Hawkesbury City Council

Attachment 2 to item 232

Submission received during public exhibition of the Draft Hawkesbury Local Strategic Planning Statement 2040 (Submission 30 - 42)

date of meeting: 10 December 2019
location: council chambers
time: 6:30 p.m.

Andrew Kearns

From: [redacted]
Sent: Tuesday, 12 November 2019 3:45 PM
To: Hawkesbury City Council
Subject: Attention: Manager, Strategic Planning: Feedback on the Draft LSPS 2040
Attachments: Hawkesbury City Council draft LSPS submission.docx; 2018 09 20 Att 3 - CCNSW Guidelines to Shade.pdf; 2019 07 16 LSPS shade example text FINAL.pdf; 2019 07 16 Two pager on shade FINAL.pdf

To whom it may concern,

Re: Feedback on the Draft LSPS 2040

Thank you for the opportunity to provide feedback on the Hawkesbury City Council Draft LSPS 2040. Please find attached a submission from Cancer Council NSW.

Kind regards,

[redacted]

WEB | FAN | TWEET | TUBE | HELPLINE

Please note my work days are currently Monday – Wednesday and Fridays

Cancer Council

12 November 2019

Manager, Strategic Planning
Hawkesbury City Council
PO Box 146
Windsor NSW 2756

Dear Hawkesbury City Council,

Re: Feedback on the Draft Local Strategic Planning Statement 2040 (LSPS)

Thank you for the opportunity to provide feedback on Hawkesbury City Council Draft LSPS.

Cancer Council NSW is committed to reducing the impact of cancer on individuals and the community, and to lessening the burden for people affected by cancer. We are community funded and community focused. We believe health is central to urban planning in order to create environments that promote cancer-smart behaviours and reduce exposure to known cancer risks such as solar ultraviolet (UV) radiation.

Cancer Council NSW is a key partner in the implementation of the *NSW Skin Cancer Prevention Strategy* (2017) which defines a comprehensive approach to reducing overexposure to (UV) and ultimately the incidence of skin cancer in NSW. The Strategy is a multidisciplinary initiative lead by Cancer Institute NSW which is an agency of NSW Health.

As part of the delivery of the Strategy, the Shade Working Group is committed to increasing shade across NSW for skin cancