	Regional Priorities
Current Year 2009-2010	Wollemi NP (Mudgee Area Part 2) (~140 000 ha)	Flora Survey Mapping Report	Hunter Central Rivers CMA 2010-2014 Greater Blue Mountains World Heritage Area
	Royal NP, Heathcote NP & Garawarra SCA (~19 000 ha) Botany Bay NP (~500 ha)	Fauna Survey Report	Parks Plan of Management Revisions
Year 2: **2010-11**	Wollemi NP (Hunter Range Area) (~156 000ha)	Flora Survey Mapping Report	DECCW Vegetation Strategy Priorities Hunter-Central Rivers CMA Greater Blue Mountains World Heritage Area
	Wambina NR (~54 ha) Palm Grove NR (~238 ha) Tingira Heights NR (~18ha)	Flora Survey	DECCW Vegetation Strategy Priorities Hunter-Central Rivers CMA
	Jenolan Karst Conservation Reserve (~3 000 ha) Gardens of Stone National Park (~15 000ha)	Fauna Survey Report	Greater Blue Mountains World Heritage Area

Financial Year	Survey Area	Work required	Regional Priorities
Year 3 **2011-12**	Wollemi NP (Upper Mountains Area ~76 000 ha) Blue Mountains NP (Upper Mountains North ~72 000 ha)	Flora Survey Mapping Report	Greater Blue Mountains World Heritage Area DECCW Vegetation Priorities Hawkesbury-Nepean CMA Includes western and central parts of the Grose Valley
	Blue Mountains NP (Upper Mountains North ~72 000 ha)	Fauna Survey Report	Greater Blue Mountains World Heritage Area Includes western and central parts of the Grose Valley
Year 4 **2012-13**	Blue Mountains NP (Hawkesbury Richmond Area ~19 000 ha) Blue Mountains NP (Kanangra West Area ~35 000 ha) Kanangra Boyd NP (western section ~ 26 700 ha)	Flora Survey Mapping Report	Completes Vegetation Survey and Mapping in the Greater Blue Mountains World Heritage Area
	Georges River NP & SCA (534 ha) Wamberal Lagoon NR (142 ha) Tuggerah NR (134 ha)	Fauna Survey Report	Completes Fauna Survey in the Greater Blue Mountains World Heritage Area
Year 5 **2013-14**	Focus on the following reserves in Greater Northern Sydney Region: Tuggerah SCA (126 ha) Durridgere SCA (~5 600 ha) Awabakal NR (245 ha) Palm Grove NR (239 ha) Colongra Swamp NR (119 ha) Glenrock SCA (537 ha) Watagans NP (~7 800 ha) Dural NR (36 ha) Muogamarra NR (2 575 ha)	Fauna Survey Report	Completes Fauna Survey in the Greater Northern Sydney region

Current Year 2009-2010

Vegetation – Central Western Wollemi NP

The primary aim for 2009-2010 is to continue the vegetation mapping of Wollemi National Park, focussing on the south western portions managed by both Mudgee and Upper Mountains Area Offices. The proposed mapping area covers approximately 100 000 hectares. The completed map will link with mapping undertaken for Hawkesbury–Nepean CMA in the Capertee Valley and Newnes Plateau/Lithgow areas.

Limited floristic survey has previously been undertaken in the area, and though Bell (1998) completed some vegetation survey, he derived map was never designed for use in delineating fauna habitats and Endangered Ecological Communities at a fine scale. The proposed program will make use of sites from previous studies to highlight survey gaps, but will implement Aerial Photograph Interpretation to more accurately delineate vegetation type boundaries. The completion of the new work will provide 1:25 000 scale delineation of vegetation communities, and, importantly, map areas of Grassy Woodlands and Newnes Plateau Upland Swamps which will be an essential input into the assessment of lands for off-setting programs in the region.

Fauna - Royal NP, Garawarra SCA, Heathcote NP, Botany Bay NP

Fauna Survey will be undertaken in the Sydney Metropolitan Area, beginning with four reserves: Botany Bay, Royal, Heathcote and Garrawarra. This project will require a combination of new survey effort and considerable effort to synthesise the large amount of existing information. A single report will be produced on the fauna of Royal, Heathcote and Garrawarra NPs and another for both sections of Botany Bay NP.

Year 2 (2010-2011)

This year will focus on addressing the vegetation survey and mapping needs for the Hunter-Central Rivers CMA area and the GBMWHA. At the completion of this year, data will be available to integrate directly into the region-wide classification and mapping program and will ensure that reserves are adequately covered by the mapping. The largest area targets **Wollemi NP (Hunter Range Area)** which covers over 150 000 ha**.** Additional vegetation survey will improve available information on several small central coast reserves, **Wambina NR, Palm Grove NR** and **Tingira Heights NR** to raise the available data to the 'adequate' category.

Some fauna survey work will continue within the GBMWHA and will cover **Jenolan Karst Conservation Reserve** and **Gardens of Stone National Park.**

Year 3 (2011-2012):

This year focuses on achieving vegetation survey and mapping across large areas of the Upper Blue Mountains sections of Wollemi and Blue Mountains National Parks. This area will cover the western and central parts of the Grose Valley. In addition, new fauna survey effort will also target the Upper Mountains area of Blue Mountains National Park. Works completed during this year will result in baseline fauna surveys being complete for the GBMWHA.

The reserves targeted for Year 3 are **Wollemi NP (Upper Mountains Area ~76 000 ha)** and **Blue Mountains NP (Upper Mountains North ~72 000ha).**

Year 4 (2012-2013):

This year will focus on vegetation survey and mapping for large sections of Blue Mountains NP, which, on completion will mean that all areas of the GBMWHA have been surveyed and mapped. This includes the Hawkesbury Area of **Blue Mountains National Park** and portions of south-western Blue Mountains NP and **Kanangra NP** not covered by detailed mapping in the Warragamba Special Area.

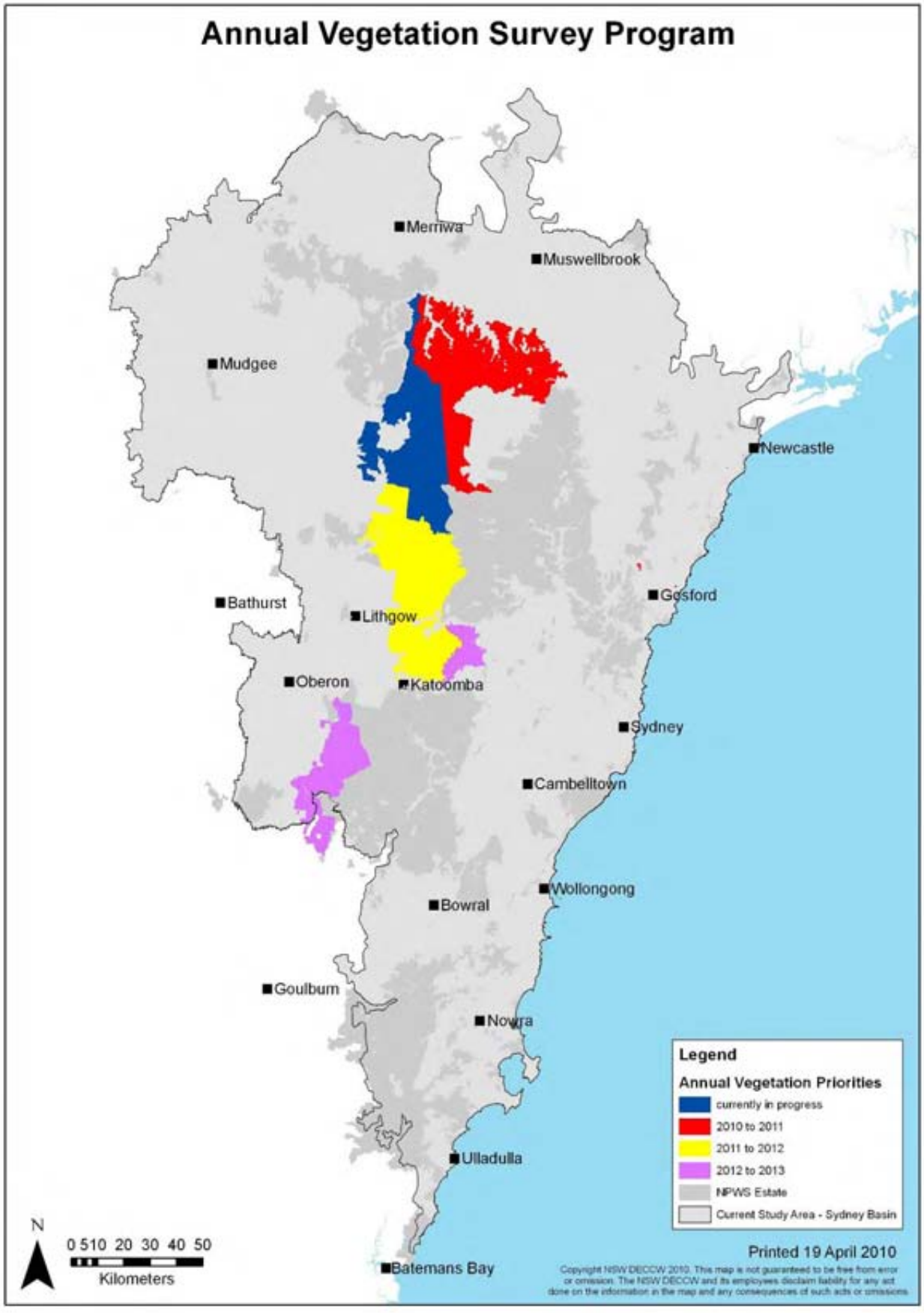
Fauna survey will target **Georges River NP, Wamberal Lagoon NR** and **Tuggerah NR**.

Year 5 (2013-2014):

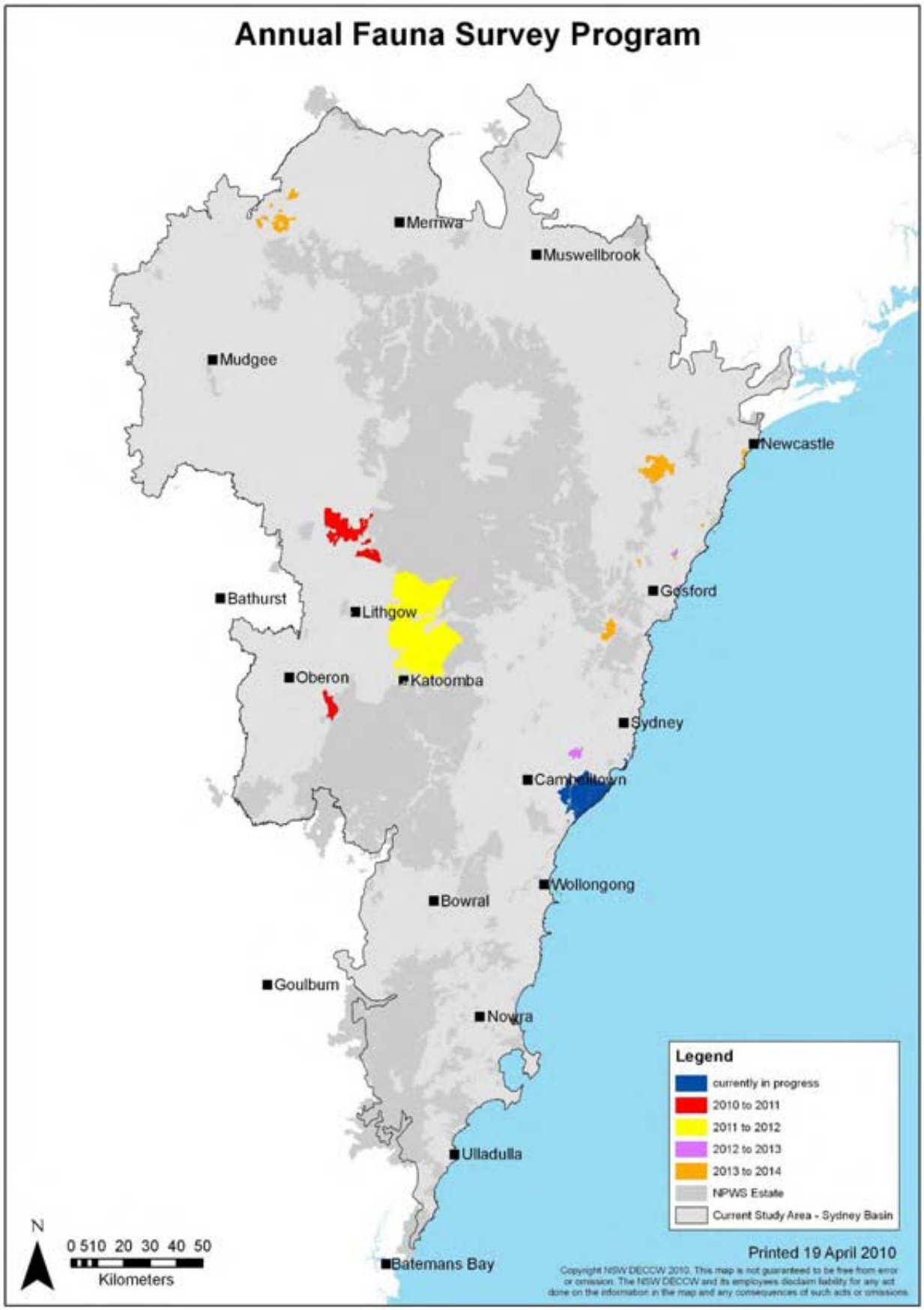
Year five focuses on fauna sampling priorities within the Greater Northern Sydney Region. It includes a large number of small reserves situated across the Central Coast and northern Sydney area.

1. Tuggerah SCA
2. Durridgere SCA
3. Awabakal NR
4. Palm Grove NR
5. Colongra Swamp NR
6. Glenrock SCA
7. Watagans NP
8. Dural NR
9. Muogamarra NR

Map 19: Identified Annual Vegetation Mapping Projects



Map 20: Identified Annual Fauna Survey Projects



8. Stage 3: Regional Biodiversity Information Resources

This section describes a series of region-wide biodiversity data products that will utilise data collected from Stage 1 and Stage 2 of the BSP Program. The development of these products is dependent on external funds though will also require in-kind support. These products are aimed at making single, stand alone reports and mapping resources such as cross tenure vegetation community and fauna habitat maps.

Introduction

The collection of biodiversity data on individual reserves meets multiple objectives. The immediate demand is for information concerning park management (plans of management, fire, pests and weed management) and threatened species. However the information contributes to the sequential development of biodiversity information data layers that span all land tenures and provide biodiversity data resources for multiple users over much larger areas. These regional products are built up over time using consistency in method and assessment processes. There are a number of regional priorities that the BSP data will contribute to in the short to near term. These reflect DECCW-wide data priorities.

The Native Vegetation of the Hunter-Central Rivers CMA

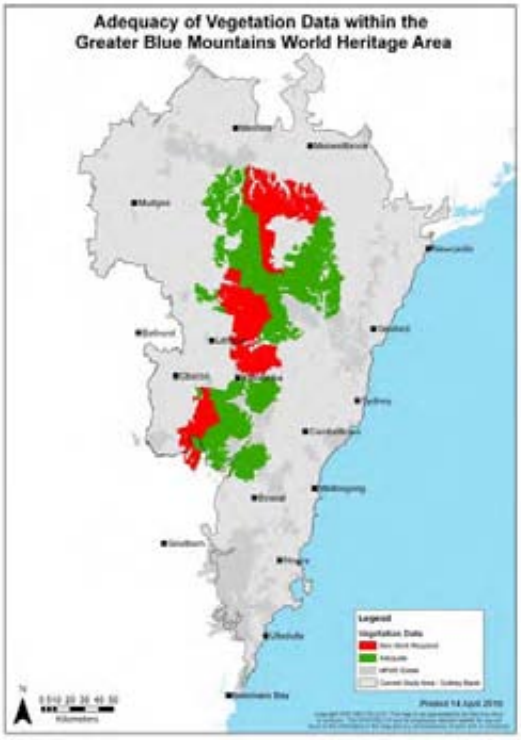
Map 21: Status of Vegetation mapping on reserves in HCRCMA

The Hunter-Central Rivers CMA is the highest priority area in NSW for new vegetation mapping products. Considerable efforts have already been made by the CMA, Hunter Councils and DECCW to develop a uniform classification system. Efforts are now underway to seek funds to develop a catchment wide vegetation map. As part of this objective, the BSP program will provide baseline data and mapping for all reserves in the CMA area that fall within the Sydney Basin region. This will ensure that reserves meet the 'adequate' criteria as defined in this report. Map 21 shows that most reserves are already covered by an adequate level of data, although large gaps remain in Wollemi NP and some smaller reserves on the central coast. These gaps will be addressed in the 2010/11 financial year. At the completion of this work 413 439 hectares of reserve will be covered by vegetation mapping in the CMA. This meets part of the PWG requirements under Action 7 of the DECCW Vegetation Mapping Strategy.

The Native Vegetation of the GBMWHA

One of the pressing needs is to provide a consistent vegetation classification and mapping system across the Greater Blue Mountains World Heritage Area. Significant advances have been made toward the completion of this task since 2003. In order to expedite this process our proposal recommends greater investment of resources into vegetation mapping in this area, over the next 2-3 years to complete the task. At that stage all necessary data will have been collected and the opportunity will be available to present a stand alone, seamless vegetation map and report. This report will provide a primary document that will identify vegetation values that will in turn help to manage and monitor the world heritage values that define the inscription.

Map 22 shows progress toward a standard fine scale vegetation map across the GBMWHA. Almost 60% of the area will be mapped by the end of the 2009/10 financial year and a completion date of 2013 for the whole area is anticipated.



Map 22: Status of Vegetation Mapping in the GBMWHA

Map 23: Status of Fauna Survey Adequacy in the GBMWHA

The Vertebrate Fauna of the GBMWHA

Significant investment in fauna data has already been made by the BSP program (Stage 1) across the GBMWHA, and as a result there are only small areas in the Upper Blue Mountains that require additional systematic fauna effort. The southern Blue Mountains area and Kanangra Boyd NP have been included in a comprehensive review of priority fauna species and their conservation status as part of a synthesis of data collected across the greater southern Sydney region. It is recommended that an assessment of fauna values and their habitats across the entire GBMWHA be conducted when a comprehensive vegetation classification and mapping resource becomes available in 2013.

Map 23 shows the progress toward the assessment of vertebrate fauna of the GBMWHA. Over 80% of the area has been surveyed using stratified systematic survey methods. As a result of the Greater Southern Sydney Fauna assessment in 2007, detailed fauna habitat mapping and assessment is complete across 23% of the GBMWHA. Under the current order of works fauna assessment in the GBMWHA will be complete in 2013.

Vegetation Classification and Mapping of the Sydney Basin Bioregion

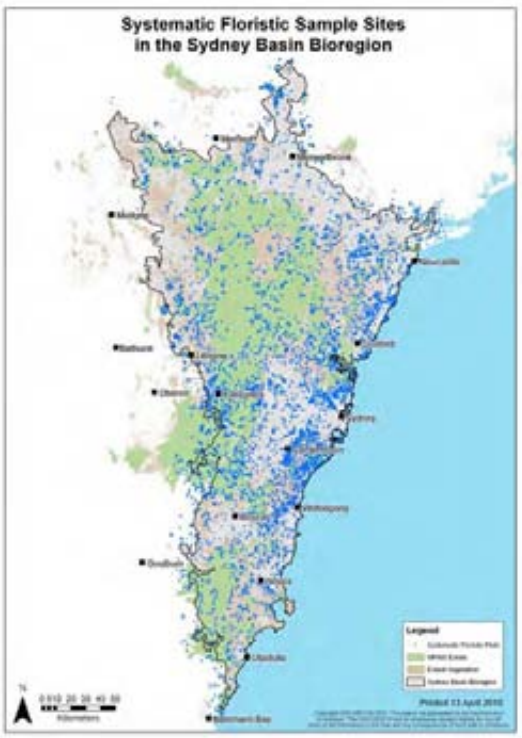
The development of a unified vegetation classification and mapping system for NSW underpins the DECCW vegetation mapping strategy. Metropolitan EPRG has been collecting systematic field data in the Sydney Basin region for over 12 years, with an aim to deliver robust information for local studies while sequentially working towards a uniform vegetation classification and mapping system for the region. Considerable progress has been made toward this goal with the integration of methods for work carried out on reserves and on private land. The classification of native vegetation across large regions is required to develop a uniform state-wide classification system. Such a system touches just about every aspect of the organisations regulatory, assessment, management and educational objectives. When supported by a mapped product these two information resources become a very powerful and useable information layer for natural resource management.

The result of this effort means that the classification of vegetation no longer is restricted to local areas and the distribution of vegetation communities can be understood in terms of their local, regional and state-wide patterns. With so much native vegetation found on reserves in the Sydney Basin region, on park vegetation survey is critical to the classification and mapping of the region.

Map 24 illustrates the extent of externally funded detailed mapping projects in the region. These funding sources include local government, CMAs, Sydney Catchments Authority and the Department of Planning. Larger local studies have included Western Sydney mapping for the Cumberland Plan Woodlands recovery plan, the Illawarra Escarpment and Coastal Plain Biodiversity Study, Vegetation classification and mapping for the Lower Hunter and Central Coast, Vegetation mapping of the Warragamba, Woronora and Metropolitan Special Areas, Sydney Metropolitan Catchment Management Authority and a number of study areas for the Hawkesbury Nepean Catchment Management Area (including Capertee Valley, Lithgow and Oberon, Putty Valley and Northern Hawkesbury LGA). Combined with the BSP program, there is detailed mapping and classification across extensive areas of the region. At present these are supplemented by broader regional classification efforts that have been completed for the South Coast areas for the CRA and more recently as part of the ex DNR state-wide mapping priorities.

Map 25 illustrates the distribution of systematic survey effort across the region. These sites are classified as part of a region wide approach to vegetation classification. The purpose of this study is to produce robust and uniform classification and nomenclature to the region. It also is building toward a better understanding of vegetation patterns between regions and assists with the development of a state-wide vegetation classification system.

Map 24: Extent of Externally Funded Detailed Mapping undertaken by Metro EPRG



Map 25: Distribution of Systematic Floristic Survey Effort

Our goal is to ensure that by 2015 there is a seamless classification and detailed vegetation map and single report available for all stakeholders across all land tenures of the Sydney Basin. The production of this map will arise from the completion of the BSP program priorities and the integration of CMA and Scientific Services Division and EPRG priorities.

The Fauna of Greater Northern Sydney Region

The success of the complementary study on the fauna of Greater Southern Sydney demonstrated the utility of synthesising the numerous reserve and off park studies into a single reference. Map 26 shows the extent of the proposed new study area to provide information for the reserves of the northern Blue Mountains, Hunter Range, Northern Sydney LGAs and the Central Coast. The purpose of this study area is to extend the mapping of habitats for threatened native species and pest species across all land tenures of the region. The study will complete the first comprehensive conservation status assessment across the region, identify priority fauna habitats and map them, and document the distribution of priority fauna species.

The study will span the Hawkesbury-Nepean, Sydney Metropolitan, Hunter-Central Rivers CMAs and the GBMWHA.

Map 26: Fauna of Greater Northern Sydney – Study Area

Appendix 1: List of Reports Completed Under the Biodiversity Survey Priorities Program

Vegetation Mapping

Blue Mountains National Park (Erskine Ranges), Munghorn Gap Nature Reserve, Nattai National Park and State Conservation Area & Bargo State Conservation Area, Wollemi National Park (North-west and South-east sections), Yengo National Park and Parr State Conservation Area.

Fauna Survey

Avisford Nature Reserve, Blue Mountains National Park (North-east and South-west sections), Dharawal Nature Reserve and Dharawal State Conservation Area, Kanangra Boyd National Park, Lane Cove National Park, Manobalai Nature Reserve and adjacent crown lands, Munghorn Gap Nature Reserve, Nattai National Park & State Conservation Area, Bargo State Conservation Area, Sugarloaf State Conservation Area, Werakata National Park & State Conservation Area, Wollemi National Park (NW, NE, SE & SW sections), Wollondilly River Nature Reserve, Yengo National Park and Parr State Conservation Area

Appendix 2: 2010 Fauna Assessment Results for Each Reserve Unit in the Sydney Basin Bioregion

Reserve Name	Total area (Ha)	Reserve Size Class	Avg. no. systematic sites [1]	Avg no. systematic sites needed for adequacy	Current Fauna Systematic Survey Effort	FAI Score [2]	FAI (category)	Existing Report? [3]
Abercrombie River National Park	18918.81	4	8	13	poor	6.67	Medium	No
Agnes Banks Nature Reserve	123.47	2	16	0	adequate	5.93	Medium	No
Appletree Aboriginal Area	3.58	1	0	2	poor	1.52	Low	Yes (DP)
Avisford Nature Reserve	2598.32	3	8	1	moderate	4.97	Medium	Yes (DP)
Awabakal Nature Reserve	244.75	2	0	4	poor	1.57	Low	No
Bamarang Nature Reserve	373.18	2	0	4	poor	5.45	Medium	No
Bangadilly National Park	2136.93	3	13	0	adequate	1.39	Low	Yes (Other)
Bargo River State Conservation Area	1953.18	3	3	4	poor	4.57	Medium	Yes (SA)
Bargo State Conservation Area	4238.76	3	6	8	moderate	4.42	Low	Yes (DP)
Barnunj State Conservation Area	160.74	2	0	4	poor	3.23	Low	No
Barren Grounds Nature Reserve	2089.67	3	0	7	moderate	10.07	High	No
Barrengarry Nature Reserve	20.63	1	1	2	moderate	1.50	Low	Yes (Other)
Belford National Park	288.42	2	0	4	poor	2.75	Low	Yes (Other)
Belowla Island Nature Reserve	3.09	1	0	2	poor	4.16	Low	No
Bents Basin State Conservation Area	43.98	1	3	0	adequate	2.60	Low	Yes (Other)
Berkeley Nature Reserve	8.59	1	1	1	moderate	4.30	Low	No
Berowra Valley Regional Park	3602.54	3	0	12	poor	6.17	Medium	Yes (Other)
Bird Island Nature Reserve	5.14	1	0	2	poor	1.68	Low	No
Blue Gum Hills Regional Park	128.03	2	0	4	poor	1.99	Low	No
Blue Mountains National Park (Hawkesbury - Glenbrook area)	24548.49	4	17	10	moderate	8.25	High	Yes (DP)
Blue Mountains National Park (Hawkesbury - Richmond area)	19132.00	4	42	0	adequate	19.36	High	Yes (DP)
Blue Mountains National Park (Kanangra area)	107302.56	5	108	0	adequate	27.50	High	Yes (DP)
Blue Mountains National Park (Upper Mountains North)	71951.17	5	17	20	poor	21.18	High	No
Blue Mountains National Park (Upper Mountains Sth)	45183.24	4	62	0	adequate	11.87	High	Yes (SA)
Bomaderry Creek Regional Park	84.60	1	0	2	poor	3.21	Low	No
Botany Bay National Park [4]	499.79	2	10	0	adequate	6.37	Medium	Yes (DP)
Bouddi National Park	1617.02	3	8	0	adequate	7.98	High	No

Reserve Name	Total area (Ha)	Reserve Size Class	Avg. no. systematic sites [1]	Avg no. systematic sites needed for adequacy	Current Fauna Systematic Survey Effort	FAI Score[2]	FAI (category)	Existing Report? [3]
Brisbane Water National Park	12027.24	4	6	7	moderate	21.67	High	No
Brundee Swamp Nature Reserve	227.33	2	1	4	poor	2.91	Low	Yes (Other)
Brush Island Nature Reserve	36.93	1	0	2	poor	4.62	Medium	No
Budderoo National Park	7216.56	3	0	24	poor	13.56	High	No
Bugong National Park	1007.34	3	0	3	poor	3.41	Low	No
Burning Mountain Nature Reserve	14.57	1	0	2	poor	1.55	Low	No
Burragorang State Conservation Area	17722.76	4	24	0	adequate	9.19	High	Yes (SA)
Cadmans Cottage Historic Site	0.10	1	0	2	poor	2.81	Low	No
Cambewarra Range Nature Reserve	1679.66	3	2	4	poor	4.49	Low	No
Camerons Gorge Nature Reserve	1330.11	3	0	6	poor	1.33	Low	No
Camerons Gorge State Conservation Area	430.91	2	0	4	poor	1.06	Low	No
Castlereagh Nature Reserve	497.91	2	11	0	adequate	5.27	Medium	No
Cattai National Park	429.52	2	11	0	adequate	6.19	Medium	No
Cecil Hoskins Nature Reserve	47.09	1	0	2	poor	2.69	Low	No
Cockle Bay Nature Reserve	45.45	1	0	2	poor	5.10	Medium	No
Colongra Swamp Nature Reserve	118.91	2	0	4	poor	2.20	Low	No
Colymea State Conservation Area	1671.93	3	0	6	poor	1.55	Low	No
Comerong Island Nature Reserve	713.76	2	0	4	poor	11.72	High	No
Conjola National Park	11028.41	4	14	0	adequate	12.33	High	No
Coolah Tops National Park	15108.48	4	13	4	moderate	13.35	High	Yes (DP)
Corramy State Conservation Area	855.99	2	0	4	poor	1.70	Low	No
Dalrymple-Hay Nature Reserve	11.15	1	0	2	poor	3.22	Low	No
Dapper Nature Reserve	1105.49	3	0	4	poor	1.41	Low	No
Dharawal Nature Reserve	376.10	2	4	0	adequate	5.38	Medium	Yes (DP)
Dharawal State Conservation Area	6372.84	3	27	0	adequate	12.02	High	Yes (DP)
Dharug National Park	15324.70	4	5	12	poor	6.89	Medium	No
Dural Nature Reserve	35.56	1	0	2	poor	2.46	Low	No
Durridgere CCA Zone 3 State Conservation Area	5615.32	3	0	19	poor	3.43	Low	No
Evans Crown Nature Reserve	433.88	2	0	4	poor	3.07	Low	No
Finchley Aboriginal Area	5.43	1	0	2	poor	1.15	Low	Yes (DP)
Five Islands Nature Reserve	27.60	1	0	2	poor	3.29	Low	No
Garawarra State Conservation Area[4]	925.53	2	4	1	moderate	5.46	Medium	Yes (DP)

Reserve Name	Total area (Ha)	Reserve Size Class	Avg. no. systematic sites [1]	Avg no. systematic sites needed for adequacy	Current Fauna Systematic Survey Effort	FAI Score [2]	FAI (category)	Existing Report? [3]
Gardens of Stone National Park	15130.25	4	9	8	moderate	5.88	Medium	No
Garigal National Park	2256.94	3	1	7	poor	18.25	High	No
Georges River National Park	532.58	2	1	3	poor	4.41	Low	No
Georges River State Conservation Area	1.86	1	0	2	poor	2.89	Low	No
Glenrock State Conservation Area	536.87	2	0	4	poor	1.82	Low	No
Goodiman CCA Zone 3 State Conservation Area	570.02	2	0	4	poor	1.89	Low	No
Goulburn River National Park	73636.95	5	30	7	moderate	13.89	High	Yes (DP)
Gulguer Nature Reserve	365.52	2	12	0	adequate	5.57	Medium	No
Hartley Historic Site	12.61	1	0	2	poor	4.98	Medium	No
Heathcote National Park[4]	2731.88	3	17	0	adequate	8.08	High	Yes (DP)
Hill End Historic Site	135.90	2	0	4	poor	1.69	Low	No
Howe Aboriginal Area	6.66	1	0	2	poor	2.86	Low	No
Hunter Wetlands National Park	4316.44	3	0	14	poor	18.51	High	No
Illawarra Escarpment State Conservation Area	2511.32	3	13	0	adequate	14.31	High	Yes (DP)
Jenolan Karst Conservation Reserve	3092.97	3	2	9	poor	4.04	Low	No
Jerrawangala National Park	4019.50	3	0	13	poor	4.26	Low	No
Jervis Bay National Park (North)	3189.30	3	8	3	moderate	7.54	High	No
Jervis Bay National Park (South)	1693.01	3	8	0	adequate	6.19	Medium	No
Jilliby State Conservation Area	12062.86	4	13	0	adequate	18.60	High	No
Joadja Nature Reserve	853.46	2	8	0	adequate	3.19	Low	Yes (SA)
Kanangra-Boyd National Park	69438.67	5	56	4	adequate	19.66	High	Yes (DP)
Kangaroo River Nature Reserve	117.80	2	1	3	poor	2.13	Low	Yes (Other)
Kemps Creek Nature Reserve	129.18	2	5	0	adequate	3.51	Low	No
Ku-ring-gai Chase National Park	15544.69	4	2	15	poor	14.33	High	No
Lake Macquarie State Conservation Area	768.23	2	4	0	moderate	6.83	Medium	No
Lane Cove National Park	630.04	2	8	0	adequate	9.77	High	Yes (DP)
Leacock Regional Park	34.12	1	3	0	adequate	3.44	Low	No
Lion Island Nature Reserve	11.77	1	0	2	poor	38.39	High	No
Long Island Nature Reserve	67.91	1	0	2	poor	2.31	Low	No
Macquarie Pass National Park	1062.10	3	2	2	moderate	4.19	Low	Yes (SA)
Macquarie Pass State Conservation Area	166.22	2	0	4	poor	6.84	Medium	No
Manobalai Nature Reserve	3806.80	3	16	0	adequate	6.78	Medium	Yes (DP)
Maroota Historic Site	32.91	1	0	2	poor	1.37	Low	No

Reserve Name	Total area (Ha)	Reserve Size Class	Avg. no. systematic sites [1]	Avg no. systematic sites needed for adequacy	Current Fauna Systematic Survey Effort	FAI Score[2]	FAI (category)	Existing Report? [3]
Maroota Ridge State Conservation Area	259.61	2	6	0	adequate	4.14	Low	Yes (DP)
Marramarra National Park	11640.25	4	8	5	moderate	4.21	Low	No
Marrangaroo National Park	1670.77	3	0	6	poor	3.15	Low	No
Medowie Nature Reserve	223.32	2	0	3	poor	4.75	Medium	No
Medowie State Conservation Area	2834.08	3	2	8	poor	4.52	Medium	No
Meroo National Park	3591.67	3	2	10	poor	7.45	Medium	No
Moffats Swamp Nature Reserve	143.09	2	0	4	poor	2.59	Low	No
Moon Island Nature Reserve	3.62	1	0	2	poor	2.91	Low	No
Mooney Mooney Aboriginal Area	9.07	1	0	2	poor	2.54	Low	No
Morton National Park (Highlands area)	40810.80	4	16	29	poor	5.70	Medium	No
Morton National Park (Nowra Area)	83294.24	5	14	29	poor	4.21	Low	No
Morton National Park (Ulladulla area)	75563.88	5	4	35	poor	6.00	Medium	No
Morton State Conservation Area	1028.22	3	0	3	poor	2.82	Low	No
Mount Ku-ring-gai Aboriginal Area	0.56	1	0	2	poor	2.20	Low	No
Mount Royal National Park	6973.74	3	4	16	poor	7.56	High	Yes (Other)
Mulgoa Nature Reserve	213.39	2	23	0	adequate	8.94	High	No
Munghorn Gap Nature Reserve	6158.52	3	13	8	moderate	11.37	High	Yes (DP)
Munmorah State Conservation Area	1529.84	3	5	0	moderate	11.50	High	No
Muogamarra Nature Reserve	2575.34	3	2	7	poor	3.09	Low	No
Murramarang Aboriginal Area	60.40	1	0	2	poor	5.35	Medium	No
Murramarang National Park	12416.22	4	29	0	adequate	16.08	High	No
Murrurundi Pass CCA Zone 1 National Park	214.90	2	0	4	poor	4.69	Medium	No
Narrawallee Creek Nature Reserve	872.47	2	0	4	poor	4.44	Low	No
Nattai National Park	49455.10	4	47	7	moderate	14.95	High	Yes (DP)
Nattai State Conservation Area	3266.09	3	0	11	poor	2.28	Low	Yes (DP)
Newington Nature Reserve	47.77	1	0	2	poor	1.96	Low	Yes (Other)
Palm Grove Nature Reserve	238.85	2	0	4	poor	3.99	Low	No
Pambalong Nature Reserve	34.69	1	0	2	poor	2.62	Low	Yes (Other)
Parma Creek Nature Reserve	3618.03	3	2	10	poor	3.51	Low	No
Parr State Conservation Area	35734.56	4	25	14	moderate	7.94	High	Yes (DP)
Parramatta River Regional Park	4.60	1	0	2	poor	1.97	Low	No

Reserve Name	Total area (Ha)	Reserve Size Class	Avg. no. systematic sites [1]	Avg no. systematic sites needed for adequacy	Current Fauna Systematic Survey Effort	FAI Score [2]	FAI (category)	Existing Report? [3]
Pelican Island Nature Reserve	50.97	1	0	2	poor	3.16	Low	No
Penrith Lakes Regional Park	0.69	1	0	2	poor	2.42	Low	No
Pitt Town Nature Reserve	46.83	1	0	2	poor	2.76	Low	No
Popran National Park	4019.22	3	7	7	moderate	4.87	Medium	No
Prospect Nature Reserve	364.16	2	3	1	moderate	3.08	Low	No
Pulbah Island Nature Reserve	66.13	1	0	2	poor	2.21	Low	No
Rileys Island Nature Reserve	41.56	1	0	2	poor	3.58	Low	No
Robertson Nature Reserve	5.35	1	0	2	poor	3.36	Low	No
Rodway Nature Reserve	85.43	1	0	2	poor	3.28	Low	No
Rouse Hill Regional Park	43.14	1	3	0	adequate	2.86	Low	No
Royal National Park	15342.47	4	55	0	adequate	19.66	High	Yes (DP)
Saltwater Swamp Nature Reserve	213.77	2	1	4	poor	2.37	Low	Yes (Other)
Saratoga Island Nature Reserve	1.01	1	0	2	poor	2.90	Low	No
Scheyville National Park	933.18	2	17	0	adequate	40.72	High	No
Seven Mile Beach National Park	953.81	2	0	4	poor	9.48	High	No
Spectacle Island Nature Reserve	46.89	1	0	2	poor	2.54	Low	No
Sugarloaf State Conservation Area	3902.91	3	25	0	adequate	8.01	High	Yes (DP)
Sydney Harbour National Park	389.38	2	0	4	poor	7.78	High	No
Tapitallee Nature Reserve	94.44	1	0	2	poor	2.28	Low	No
Thirlmere Lakes National Park	662.00	2	1	3	poor	4.00	Low	Yes (SA)
Throsby Park Historic Site	74.42	1	0	2	poor	1.48	Low	No
Tingira Heights Nature Reserve	17.69	1	0	2	poor	1.99	Low	No
Towarri National Park	6086.33	3	0	20	poor	1.84	Low	No
Towra Point Nature Reserve	633.19	2	6	0	adequate	7.58	High	No
Triplarina Nature Reserve	138.41	2	0	4	poor	4.79	Medium	No
Tuggerah Nature Reserve	133.59	2	0	4	poor	3.90	Low	No
Tuggerah State Conservation Area	126.43	2	0	4	poor	3.81	Low	No
Turon National Park	3103.02	3	4	6	poor	7.33	Medium	No
Upper Nepean State Conservation Area	25133.53	4	35	0	adequate	26.41	High	Yes (SA)
Wallarah National Park	174.43	2	0	4	poor	2.06	Low	Yes (Other)
Wallumatta Nature Reserve	6.15	1	0	2	poor	2.60	Low	No
Wamberal Lagoon Nature Reserve	142.50	2	1	3	poor	3.30	Low	No
Wambina Nature Reserve	54.43	1	1	1	moderate	13.19	High	No
Watagans National Park	7790.57	3	1	25	poor	4.23	Low	Yes (Other)
Werakata National Park	3336.14	3	14	0	adequate	9.11	High	Yes (DP)

Reserve Name	Total area (Ha)	Reserve Size Class	Avg. no. systematic sites [1]	Avg no. systematic sites needed for adequacy	Current Fauna Systematic Survey Effort	FAI Score[2]	FAI (category)	Existing Report? [3]
Werakata State Conservation Area	2261.20	3	14	0	adequate	7.28	Medium	Yes (DP)
Western Sydney Regional Park	562.16	2	10	0	adequate	4.90	Medium	No
Wianamatta Regional Park[5]	63.66	1	0	2	poor	1.00	Low	No
William Howe Regional Park	43.06	1	0	2	poor	2.92	Low	No
Windsor Downs Nature Reserve	364.28	2	7	0	adequate	4.66	Medium	No
Wingen Maid Nature Reserve	1095.09	3	0	4	poor	2.27	Low	No
Wisemans Ferry Historic Site	21.50	1	0	2	poor	1.41	Low	No
Wogamia Nature Reserve	276.67	2	0	4	poor	2.18	Low	No
Wollemi National Park (Hawkesbury area)	79728.34	5	60	0	adequate	17.45	High	Yes (DP)
Wollemi National Park (Hunter Range area)	156386.71	5	92	0	adequate	28.12	High	Yes (DP)
Wollemi National Park (Mudgee area)	184864.98	5	144	0	adequate	45.49	High	Yes (DP)
Wollemi National Park (Upper Mountains)	80990.55	5	34	7	moderate	12.47	High	Yes (DP)
Wolli Creek Regional Park	14.19	1	1	1	moderate	2.12	Low	No
Wollondilly River Nature Reserve	912.11	2	6	0	adequate	3.96	Low	Yes (DP)
Wombeyan Karst Conservation Reserve	564.31	2	2	2	moderate	1.77	Low	Yes (SA)
Woollamia Nature Reserve	452.62	2	3	1	moderate	3.12	Low	No
Worrigee Nature Reserve	230.84	2	1	3	poor	2.68	Low	Yes (Other)
Wyrrabalong National Park	580.92	2	6	0	adequate	6.95	Medium	No
Yarrobil CCA Zone 1 National Park	1831.22	3	0	6	poor	2.17	Low	No
Yatteyattah Nature Reserve	35.10	1	0	2	poor	3.44	Low	No
Yellomundee Regional Park	482.84	2	0	4	poor	4.48	Low	No
Yengo National Park (Hunter Range area)	46786.55	4	52	0	adequate	16.59	High	Yes (DP)
Yengo National Park (Yango area)	120786.60	5	52	0	adequate	22.40	High	Yes (DP)
Yerranderie State Conservation Area	12422.92	4	13	0	adequate	9.25	High	Yes (SA)

[1] Average number of sites from the following standard systematic techniques: Diurnal bird census, diurnal herpetofauna survey, site spotlight, bat ultrasonic survey (Anabat).

[2] FAI score is the Fauna Atlas Index calculated by dividing the total number of observation/total number of species

[3] Descriptive report of fauna values where DP= BSP Program; SA= SCA Special Areas; Other

[4] Based on anticipated work currently in progress this financial year

[5] Other survey effort likely to have been completed though is not recorded in corporate databases or library systems

Appendix 3: 2010 Vegetation Survey and Mapping Assessment Results for each Reserve Unit in the Sydney Basin Bioregion

Reserve	Area (ha)	Reserve Size[1]	No. of systematic sites	No. of new sites needed for adequacy	Current Vegetation Systematic Survey Effort	Remote Sensing Score[2]	Report[3]
Abercrombie River National Park	18918.81	4	45	18	Moderate	3	No
Agnes Banks Nature Reserve	123.47	2	2	0	Adequate	5	No
Appletree Aboriginal Area	3.58	1	0	5	Poor	1	No
Avisford Nature Reserve	2598.32	3	35	0	Adequate	4	Yes (Other)
Awabakal Nature Reserve	244.75	2	21	0	Adequate	4	Yes (Other)
Bamarang Nature Reserve	373.18	2	3	1	Moderate	3	No
Bangadilly National Park	2136.93	3	36	0	Adequate	4	Yes (Other)
Bargo River State Conservation Area	1953.18	3	5	5	Moderate	5	Yes (DP)
Bargo State Conservation Area	4238.76	3	16	6	Moderate	5	Yes (DP)
Barnunj State Conservation Area	160.74	2	7	0	Adequate	4	Yes (Other)
Barren Grounds Nature Reserve	2089.67	3	15	0	Adequate	3	Yes (Other)
Barrengarry Nature Reserve	20.63	1	0	5	Poor	3	No
Belford National Park	288.42	2	16	0	Adequate	5	Yes (Other)
Belowla Island Nature Reserve	3.09	1	0	5	Poor	3	Yes (Other)
Bents Basin State Conservation Area	43.98	1	1	4	Poor	1	No
Berkeley Nature Reserve	8.59	1	6	0	Adequate	5	No
Berowra Valley Regional Park	3602.54	3	6	13	Adequate	4	Yes (Other)
Bird Island Nature Reserve	5.14	1	0	5	Poor	4	No
Blue Gum Hills Regional Park	128.03	2	0	2	Poor	4	No
Blue Mountains National Park (Hawkesbury Glenbrook)	24548.49	4	71	0	Adequate	5	Yes (SA)
Blue Mountains National Park (Hawkesbury Richmond)	19006.89	4	34	30	Moderate	1	No
Blue Mountains National Park (Hawkesbury Richmond - Special area)	125.10	4				5	Yes (SA)
Blue Mountains National Park (Kanangra East)	88947.28	5	239	0	Adequate	5	Yes (SA)
Blue Mountains National Park (Kanangra West)	34888.37	4	56	61	Moderate	3	No
Blue Mountains National Park (Upper Mountains Nth)	71945.08	4	112	32	Moderate	1	No
Blue Mountains National Park (Upper Mountains Nth - Special Area)	6.09	4				5	Yes (SA)
Blue Mountains National Park (Upper Mountains Sth)	45183.24	5	234	0	Adequate	5	Yes (SA)
Bomaderry Creek Regional Park	84.60	1	4	1	Moderate	3	No
Botany Bay National Park	499.79	2	19	0	Adequate	5	No
Bouddi National Park	1617.02	3	34	0	Adequate	4	Yes (Other)
Brisbane Water National Park	12027.24	4	27	14	Moderate	4	Yes (Other)

Reserve	Area (ha)	Reserve Size[1]	No. of systematic sites	No. of new sites needed for adequacy	Current Vegetation Systematic Survey Effort	Remote Sensing Score[2]	Report[3]
Brundee Swamp Nature Reserve	227.33	2	14	0	Adequate	4	Yes (Other)
Brush Island Nature Reserve	36.93	1	4	1	Moderate	3	Yes (Other)
Budderoo National Park	7216.56	3	38	0	Adequate	3	Yes (Other)
Bugong National Park	1007.34	3	20	0	Adequate	3	Yes (Other)
Burning Mountain Nature Reserve	14.57	1	0	5	Poor	3	No
Burragorang State Conservation Area	17722.76	4	37	23	Moderate	5	Yes (SA)
Cadmans Cottage Historic Site	0.10	1	0	5	Poor	0	No
Cambewarra Range Nature Reserve	1679.66	3	6	3	Moderate	3	Yes (Other)
Castlereagh Nature Reserve	497.91	2	8	0	Adequate	5	No
Cattai National Park	429.52	2	5	0	Adequate	5	No
Cecil Hoskins Nature Reserve	47.09	1	1	4	Poor	3	No
Cockle Bay Nature Reserve	45.45	1	4	1	Moderate	4	No
Colongra Swamp Nature Reserve	118.91	2	0	2	Poor	4	No
Colymea State Conservation Area	1671.93	3	15	0	Adequate	3	Yes (Other)
Comerong Island Nature Reserve	713.76	2	9	0	Adequate	3	No
Conjola National Park	11028.41	4	22	15	Moderate	4	Yes (Other)
Coolah Tops National Park	15108.48	4	71	0	Adequate	3	Yes (Other)
Corramy State Conservation Area	855.99	2	10	0	Adequate	3	No
Dalrymple-Hay Nature Reserve	11.15	1	2	3	Moderate	5	No
Dapper Nature Reserve	1105.49	3	16	0	Adequate	1	Yes (Other)
Dharawal Nature Reserve	376.10	2	2	0	Adequate	4	Yes (Other)
Dharawal State Conservation Area	6372.84	3	46	0	Adequate	4	Yes (Other)
Dharug National Park	15324.70	4	44	8	Moderate	3	Yes (Other)
Dural Nature Reserve	35.56	1	1	4	Poor	1	No
Durridgere CCA Zone 3 State Conservation Area	5615.32	3	34	0	Adequate	1	No
Evans Crown Nature Reserve	433.88	2	14	0	Adequate	2	No
Finchley Aboriginal Area	5.43	1	0	5	Poor	5	No
Five Islands Nature Reserve	27.60	1	0	5	Poor	5	No
Garawarra State Conservation Area	925.53	2	20	0	Adequate	2	No
Gardens of Stone National Park	15130.25	4	88	0	Adequate	4	Yes (Other)
Garigal National Park	2256.94	3	57	0	Adequate	5	Yes (Other)
Georges River National Park	532.58	2	20	0	Adequate	5	No
Glenrock State Conservation Area	536.87	2	23	0	Adequate	4	Yes (Other)
Goodiman CCA Zone 3 State Conservation Area	570.02	2	9	0	Adequate	1	No
Goulburn River National Park	73636.95	5	164	0	Adequate	3	Yes (Other)
Gulguer Nature Reserve	365.52	2	1	3	Poor	1	No
Hartley Historic Site	12.61	1	1	4	Poor	1	No
Heathcote National Park	2731.88	3	39	0	Adequate	2	No

Reserve	Area (ha)	Reserve Size[1]	No. of systematic sites	No. of new sites needed for adequacy	Current Vegetation Systematic Survey Effort	Remote Sensing Score[2]	Report[3]
Hill End Historic Site	135.90	2	0	2	Poor	1	No
Howe Aboriginal Area	6.66	1	0	5	Poor	4	No
Hunter Wetlands National Park	4316.44	3	5	17	Adequate	4	Yes (Other)
Illawarra Escarpment State Conservation Area	2511.32	3	38	0	Adequate	5	No
Jenolan Karst Conservation Reserve	3092.97	3	39	0	Adequate	5	No
Jerrawangala National Park	4019.50	3	30	0	Adequate	3	Yes (Other)
Jervis Bay National Park (North)	3189.30	3	12	4	Moderate	3	Yes (Other)
Jervis Bay National Park (South)	1693.01	3	17	0	Adequate	3	Yes (Other)
Jilliby State Conservation Area	12062.86	4	61	0	Moderate	4	No
Joadja Nature Reserve	853.46	2	22	0	Adequate	4	Yes (Other)
Kanangra-Boyd National Park (Kanangra area 1- west)	39179.33	5	92	40	Adequate	3	No
Kanangra-Boyd National Park (Kanangra area 1- east)	26672.86				Adequate	5	Yes (SA)
Kanangra-Boyd National Park (Kanangra area 2)	2356.32	5	1	0	Adequate	5	No
Kanangra-Boyd National Park (Upper Mountains)	1230.16	5	2	0	Adequate	5	No
Kangaroo River Nature Reserve	117.80	2	1	1	Moderate	3	No
Kemps Creek Nature Reserve	129.18	2	4	0	Adequate	5	No
Ku-ring-gai Chase National Park	15544.69	4	39	13	Moderate	3	Yes (Other)
Lake Macquarie State Conservation Area	768.23	2	57	0	Adequate	4	Yes (Other)
Lane Cove National Park	630.04	2	86	0	Adequate	5	Yes (Other)
Leacock Regional Park	34.12	1	0	5	Poor	5	No
Lion Island Nature Reserve	11.77	1	0	5	Poor	1	No
Long Island Nature Reserve	67.91	1	0	5	Poor	1	No
Macquarie Pass National Park	1062.10	3	6	0	Adequate	4	Yes (Other)
Macquarie Pass State Conservation Area	166.22	2	3	0	Adequate	4	No
Manobalai Nature Reserve	3806.80	3	29	0	Adequate	3	Yes (Other)
Maroota Historic Site	32.91	1	4	1	Moderate	1	No
Maroota Ridge State Conservation Area	259.61	2	2	1	Moderate	5	No
Marramarra National Park	11640.25	4	76	0	Adequate	2	Yes (Other)
Marrangaroo National Park	1670.77	3	13	0	Adequate	5	No
Medowie Nature Reserve	223.32	2	1	2	Moderate	3	No
Medowie State Conservation Area	2834.08	3	15	0	Adequate	3	No
Meroo National Park	3591.67	3	27	0	Adequate	4	Yes (Other)
Moffats Swamp Nature Reserve	143.09	2	2	0	Poor	3	No
Moon Island Nature Reserve	3.62	1	0	5	Poor	4	No
Mooney Mooney Aboriginal Area	9.07	1	0	5	Poor	4	No
Morton National Park (Highlands - area 1)	30826.85	4	95	41	Moderate	3	Yes (Other)
Morton National Park (Highlands - area 2)	9983.96	4				4	

Reserve	Area (ha)	Reserve Size[1]	No. of systematic sites	No. of new sites needed for adequacy	Current Vegetation Systematic Survey Effort	Remote Sensing Score[2]	Report[3]
Morton National Park (Nowra - area 1)	61608.61	5	88	79	Moderate	3	Yes (Other)
Morton National Park (Nowra - area 2)	21685.63	5				4	
Morton National Park (Ulladulla)	75563.88	5	100	52	Moderate	3	Yes (Other)
Morton State Conservation Area	1028.22	3	2	4	Moderate	3	Yes (Other)
Mount Ku-ring-gai Aboriginal Area	0.56	1	0	5	Poor	1	No
Mount Royal National Park	6973.74	3	4	0	Adequate	3	Yes (Other)
Mulgoa Nature Reserve	213.39	2	7	0	Adequate	2	No
Munghorn Gap Nature Reserve	6158.52	3	46	0	Adequate	3	Yes (Other)
Munmorah State Conservation Area	1529.84	3	58	0	Adequate	4	No
Muogamarra Nature Reserve	2575.34	3	41	0	Adequate	3	Yes (Other)
Murramarang Aboriginal Area	60.40	1	4	1	Moderate	4	No
Murramarang National Park	12416.22	4	103	0	Adequate	4	Yes (Other)
Murrurundi Pass CCA Zone 1 National Park	214.90	2	13	0	Adequate	3	No
Narrawallee Creek Nature Reserve	872.47	2	11	0	Adequate	4	Yes (Other)
Nattai National Park	49455.10	4	184	0	Adequate	5	Yes (DP)
Nattai State Conservation Area	3266.09	3	12	0	Adequate	5	Yes (DP)
Newington Nature Reserve	47.77	1	16	0	Adequate	5	No
Palm Grove Nature Reserve	238.85	2	2	1	Moderate	4	No
Pambalong Nature Reserve	34.69	1	12	0	Adequate	4	No
Parma Creek Nature Reserve	3618.03	3	6	13	Adequate	3	No
Parr State Conservation Area	35734.56	4	75	0	Adequate	5	Yes (DP)
Parramatta River Regional Park	4.60	1	0	5	Poor	5	No
Pelican Island Nature Reserve	50.97	1	0	5	Poor	4	No
Penrith Lakes Regional Park	0.69	1	0	5	Poor	5	No
Pitt Town Nature Reserve	46.83	1	0	5	Poor	5	No
Popran National Park	4019.22	3	40	0	Adequate	4	Yes (Other)
Prospect Nature Reserve	364.16	2	6	0	Adequate	5	No
Pulbah Island Nature Reserve	66.13	1	6	0	Adequate	4	No
Rileys Island Nature Reserve	41.56	1	0	5	Poor	4	No
Robertson Nature Reserve	5.35	1	3	2	Moderate	3	No
Rodway Nature Reserve	85.43	1	2	3	Moderate	3	No
Rouse Hill Regional Park	43.14	1	0	5	Poor	5	No
Royal National Park	15342.47	4	277	0	Adequate	2	No
Saltwater Swamp Nature Reserve	213.77	2	17	0	Adequate	4	Yes (Other)
Saratoga Island Nature Reserve	1.01	1	0	5	Poor	4	No
Scheyville National Park	933.18	2	2	8	Poor	5	No
Seven Mile Beach National Park	953.81	2	11	0	Adequate	3	No
Spectacle Island Nature Reserve	46.89	1	0	5	Poor	1	No
Sugarloaf State Conservation Area	3902.91	3	10	0	Adequate	4	Yes (Other)
Sydney Harbour National Park	389.38	2	11	0	Adequate	5	Yes (Other)

Reserve	Area (ha)	Reserve Size[1]	No. of systematic sites	No. of new sites needed for adequacy	Current Vegetation Systematic Survey Effort	Remote Sensing Score[2]	Report[3]
Tapitallee Nature Reserve	94.44	1	11	0	Adequate	3	Yes (Other)
Thirlmere Lakes National Park	662.00	2	7	0	Adequate	5	Yes (SA)
Throsby Park Historic Site	74.42	1	1	4	Poor	3	No
Tingira Heights Nature Reserve	17.69	1	2	3	Moderate	3	Yes (Other)
Towarri National Park	6086.33	3	102	0	Adequate	3	Yes (Other)
Towra Point Nature Reserve	633.19	2	13	0	Adequate	5	No
Triplarina Nature Reserve	138.41	2	5	0	Adequate	3	No
Tuggerah Nature Reserve	133.59	2	3	0	Adequate	4	No
Tuggerah State Conservation Area	126.43	2	5	0	Adequate	4	No
Turon National Park	3103.02	3	32	0	Adequate	5	Yes (Other)
Upper Nepean State Conservation Area	25133.53	4	72	12	Moderate	5	Yes (SA)
Wallarah National Park	174.43	2	9	0	Adequate	4	No
Wallumatta Nature Reserve	6.15	1	1	4	Poor	5	No
Wamberal Lagoon Nature Reserve	142.50	2	18	0	Adequate	4	Yes (Other)
Wambina Nature Reserve	54.43	1	3	2	Moderate	4	No
Watagans National Park	7790.57	3	39	0	Adequate	4	Yes (Other)
Werakata National Park	3336.14	3	36	0	Adequate	5	Yes (Other)
Werakata State Conservation Area	2261.20	3	38	0	Adequate	5	Yes (Other)
Western Sydney Regional Park	562.16	2	5	1	Moderate	5	No
Wianamatta Regional Park	63.66	1	0	5	Poor	5	No
William Howe Regional Park	43.06	1	0	5	Poor	5	No
Windsor Downs Nature Reserve	364.28	2	9	0	Adequate	5	No
Wingen Maid Nature Reserve	1095.09	3	51	0	Adequate	3	No
Wisemans Ferry Historic Site	21.50	1	1	4	Poor	1	No
Wogamia Nature Reserve	276.67	2	5	0	Adequate	3	No
Wollemi National Park (Hawkesbury area 1)	11744.18	5	166	0	Adequate	1	Yes (DP)
Wollemi National Park (Hawkesbury area 2)	67984.15	5				5	
Wollemi National Park (Hunter Range)	156386.71	5	154	159	Poor	1	Yes (Other)
Wollemi National Park (Mudgee area 1)	106179.10	5	232	0	Adequate	1	Yes (DP)
Wollemi National Park (Mudgee area 2)	78685.92	5				5	
Wollemi National Park (Upper Mountains)	383458.36	5	76	86	Poor	1	Yes (Other)
Wolli Creek Regional Park	14.19	1	1	4	Poor	5	No
Wollondilly River Nature Reserve	912.11	2	7	3	Moderate	5	No
Wombeyan Karst Conservation Reserve (Special area)	22.89	2	6	0	Adequate	5	Yes (SA)
Wombeyan Karst Conservation Reserve (remainder area)	541.42	2				2	No
Woollamia Nature Reserve	452.62	2	6	0	Adequate	3	No
Worrigee Nature Reserve	230.84	2	3	0	Adequate	3	No
Wyrrabalong National Park	580.92	2	31	0	Adequate	4	Yes (Other)

Reserve	Area (ha)	Reserve Size[1]	No. of systematic sites	No. of new sites needed for adequacy	Current Vegetation Systematic Survey Effort	Remote Sensing Score[2]	Report[3]
Yarrobil CCA Zone 1 National Park	1831.22	3	16	0	Adequate	1	No
Yatteyattah Nature Reserve	35.10	1	2	3	Moderate	3	No
Yellomundee Regional Park	482.84	2	3	2	Moderate	1	No
Yengo National Park (Hunter Range)	46786.55	4	114	0	Adequate	5	Yes (DP)
Yengo National Park (Yango)	120786.60	5	149	0	Adequate	5	Yes (DP)
Yerranderie State Conservation Area	12422.92	4	30	12	Moderate	5	Yes (SA)

[1] Reserve size classes are as per Table 3 where 1<100ha and 5>50 000ha

[2] Remote sensing score is based on effort and attribution of spatial layer as per Table 6where 1 is lower effort and 5 is higher effort

[3] Descriptive report of fauna values where DP= BSP Program; SA= SCA Special Areas; Other

Appendix 4: Methods Used to Prioritise Reserves for Fauna Survey

Step 1: Selecting Attributes

The basis for fauna prioritisation was based on six factors. The first three are described in Section 4 of the report. The fifth and sixth are described below.

1. Systematic Survey Effort
2. Comprehensiveness of fauna observation data in the Atlas of NSW Wildlife (FAI score)
3. Existence of a report describing fauna values and habitats
4. Reserve Size
5. Region in which the reserve was located
6. Whether the reserve was managed for nature conservation or whether the reserve was restricted to single habitats such as mangrove.

Sub Regional Priorities:

We identified a set of subregions to ensure that data was compiled in a structured and meaningful way so that any broader corporate priorities could be addressed. These sub-regions are in order of priority, the Greater Blue Mountains World Heritage Area, Greater North Sydney Region, South Coast Region, Hunter Central Rivers, South West Slopes, Brigalow Belt South and Greater Southern Sydney Region. The last region has already been subject to comprehensive cross tenure fauna study.

Reserve Use and Habitat

Reserves that are primarily used for recreation, or the protection of values other than biodiversity, e.g. historic, cultural heritage, or those reserves that have only specialised habitats that would not warrant full floristic plot surveys (e.g. mangroves) were identified. The categories identified were Historic (H), Recreation (R), Cultural (C), Specialised Habitat (S), and Highly Modified (HM). These types of reserves were not assessed further.

Step 2: Priority Selection Criteria and Class

Twenty separate selection categories (Table A) were developed to rank each of the 183 reserve units present in the region. These selection criteria were then grouped into priority rank classes where F1 and F2 represent very high priority, F3-F12 represent high priority, F13-F15 medium priority and F16-20 are either classed as low priority or adequately addressed. An additional class was created to identify those reserves that have current fauna survey project in progress.

Table A: Fauna Survey Selection Categories and Priority Class Rank

Priority Rank Category	In GBMWHA[1]?	In GNSR[2]?	In SCR[3]?	In other region?	Reserve Area	Survey Effort	FAI Score	Existing Report?	Other use reserves
F1 Very High Priority	Yes	-	-	-	>30ha	Poor	Low	No	No
	Yes	-	-	-	>30ha	Poor	Medium	No	No
	Yes	-	-	-	>30ha	Poor	High	No	No
	Yes	-	-	-	>30ha	Moderate	any	No	No
F2 very high priority	No	Yes	No	No	>30ha	Poor	Low	No	No
F3 High Priority	No	Yes	No	No	>30ha	Poor	Medium	No	No
F4 High Priority	No	Yes	No	No	>30ha	Poor	High	No	No
F5 High Priority	No	Yes	No	No	>30ha	Moderate	any	No	No

Priority Rank Category	In GBMWHA[1]?	In GNSR[2]?	In SCR[3]?	In other region?	Reserve Area	Survey Effort	FAI Score	Existing Report?	Other use reserves
F6 High Priority	No	No	**Yes**	No	>30ha	Poor	Low	No	No
F7 High Priority	No	No	**Yes**	No	>30ha	Poor	Medium	No	No
F8 High Priority	No	No	**Yes**	No	>30ha	Poor	High	No	No
F9 High Priority	No	No	**Yes**	No	>30ha	Moderate	any	No	No
F10 High Priority	No	No	No	**Yes**	>30ha	Poor	Low	No	No
F11 High Priority	No	No	No	**Yes**	>30ha	Poor	Medium	No	No
F12 High Priority	No	No	No	**Yes**	>30ha	Poor	High	No	No
F13 Medium Priority	-	-	-	-	>30ha	Poor	Low	Yes	No
F14 Medium Priority	-	-	-	-	>30ha	Poor	Medium	Yes	No
F15 Medium Priority	-	-	-	-	>30ha	Poor	High	Yes	No
F16 Low Priority	-	-	-	-	>30ha	Moderate	Low	Yes	No
	-	-	-	-	>30ha	Moderate	Medium	Yes	No
	-	-	-	-	>30ha	Moderate	High	Yes	No
F17 Low Priority	-	-	-	-	<30ha	-	-	-	No
F18 Low Priority	-	-	-	-	>30ha	Adequate	Low	No	No
	-	-	-	-	>30ha	Adequate	Medium	No	No
	-	-	-	-	>30ha	Adequate	High	No	No
F19 Low Priority	-	-	-	-	-	-	-	-	**Yes**
F20 Assessed as Adequate	-	-	-	-	-	Adequate	Low	Yes	-
	-	-	-	-	-	Adequate	Medium	Yes	-
	-	-	-	-	-	Adequate	High	Yes	-

[1] Greater Blue Mountains World Heritage Area

[2] Greater Northern Sydney Region

[3] South Coast Region

Step 3: Sorting Within Priority Class

Priority groups which contained more than one reserve were then sorted in order of:

1. Fauna Systematic Survey Effort (In the following order: Poor, Moderate, Adequate)
2. FAI (Low, Medium, High)
3. If there was no existing fauna report
4. For those categories that were not already defined by regional priorities, sorted by Regions in the following order (GBM WHA, GNSR, South Coast Region, Hunter, South West Slopes, Brigalow Belt South, Greater Southern Sydney Region)
5. Whether there was a Plan of Management due to be drafted for the reserve in the next 5 years (sorted by due date). The idea being that data provided by the BSP program would inform the development of the Plan of Management for the reserve.

Appendix 5: Methods Used to Prioritise Reserves for Vegetation Survey & Mapping

Step 1: Scoring Attributes

There were 5 factors used to allocate the reserves of the Sydney Basin into priority groups for vegetation survey:

1. **VSMR score** (Vegetation Survey, Mapping & Reporting Score)
2. **Vegetation Systematic Survey Effort** (rating of adequacy)
3. **Reserve Size**
4. **Location of reserve in priority areas** (Hunter Central Rivers CMA & the Greater Blue Mountains World Heritage Area)
5. **Whether the reserve was managed for nature conservation** or whether the reserve was restricted to single habitats such as mangrove.

1. VSMR score

The VSMR Score was calculated by converting the adequacy assessments for survey effort, mapping and the existence of a report into numeric values and combining them into one score as per Table C and D below.

We used the amount of systematic survey effort found within each reserve unit to weight the values generated for existing reports and remote sensing. This weighting was given to underline the relationships between field survey data and report quality and the interpretation of image patterns.

We considered that it was more likely that a report completed under the BSP Stage 1 or through SCA Special Areas surveys was more likely to have the range of attributes required by the DECCW vegetation type standard.

The following tables describe which values that were given to all combinations of the assessments. The VSMR metric is simply Score 1 + Score 2.

Table C: Score 1: Remote Sensing Score weighted by Survey Effort

		Remote Sensing Effort				
		5	**4**	**3**	**2**	**1**
Systematic Survey Effort	High	50	40	35	25	20
	Moderate	40	30	25	20	10
	Low	25	20	15	10	5

Table D: Score 2: Existing Report Score weighted by Survey Effort

		Existing Report Score		
		DECCW standard (DP or SA)	Other report	No report
Systematic Survey Effort	High	30	20	6
	Moderate	25	15	3
	Low	25	10	1

The reserves with the lowest VSMR are those reserves that scored lowest for Survey Effort, Remote Sensing & Existing reports.

By way of example:

In the adequacy assessments carried out for this report, Wambina Nature Reserve was assessed as having "Moderate" vegetation survey effort, a rating of 4 for remote sensing, and no existing report. Combined with survey effort class a score of 30 was generated (Table E). Some surveying has been carried out however no report has ben completed. As a result a low score of 3 was generated (Table F)

Table E Score 1: Remote Sensing Score - example for Wambina NR

		Remote Sensing Effort				
		5	**4**	**3**	**2**	**1**
Systematic Survey Effort	High	50	40	35	25	20
	Moderate	40	**30**	25	20	10
	Low	25	20	15	10	5

Table F Score 2: Existing Report Score - example for Wambina NR

		Existing Report Score		
		DECCW standard (DP or SA)	Other report	No report
Systematic Survey Effort	High	30	20	6
	Moderate	25	15	**3**
	Low	25	10	1

A final VSMR score is generated by summing the scores from Table E and F. In this instance the VSMR for Wambina NR is 30 + 3 = 33

2. Vegetation Systematic Survey Effort

Vegetation survey effort classes of Poor, Moderate or Adequate were obtained from the assessment of survey effort defined as number of full floristic plots per hectare for each reserve unit. These are listed in Appendix 2.

3. Reserve Size

Reserves were classified as small (less than 1000 ha in size) or large (1000ha or larger).

4. Location of Reserve in Priority Areas

Priority areas followed the rank of CMA areas listed the DECCW Vegetation Mapping Strategy. All CMAs that fell within the Sydney Region Bioregion and were included in the strategy were identified. In addition the boundaries of the Greater Blue Mountains World Heritage Area were also used to identify regional priorities. Reserve units that straddled regional boundaries were considered to be in the region that held more than 50% of the reserve unit area.

5. Reserve use

Reserves that are primarily used for recreation, or the protection of values other than biodiversity, e.g. historic, cultural heritage, or those reserves that have only specialised habitats that would not warrant full floristic plot surveys (e.g. mangroves) were identified. The categories identified were Historic (H), Recreational (R), Cultural (C), Specialised Habitat (S), and Highly Modified (HM). These types of reserves were not assessed further.

Step 2: Priority Selection Criteria and Class

Thirteen separate criteria (Table G) were chosen using different combinations of the five factors described above. These reflect different priorities for new vegetation survey in the region where criteria V1-V4 represent very high priority, V3-V6 high priority, V7-V9 moderate priority. Classes V10-V13 are considered low priority as they are either classed as adequately addressed or require only minor effort to bring them to an adequate standard. A separate class was created to identify those reserves that have current vegetation mapping projects in progress.

Table G Vegetation Survey and Mapping Selection Category and Priority Class Rank

Priority Selection Criteria and Class	VSMR score	Veg Systematic Survey Effort	Reserve Size	In HCR CMA?	In GBMWHA?	Other use reserve?
V1 Very High Priority	<50	Poor or Moderate	large (>1000ha)	**Yes**	**Yes**	No
V2 Very High Priority	<50	Poor or Moderate	large (>1000ha)	**Yes**	No	No
V3 Very High Priority	<50	Poor or Moderate	small (<1000ha)	**Yes**	No	No
V4 Very High priority	<50	Poor or Moderate	any size	No	**Yes**	No
V5 High Priority	<50	Poor or Moderate	large (>1000ha)	No	No	No
V6 High priority	<50	Poor or Moderate	small (<1000ha)	No	No	No
V7 Medium Priority	<50	Adequate	large (>1000ha)	-	-	No
V8 Medium Priority	<50	Adequate	small (<1000ha)	**Yes**	-	No
V9 Medium Priority	<50	Adequate	small (<1000ha)	No	-	No
V10 Low priority (other use reserve)	-	-	-	-	-	Yes
V11 Low priority (high score)	≥ 50 and < 70	-	large (>1000ha)	-	-	No
V12 Low priority (small reserve, high score)	≥ 50 and < 70	-	small (<1000ha)	-	-	No
V13 Assessed as Adequate	≥ 70	-	-	-	-	No

Step 3: Sorting Within Priority Class

Priority classes which contained more than one reserve unit were then sorted to establish the final priority based on:

1. Vegetation Systematic Survey Effort (In the following order: Poor, Moderate, Adequate)
2. If the reserve is in HCR CMA or GBM WHA (both DECCW Vegetation Mapping Priorities)
3. VSMR (in numerical order lowest to highest)
4. Whether there was a Plan of Management due to be drafted for the reserve in the next 5 years (sorted by due date)

Appendix 6: Fauna Survey Prioritisation results

The table below lists the reserves of the Sydney Basin in order of highest to lowest priority for new fauna survey and reporting at the reserve or part reserve scale. The highest priority reserves are listed in 12 groups (F1-F12), and are sorted within these groups in priority order as explained in Appendix 4

Sort Order	Reserve Name	Total area (Ha)	Fauna Systematic Survey Effort	FAI (category)	Existing Report?	In GBM WHA[1]?	In GNSR[2]	In SCR[3]?	In other region[4]?	Other use reserves[5]	PoM due in next 5 years?	Flag[6]
Very High Priority Group F1												
1	Blue Mountains National Park (Upper Mountains North)	45183.24	poor	High	No	Y	Y				Y	
2	Jenolan Karst Conservation Reserve	3092.97	poor	Low	No	Y			Y			
3	Gardens of Stone National Park	15130.25	moderate	Medium	No	Y	Y					
Very High Priority Group F2												
4	Georges River National Park & SCA	532.58	poor	Low	No		Y				Y	
5	Wamberal Lagoon Nature Reserve	142.50	poor	Low	No		Y				Y	
6	Tuggerah Nature Reserve	133.59	poor	Low	No		Y				Y	
7	Tuggerah State Conservation Area	126.43	poor	Low	No		Y				Y	
8	Durridgere CCA Zone 3 State Conservation Area	5615.32	poor	Low	No		Y				Y	
9	Awabakal Nature Reserve	244.75	poor	Low	No		Y				Y	
10	Palm Grove Nature Reserve	238.85	poor	Low	No		Y				Y	
11	Colongra Swamp Nature Reserve	118.91	poor	Low	No		Y				Y	U
12	Glenrock State Conservation Area	536.87	poor	Low	No		Y					
13	Watagans National Park	7790.57	poor	Low	No		Y					U
14	Dural Nature Reserve	35.56	poor	Low	No		Y					
15	Wianamatta Regional Park	63.66	poor	Low	No		Y					U
16	Muogamarra Nature Reserve	2575.34	poor	Low	No		Y					
17	Pitt Town Nature Reserve	46.83	poor	Low	No		Y					U
18	Pulbah Island Nature Reserve	66.13	poor	Low	No		Y					
19	Yellomundee Regional Park	482.84	poor	Low	No		Y					
High Priority Group F3												
20	Dharug National Park	15324.70	poor	Medium	No		Y				Y	
21	Cockle Bay Nature Reserve	45.45	poor	Medium	No		Y					U
High Priority Group F4												
22	Sydney Harbour National Park	389.38	poor	High	No		Y				Y	
23	Garigal National Park	2256.94	poor	High	No		Y					
24	Ku-ring-gai Chase National Park	15544.69	poor	High	No		Y					
High Priority Group F5												
25	Prospect Nature Reserve	364.16	moderate	Low	No		Y					
26	Marramarra National Park	11640.25	moderate	Low	No		Y					

Sort Order	Reserve Name	Total area (Ha)	Fauna Systematic Survey Effort	FAI (category)	Existing Report?	In GBM WHA[1]?	In GNSR[2]	In SCR[3]?	In other region[4]?	Other use reserves[5]	PoM due in next 5 years?	Flag[6]
27	Popran National Park	4019.22	moderate	Medium	No		Y				Y	
28	Lake Macquarie State Conservation Area	768.23	moderate	Medium	No		Y					
29	Brisbane Water National Park	12027.24	moderate	High	No		Y				Y	
30	Wambina Nature Reserve	54.43	moderate	High	No		Y					U
31	Munmorah State Conservation Area	1529.84	moderate	High	No		Y					U
High Priority Group F6												
32	Bomaderry Creek Regional Park	84.60	poor	Low	No			Y			Y	
33	Bugong National Park	1007.34	poor	Low	No			Y			Y	
34	Tapitallee Nature Reserve	94.44	poor	Low	No			Y			Y	
35	Colymea State Conservation Area	1671.93	poor	Low	No			Y			Y	
36	Morton State Conservation Area	1028.22	poor	Low	No			Y			Y	
37	Wogamia Nature Reserve	276.67	poor	Low	No			Y			Y	
38	Barnunj State Conservation Area	160.74	poor	Low	No			Y				
39	Corramy State Conservation Area	855.99	poor	Low	No			Y				
40	Morton National Park (Nowra Area)	83294.24	poor	Low	No			Y				
41	Yatteyattah Nature Reserve	35.10	poor	Low	No			Y				
42	Narrawallee Creek Nature Reserve	872.47	poor	Low	No			Y				
43	Cambewarra Range Nature Reserve	1679.66	poor	Low	No			Y				
44	Rodway Nature Reserve	85.43	poor	Low	No			Y				
High Priority Group F7												
45	Bamarang Nature Reserve	373.18	poor	Medium	No			Y			Y	
46	Triplarina Nature Reserve	138.41	poor	Medium	No			Y			Y	
47	Macquarie Pass State Conservation Area	166.22	poor	Medium	No			Y			Y	
48	Meroo National Park	3591.67	poor	Medium	No			Y				
49	Brush Island Nature Reserve	36.93	poor	Medium	No			Y				
50	Murramarang Aboriginal Area	60.40	poor	Medium	No			Y				
51	Morton National Park (Highlands area)	40810.80	poor	Medium	No			Y				
52	Morton National Park (Ulladulla area)	75563.88	poor	Medium	No			Y				
High Priority Group F8												
53	Comerong Island Nature Reserve	713.76	poor	High	No			Y				
54	Seven Mile Beach National Park	953.81	poor	High	No			Y				
55	Budderoo National Park	7216.56	poor	High	No			Y				
High Priority Group F9												
56	Woollamia Nature Reserve	452.62	moderate	Low	No			Y				
57	Jervis Bay National Park	3189.30	moderate	High	No			Y				
58	Barren Grounds Nature Reserve	2089.67	moderate	High	No			Y				
High Priority Group F10												
59	Moffats Swamp Nature Reserve	143.09	poor	Low	No				Y		Y	

Sort Order	Reserve Name	Total area (Ha)	Fauna Systematic Survey Effort	FAI (category)	Existing Report?	In GBM WHA[1]?	In GNSR[2]	In SCR[3]?	In other region[4]?	Other use reserves[5]	PoM due in next 5 years?	Flag[6]
62	Towarri National Park	6086.33	poor	Low	No				Y			
63	Wingen Maid Nature Reserve	1095.09	poor	Low	No				Y			
64	Goodiman CCA Zone 3 State Conservation Area	570.02	poor	Low	No				Y		Y	
65	Yarrobil CCA Zone 1 National Park	1831.22	poor	Low	No				Y		Y	
66	Marrangaroo National Park	1670.77	poor	Low	No				Y		Y	
67	Dapper Nature Reserve	1105.49	poor	Low	No				Y		Y	
68	Evans Crown Nature Reserve	433.88	poor	Low	No				Y			
High Priority Group F11												
69	Five Islands Nature Reserve	214.90	poor	Medium	No				Y		Y	
70	Murrurundi Pass CCA Zone 1 National Park	214.90	Poor	Medium	No				Y		Y	
71	Medowie State Conservation Area	2834.08	poor	Medium	No				Y			
72	Turon National Park	3103.02	poor	Medium	No				Y		Y	
73	Abercrombie River National Park	18918.81	poor	Medium	No				Y			
High Priority Group F12												
74	Hunter Wetlands National Park	4316.44	poor	High	No				Y		Y	U
Medium Priority Group F13												
75	Thirlmere Lakes National Park	662.00	poor	Low	SpecArea	Y			Y		Y	
76	Wallarah National Park	174.43	poor	Low	Yes		Y				Y	U
77	Newington Nature Reserve	47.77	poor	Low	Yes		Y					U
78	Worrigee Nature Reserve	230.84	poor	Low	Yes			Y			Y	
79	Brundee Swamp Nature Reserve	227.33	poor	Low	Yes			Y				
80	Saltwater Swamp Nature Reserve	213.77	poor	Low	Yes			Y				
81	Kangaroo River Nature Reserve	117.80	poor	Low	Yes			Y				
82	Nattai State Conservation Area	3266.09	poor	Low	DP				Y		Y	
83	Belford National Park	288.42	poor	Low	Yes				Y			U
84	Pambalong Nature Reserve	34.69	poor	Low	Yes				Y			U
Medium Priority Group F14												
85	Berowra Valley Regional Park	3602.54	poor	Medium	Yes		Y					
86	Bargo River State Conservation Area	1953.18	poor	Medium	SpecArea				Y		Y	
Medium Priority Group F15												
87	Mount Royal National Park	6973.74	poor	High	Yes				Y			U
Medium Priority Group F16												
88	Wombeyan Karst Conservation Reserve	564.31	moderate	Low	SpecArea				Y		Y	
89	Macquarie Pass National Park	1062.10	moderate	Low	SpecArea				Y			
90	Bargo State Conservation Area	4238.76	moderate	Low	DP				Y			
91	Avisford Nature Reserve	2598.32	moderate	Medium	DP				Y			
92	Wollemi National Park (Upper Mountains)	80990.55	moderate	High	DP	Y	Y				Y	
93	Blue Mountains National Park (Hawkesbury - Glenbrook area)	24548.49	moderate	High	DP	Y			Y		Y	

Sort Order	Reserve Name	Total area (Ha)	Fauna Systematic Survey Effort	FAI (category)	Existing Report?	In GBM WHA[1]?	In GNSR[2]	In SCR[3]?	In other region[4]?	Other use reserves[5]	PoM due in next 5 years?	Flag[6]
94	Nattai National Park	49455.10	moderate	High	DP	Y			Y		Y	
95	Parr State Conservation Area	35734.56	moderate	High	DP		Y					
96	Goulburn River National Park	73636.95	moderate	High	DP		Y					
97	Munghorn Gap Nature Reserve	6158.52	moderate	High	DP		Y					
98	Coolah Tops National Park	15108.48	moderate	High	DP				Y			
Medium Priority Group F17												
99	Wallumatta Nature Reserve	6.15	poor	Low	No		Y					
100	Dalrymple-Hay Nature Reserve	11.15	poor	Low	No		Y					
101	Tingira Heights Nature Reserve	17.69	poor	Low	No		Y					
102	Robertson Nature Reserve	5.35	poor	Low	No			Y				
103	Berkeley Nature Reserve	8.59	moderate	Low	No				Y			
104	Barrengarry Nature Reserve	20.63	moderate	Low	Yes			Y				
Medium Priority Group F18												
105	Kemps Creek Nature Reserve	129.18	adequate	Low	No				Y		Y	
106	Wyrrabalong National Park	580.92	adequate	Medium	No		Y				Y	U
107	Cattai National Park	429.52	adequate	Medium	No		Y				Y	
108	Agnes Banks Nature Reserve	123.47	adequate	Medium	No		Y					
109	Castlereagh Nature Reserve	497.91	adequate	Medium	No		Y					
110	Windsor Downs Nature Reserve	364.28	adequate	Medium	No		Y					
111	Jervis Bay National Park (Southern Section)	1693.01	adequate	Medium	No			Y				
112	Gulguer Nature Reserve	365.52	adequate	Medium	No				Y		Y	
113	Bouddi National Park	1617.02	adequate	High	No		Y				Y	U
114	Jilliby State Conservation Area	12062.86	adequate	High	No		Y					
115	Scheyville National Park	933.18	adequate	High	No		Y					
116	Towra Point Nature Reserve	633.19	adequate	High	No		Y					
117	Mulgoa Nature Reserve	213.39	adequate	High	No		Y					
118	Murramarang National Park	12416.22	adequate	High	No			Y				
119	Conjola National Park	11028.41	adequate	High	No			Y				
Low Priority Group F LP 1												
120	Wisemans Ferry Historic Site	21.50	poor	Low	No		Y			H		
121	Parramatta River Regional Park	4.60	poor	Low	No		Y			R		
122	Howe Aboriginal Area	6.66	poor	Low	No		Y			C		
123	Mooney Mooney Aboriginal Area	9.07	poor	Low	No		Y			C		
124	Penrith Lakes Regional Park	0.69	poor	Low	No		Y			R		
125	Spectacle Island Nature Reserve	46.89	poor	Low	No		Y			S		
126	Rileys Island Nature Reserve	41.56	poor	Low	No		Y			S		
127	Cadmans Cottage Historic Site	0.10	poor	Low	No		Y			H		
128	Maroota Historic Site	32.91	poor	Low	No		Y			H		

Sort Order	Reserve Name	Total area (Ha)	Fauna Systematic Survey Effort	FAI (category)	Existing Report?	In GBM WHA[1]?	In GNSR[2]	In SCR[3]?	In other region[4]?	Other use reserves[5]	PoM due in next 5 years?	Flag[6]
129	Long Island Nature Reserve	67.91	poor	Low	No		Y			S		
130	Bird Island Nature Reserve	5.14	poor	Low	No		Y			S		
131	Moon Island Nature Reserve	3.62	poor	Low	No		Y			S		
132	Saratoga Island Nature Reserve	1.01	poor	Low	No		Y			S		
133	Pelican Island Nature Reserve	50.97	poor	Low	No		Y			S		
134	Wolli Creek Regional Park	14.19	moderate	Low	No		Y			HM		
135	Belowla Island Nature Reserve	3.09	poor	Low	No			Y		S		
136	Cecil Hoskins Nature Reserve	47.09	poor	Low	No			Y		HM		
137	Throsby Park Historic Site	74.42	poor	Low	No			Y		H		
138	Burning Mountain Nature Reserve	14.57	poor	Low	No				Y	C		
139	Blue Gum Hills Regional Park	128.03	poor	Low	No				Y	HM		
140	Hill End Historic Site	135.90	poor	Low	No				Y	H	Y	
141	William Howe Regional Park	43.06	poor	Low	No				Y	R	Y	
142	Five Islands Nature Reserve	27.60	poor	Low	No				Y	S & HM		U
143	Hartley Historic Site	12.61	poor	Medium	No				Y	H	Y	
144	Lion Island Nature Reserve	11.77	poor	High	No		Y			S		
145	Western Sydney Regional Park	562.16	adequate	Medium	No		Y			HM		
146	Rouse Hill Regional Park	43.14	adequate	Low	No		Y			R		
147	Leacock Regional Park	34.12	adequate	Low	No				Y	HM	Y	
Not assessed												
-	Appletree Aboriginal Area		assessed as part of Yengo NP									
-	Finchley Aboriginal Area		assessed as part of Yengo NP									
-	Mount Ku-ring-gai Aboriginal Area		assessed as part of Ku-ring-gai NP									
Currently being completed												
-	Heathcote National Park	2731.88	adequate	High	DP				Y			
-	Garawarra State Conservation Area	925.53	moderate	Medium	DP				Y			
-	Royal National Park	15342.47	adequate	High	DP				Y		Y	
-	Jerrawangala National Park	4019.50	poor	Low	No			Y				
-	Parma Creek Nature Reserve	3618.03	poor	Low	No			Y				
	Botany Bay National Park	499.79	adequate	Medium	DP		Y				Y	
Assessed to be Adequate												
-	Yengo National Park (Hunter Range area)	46786.55	adequate	High	DP	Y	Y					
-	Yengo National Park (Yango area)	120786.60	adequate	High	DP	Y	Y					
-	Blue Mountains National Park (Hawkesbury - Richmond area)	19132.00	adequate	High	DP	Y	Y				Y	
-	Blue Mountains National Park (Kanangra area)	107302.56	adequate	High	DP	Y			Y		Y	

Sort Order	Reserve Name	Total area (Ha)	Fauna Systematic Survey Effort	FAI (category)	Existing Report?	In GBM WHA[1]?	In GNSR[2]	In SCR[3]?	In other region[4]?	Other use reserves[5]	PoM due in next 5 years?	Flag[6]
-	Blue Mountains National Park (Upper Mountains Sth)	71951.17	adequate	High	SpecArea	Y			Y		Y	
-	Kanangra-Boyd National Park	69438.67	adequate	High	DP	Y			Y		Y	
-	Wollemi National Park (Hawkesbury area)	79728.34	adequate	High	DP	Y	Y				Y	
-	Wollemi National Park (Hunter Range area)	156386.71	adequate	High	DP	Y	Y				Y	
-	Wollemi National Park (Mudgee area)	184864.98	adequate	High	DP	Y	Y				Y	
-	Bangadilly National Park	2136.93	adequate	Low	Yes			Y				
-	Dharawal Nature Reserve	376.10	adequate	Medium	DP				Y			
-	Dharawal State Conservation Area	6372.84	adequate	High	DP				Y			
-	Manobalai Nature Reserve	3806.80	adequate	Medium	DP		Y					
-	Lane Cove National Park	630.04	adequate	High	DP		Y				Y	
-	Illawarra Escarpment State Conservation Area	2511.32	adequate	High	DP				Y		Y	
-	Joadja Nature Reserve	853.46	adequate	Low	SpecArea				Y		Y	
-	Upper Nepean State Conservation Area	25133.53	adequate	High	SpecArea				Y		Y	
-	Wollondilly River Nature Reserve	912.11	adequate	Low	DP				Y		Y	
-	Maroota Ridge State Conservation Area	259.61	adequate	Low	DP		Y				Y	
-	Bents Basin State Conservation Area	43.98	adequate	Low	Yes				Y		Y	
-	Sugarloaf State Conservation Area	3902.91	adequate	High	DP		Y				Y	
-	Burragorang State Conservation Area	17722.76	adequate	High	SpecArea				Y		Y	
-	Werakata National Park	3336.14	adequate	High	DP				Y		Y	
-	Werakata State Conservation Area	2261.20	adequate	Medium	DP				Y		Y	
-	Yerranderie State Conservation Area	12422.92	adequate	High	SpecArea				Y		Y	

[1]Greater Blue Mountains World Heritage Area

[2] Greater Northern Sydney Area

[3] South Coast Region

[4] In other region refers to other subregions outside the three listed above

[5] Other use reserves as defined on page 61, where H = historic, R = recreation, C = cultural, S = specialised habitat, and HM = highly modified

[6] Flag: Reserves were flagged (with a U) where they are listed as a high priority, but we know that the reserve has had survey effort carried out, but the data was either not collected using standard systematic methods, or is not held in the corporate database.

Appendix 7: Vegetation Survey and Mapping Prioritisation results

The table below lists the reserves of the Sydney Basin in order of highest to lowest priority for new vegetation survey, mapping and reporting at the reserve or part reserve scale. The highest priority reserves are listed 9 groups (V1-V9) and the lowest priority reserves are listed in 3 groups (OUR, HS, SR-HS), and are sorted within these groups in priority order as explained in Appendix 3.

Sort Order	Reserve Name	Area (ha)	Reserve Size	Systematic Survey Effort Vegetation	Remote Sensing Score	Existing Report	VSMR score	In HCR CMA[1]?	In GBM WHA[2]?	PoM due in next 5 years?	Other use reserve?	Flag[4]
Very High Priority Group V1												
1	Wollemi National Park (Hunter Range)	156386.71	5	Poor	1	Yes	15	Y	Y	Y		
Very High Priority Group V2												
2	No reserves identified											
Very High Priority Group V3												
5	Wambina Nature Reserve	54.43	1	Moderate	4	No	33	Y				
6	Palm Grove Nature Reserve	238.85	2	Moderate	4	No	33	Y		Y		
7	Tingira Heights Nature Reserve	17.69	1	Moderate	3	Yes	40	Y				
Very High Priority Group V4												
8	Wollemi National Park (Upper Mountains)	75770.92	5	Poor	1	Yes	15		Y	Y		
9	Blue Mountains National Park (Upper Mountains Nth)	71945.08	4	Moderate	1	No	13		Y	Y		
10	Blue Mountains National Park (Hawkesbury Richmond)	19006.89	4	Moderate	1	No	13		Y	Y		
11	Blue Mountains National Park (Kanangra West)	34888.37	4	Moderate	3	No	28		Y	Y		
High Priority Group V5												
12	Abercrombie River National Park	18918.81	4	Moderate	3	No	28					
13	Dharug National Park	15324.70	4	Moderate	3	Yes	40			Y		
2	Brisbane Water National Park	12027.24	4	Moderate	4	Yes	45	N		Y		
14	Cambewarra Range Nature Reserve	1679.66	3	Moderate	3	Yes	40					
15	Jervis Bay National Park (North)	3189.30	3	Moderate	3	Yes	40					
16	Ku-ring-gai Chase National Park	15544.69	4	Moderate	3	Yes	40					
17	Morton State Conservation Area	1028.22	3	Moderate	3	Yes	40			Y		
18	Morton National Park (Highlands - area 1)	30826.85	4	Moderate	3	Yes	40					
19	Morton National Park (Highlands - area 2)	9983.96	4	Moderate	4	Yes	45					
20	Morton National Park (Nowra - area 1)	61608.61	5	Moderate	3	Yes	40					
21	Morton National Park (Nowra - area 2)	21685.63	5	Moderate	4	Yes	45					
22	Morton National Park (Ulladulla)	75563.88	5	Moderate	3	Yes	40					
23	Conjola National Park	11028.41	4	Moderate	4	Yes	45					U
High Priority Group V6												
24	Bents Basin State Conservation Area	43.98	1	Poor	1	No	6			Y		

Sort Order	Reserve Name	Area (ha)	Reserve Size	Systematic Survey Effort Vegetation	Remote Sensing Score	Existing Report	VSMR score	In HCR CMA[1]?	In GBM WHA[2]?	PoM due in next 5 years?	Other use reserve?	Flag[4]
25	Gulguer Nature Reserve	365.52	2	Poor	1	No	6			Y		
26	Dural Nature Reserve	35.56	1	Poor	1	No	6					
27	Barrengarry Nature Reserve	20.63	1	Poor	3	No	16					
29	Pitt Town Nature Reserve	46.83	1	Poor	5	No	26					
30	Scheyville National Park	933.18	2	Poor	5	No	26					
31	Wallumatta Nature Reserve	6.15	1	Poor	5	No	26					
32	Wianamatta Regional Park	63.66	1	Poor	5	No	26					
33	Yellomundee Regional Park	482.84	2	Moderate	1	No	13					
34	Bomaderry Creek Regional Park	84.60	1	Moderate	3	No	28			Y		
35	Kangaroo River Nature Reserve	117.80	2	Moderate	3	No	28					
36	Rodway Nature Reserve	85.43	1	Moderate	3	No	28					
37	Yatteyattah Nature Reserve	35.10	1	Moderate	3	No	28					
38	Robertson Nature Reserve	5.35	1	Moderate	3	No	28					
39	Murramarang Aboriginal Area	60.40	1	Moderate	4	No	33					
40	Brush Island Nature Reserve	36.93	1	Moderate	3	Yes	40					
42	Wollondilly River Nature Reserve	912.11	2	Moderate	5	No	43			Y		
Medium Priority Group V7												
43	Durridgere CCA Zone 3 State Conservation Area	5615.32	3	Adequate	4	No	41	Y		Y		
44	Medowie State Conservation Area	2834.08	3	Adequate	3	No	41	Y				
45	Kanangra-Boyd National Park (Kanangra area 1-west)	26672.86	5	Adequate	3	No	41		Y	Y		
46	Yarrobil CCA Zone 1 National Park	1831.22	3	Adequate	1	No	26			Y		
47	Dapper Nature Reserve	1105.49	3	Adequate	1	Yes	40			Y		
48	Moffats Swamp Nature Reserve	143.09	2	Adequate	3	No	41	Y		Y		
49	Marramarra National Park	11640.25	4	Adequate	2	Yes	45					
50	Jilliby State Conservation Area	12062.86	4	Adequate	4	No	46	Y				
Medium Priority Group V8												
51	Wallarah National Park	174.43	2	Adequate	4	No	46	Y		Y		U
52	Tuggerah Nature Reserve	133.59	2	Adequate	4	No	46	Y		Y		
53	Tuggerah State Conservation Area	126.43	2	Adequate	4	No	46	Y		Y		
54	Maroota Ridge State Conservation Area	259.61	2	Adequate	4	No	46			Y		
Medium Priority Group V9												
54	Goodiman CCA Zone 3 State Conservation Area	570.02	2	Adequate	1	No	26			Y		
55	Wombeyan Karst Conservation Reserve (Special area)	541.42	2	Adequate	2	No	31			Y		
56	Evans Crown Nature Reserve	433.88	2	Adequate	2	No	31					
57	Garawarra State Conservation Area	925.53	2	Adequate	2	No	31					
58	Mulgoa Nature Reserve	213.39	2	Adequate	2	No	31					
59	Comerong Island Nature Reserve	713.76	2	Adequate	3	No	41					

Sort Order	Reserve Name	Area (ha)	Reserve Size	Systematic Survey Effort Vegetation	Remote Sensing Score	Existing Report	VSMR score	In HCR CMA[1]?	In GBM WHA[2]?	PoM due in next 5 years?	Other use reserve?	Flag[4]
60	Corramy State Conservation Area	855.99	2	Adequate	3	No	41					
61	Seven Mile Beach National Park	953.81	2	Adequate	3	No	41					
62	Woollamia Nature Reserve	452.62	2	Adequate	3	No	41					
63	Macquarie Pass State Conservation Area	166.22	2	Adequate	4	No	46			Y		
Low Priority Group - Other Use Reserves (OUR)												
64	Cadmans Cottage Historic Site	0.10	1	Poor	0	No	2				H	
65	Hartley Historic Site	12.61	1	Poor	1	No	6			Y	H	
66	Hill End Historic Site	135.90	2	Poor	1	No	6			Y	H	
67	Spectacle Island Nature Reserve	46.89	1	Poor	1	No	6				S	
68	Lion Island Nature Reserve	11.77	1	Poor	1	No	6				S	
69	Long Island Nature Reserve	67.91	1	Poor	1	No	6				S	
70	Wisemans Ferry Historic Site	21.50	1	Poor	1	No	6				H	
71	Burning Mountain Nature Reserve	14.57	1	Poor	3	No	16	Y			C	
72	Cecil Hoskins Nature Reserve	47.09	1	Poor	3	No	16				HM	
73	Throsby Park Historic Site	74.42	1	Poor	3	No	16				H	
74	Blue Gum Hills Regional Park	128.03	2	Poor	4	No	21	Y			HM	
75	Rileys Island Nature Reserve	41.56	1	Poor	4	No	21	Y			S	U
76	Howe Aboriginal Area	6.66	1	Poor	4	No	21				C	
77	Mooney Mooney Aboriginal Area	9.07	1	Poor	4	No	21				C	
78	Bird Island Nature Reserve	5.14	1	Poor	4	No	21	Y			S	
79	Moon Island Nature Reserve	3.62	1	Poor	4	No	21	Y			S	
80	Saratoga Island Nature Reserve	1.01	1	Poor	4	No	21	Y			S	
81	Pelican Island Nature Reserve	50.97	1	Poor	4	No	21	Y			S	U
82	Belowla Island Nature Reserve	3.09	1	Poor	3	Yes	25				S	
83	Leacock Regional Park	34.12	1	Poor	5	No	26			Y	HM	
84	William Howe Regional Park	43.06	1	Poor	5	No	26			Y	R	
85	Five Islands Nature Reserve	27.60	1	Poor	5	No	26				S & HM	
86	Parramatta River Regional Park	4.60	1	Poor	5	No	26				R	
87	Penrith Lakes Regional Park	0.69	1	Poor	5	No	26				R	
88	Rouse Hill Regional Park	43.14	1	Poor	5	No	26				R	
89	Wolli Creek Regional Park	14.19	1	Poor	5	No	26				HM	
90	Maroota Historic Site	32.91	1	Moderate	1	No	13				H	
91	Western Sydney Regional Park	562.16	2	Moderate	5	No	43				HM	
Low Priority Group - High Score (HS)												
92	Blue Mountains National Park (Hawkesbury Richmond Special area)	125.10	4	Moderate	5	SpecArea	65		Y	Y		
93	Blue Mountains National Park (Upper Mountains Nth Special Area)	6.09	4	Moderate	5	SpecArea	65		Y	Y		
94	Bargo River State Conservation Area	1953.18	3	Moderate	5	DP	65			Y		

Sort Order	Reserve Name	Area (ha)	Reserve Size	Systematic Survey Effort Vegetation	Remote Sensing Score	Existing Report	VSMR score	In HCR CMA[1]?	In GBM WHA[2]?	PoM due in next 5 years?	Other use reserve?	Flag[4]
95	Burragorang State Conservation Area	17722.76	4	Moderate	5	SpecArea	65			Y		
96	Yerranderie State Conservation Area	12422.92	4	Moderate	5	SpecArea	65			Y		
97	Upper Nepean State Conservation Area	25133.53	4	Moderate	5	SpecArea	65			Y		
98	Bargo State Conservation Area	4238.76	3	Moderate	5	DP	65					
99	Wollemi National Park (Mudgee area 1)	106179.10	5	Adequate	1	DP	50	Y	Y	Y		
100	Wingen Maid Nature Reserve	1095.09	3	Adequate	3	Yes	55	Y				
101	Coolah Tops National Park	15108.48	4	Adequate	3	Yes	55	Y				
102	Goulburn River National Park	73636.95	5	Adequate	3	Yes	55	Y				
103	Manobalai Nature Reserve	3806.80	3	Adequate	3	Yes	55	Y				
104	Mount Royal National Park	6973.74	3	Adequate	3	Yes	55	Y				
105	Munghorn Gap Nature Reserve	6158.52	3	Adequate	3	Yes	55	Y				
106	Towarri National Park	6086.33	3	Adequate	3	Yes	55	Y				
107	Bugong National Park	1007.34	3	Adequate	3	Yes	55			Y		
108	Colymea State Conservation Area	1671.93	3	Adequate	3	Yes	55			Y		
109	Barren Grounds Nature Reserve	2089.67	3	Adequate	3	Yes	55					
110	Budderoo National Park	7216.56	3	Adequate	3	Yes	55					
111	Jerrawangala National Park	4019.50	3	Adequate	3	Yes	55					
112	Jervis Bay National Park (South)	1693.01	3	Adequate	3	Yes	55					
113	Muogamarra Nature Reserve	2575.34	3	Adequate	3	Yes	55					
114	Kanangra-Boyd National Park (Kanangra area 2)	2356.32	5	Adequate	5	No	56		Y	Y		
115	Kanangra-Boyd National Park (Upper Mountains)	1230.16	5	Adequate	5	No	56		Y	Y		
116	Jenolan Karst Conservation Reserve	3092.97	3	Adequate	5	No	56		Y			
117	Illawarra Escarpment State Conservation Area	2511.32	3	Adequate	5	No	56			Y		
118	Marrangaroo National Park	1670.77	3	Adequate	5	No	56			Y		
119	Camerons Gorge Nature Reserve	1330.11	3	Adequate	4	Yes	60	Y				
120	Munmorah State Conservation Area	1529.84	3	Adequate	4	Yes	60	Y				
121	Watagans National Park	7790.57	3	Adequate	4	Yes	60	Y				
122	Bouddi National Park	1617.02	3	Adequate	4	Yes	60	Y		Y		
123	Hunter Wetlands National Park	4316.44	3	Adequate	4	Yes	60	Y		Y		
124	Sugarloaf State Conservation Area	3902.91	3	Adequate	4	Yes	60	Y		Y		
125	Gardens of Stone National Park	15130.25	4	Adequate	4	Yes	60		Y			
126	Popran National Park	4019.22	3	Adequate	4	Yes	60			Y		
127	Berowra Valley Regional Park	3602.54	3	Adequate	4	Yes	60					
128	Avisford Nature Reserve	2598.32	3	Adequate	4	Yes	60					
129	Bangadilly National Park	2136.93	3	Adequate	4	Yes	60					
130	Dharawal State Conservation Area	6372.84	3	Adequate	4	Yes	60					
131	Macquarie Pass National Park	1062.10	3	Adequate	4	Yes	60					

Sort Order	Reserve Name	Area (ha)	Reserve Size	Systematic Survey Effort Vegetation	Remote Sensing Score	Existing Report	VSMR score	In HCR CMA[1]?	In GBM WHA[2]?	PoM due in next 5 years?	Other use reserve?	Flag[4]
132	Meroo National Park	3591.67	3	Adequate	4	Yes	60					
133	Murramarang National Park	12416.22	4	Adequate	4	Yes	60					
Low Priority Group - Small Reserve, High Score (SR-HS)												
134	Tapitallee Nature Reserve	94.44	1	Adequate	3	Yes	55			Y		
135	Botany Bay National Park	499.79	2	Adequate	5	No	56			Y		
136	Cattai National Park	429.52	2	Adequate	5	No	56			Y		
137	Georges River National Park	532.58	2	Adequate	5	No	56			Y		
138	Kemps Creek Nature Reserve	129.18	2	Adequate	5	No	56			Y		
139	Agnes Banks Nature Reserve	123.47	2	Adequate	5	No	56					
140	Berkeley Nature Reserve	8.59	1	Adequate	5	No	56					
141	Castlereagh Nature Reserve	497.91	2	Adequate	5	No	56					
142	Prospect Nature Reserve	364.16	2	Adequate	5	No	56					
143	Towra Point Nature Reserve	633.19	2	Adequate	5	No	56					
144	Windsor Downs Nature Reserve	364.28	2	Adequate	5	No	56					
145	Newington Nature Reserve	47.77	1	Adequate	5	No	56					
146	Awabakal Nature Reserve	244.75	2	Adequate	4	Yes	60	Y		Y		
147	Wamberal Lagoon Nature Reserve	142.50	2	Adequate	4	Yes	60	Y		Y		
148	Wyrrabalong National Park	580.92	2	Adequate	4	Yes	60	Y		Y		
149	Colongra Swamp Nature Reserve	118.91	2	Adequate	4	Yes	60	Y		Y		
150	Glenrock State Conservation Area	536.87	2	Adequate	4	Yes	60	Y				
151	Pulbah Island Nature Reserve	66.13	1	Adequate	4	Yes	60	Y				
152	Lake Macquarie State Conservation Area	768.23	2	Adequate	4	Yes	60	Y				
153	Pambalong Nature Reserve	34.69	1	Adequate	4	Yes	60	Y				
154	Cockle Bay Nature Reserve	45.45	1	Adequate	4	Yes	60	Y				
155	Joadja Nature Reserve	853.46	2	Adequate	4	Yes	60			Y		
156	Barnunj State Conservation Area	160.74	2	Adequate	4	Yes	60					
157	Brundee Swamp Nature Reserve	227.33	2	Adequate	4	Yes	60					
158	Dharawal Nature Reserve	376.10	2	Adequate	4	Yes	60					
159	Narrawallee Creek Nature Reserve	872.47	2	Adequate	4	Yes	60					
160	Saltwater Swamp Nature Reserve	213.77	2	Adequate	4	Yes	60					
Not assessed												
-	Appletree Aboriginal Area	3.58	1	Poor	1	No	6	Y	Y			
-	Finchley Aboriginal Area	5.43	1	Poor	5	No	26		Y			
-	Mount Ku-ring-gai Aboriginal Area	0.56	1	Poor	1	No	6					
Currently being completed												
-	Bamarang Nature Reserve	373.18	2	Moderate	3	No	28			Y		
-	Royal National Park	15342.47	4	Adequate	2	No	31			Y		

Sort Order	Reserve Name	Area (ha)	Reserve Size	Systematic Survey Effort Vegetation	Remote Sensing Score	Existing Report	VSMR score	In HCR CMA[1]?	In GBM WHA[2]?	PoM due in next 5 years?	Other use reserve?	Flag[4]
-	Heathcote National Park	2731.88	3	Adequate	2	No	31					
-	Triplarina Nature Reserve	138.41	2	Adequate	3	No	41			Y		
-	Wogamia Nature Reserve	276.67	2	Adequate	3	No	41			Y		
-	Worrigee Nature Reserve	230.84	2	Adequate	3	No	41			Y		
-	Parma Creek Nature Reserve	3618.03	3	Adequate	3	No	41					
-	Dalrymple-Hay Nature Reserve	11.15	1	Moderate	5	No	43					
Assessed as Adequate												
-	Belford National Park	288.42	2	Adequate	5	Yes	70	Y				
-	Murrurundi Pass CCA Zone 1 National Park	214.90	2	Adequate	5	Yes	70	Y		Y		
-	Blue Mountains National Park (Hawkesbury Glenbrook)	24548.49	4	Adequate	5	SpecArea	80		Y	Y		
-	Blue Mountains National Park (Kanangra East)	88947.28	5	Adequate	5	SpecArea	80		Y	Y		
-	Blue Mountains National Park (Upper Mountains Sth)	45183.24	5	Adequate	5	SpecArea	80		Y	Y		
	Kanangra-Boyd National Park (Kanangra area 1-east)	39179.33	5	Adequate	5	SpecArea	80		Y	Y		
-	Garigal National Park	2256.94	3	Adequate	5	Yes	70					
-	Lane Cove National Park	630.04	2	Adequate	5	Yes	70			Y		
-	Nattai National Park	49455.10	4	Adequate	5	DP	80		Y	Y		
-	Nattai State Conservation Area	3266.09	3	Adequate	5	DP	80			Y		
-	Parr State Conservation Area	35734.56	4	Adequate	5	DP	80					
-	Sydney Harbour National Park	389.38	2	Adequate	5	Yes	70			Y		
-	Thirlmere Lakes National Park	662.00	2	Adequate	5	SpecArea	80		Y	Y		
-	Turon National Park	3103.02	3	Adequate	5	Yes	70			Y		
-	Werakata National Park	3336.14	3	Adequate	5	Yes	70	Y		Y		
-	Werakata State Conservation Area	2261.20	3	Adequate	5	Yes	70	Y		Y		
-	Wollemi National Park (Hawkesbury)	79728.34	5	Adequate	5	DP	80	Y	Y	Y		
-	Wollemi National Park (Mudgee area 2)	78685.92	5	Adequate	5	DP	80	Y	Y	Y		
-	Wombeyan Karst Conservation Reserve (remainder area)	22.89	2	Adequate	5	SpecArea	80			Y		
-	Yengo National Park (Hunter Range)	46786.55	4	Adequate	5	DP	80	Y	Y			
-	Yengo National Park (Yango)	120786.60	5	Adequate	5	DP	80	Y	Y			

[1] Hunter Central Rivers Catchment Management Area

[2] Greater Blue Mountains World Heritage Area

[3]Other use reserves as defined on page 64, where H = historic, R = recreation, C = cultural, S = specialised habitat, and HM = highly modified

[4] Flag: Reserves were flagged (with a U) where they are listed as a high priority, but we know that the reserve has had survey effort carried out, but the data was either not collected using standard systematic methods, or is not held in the corporate database

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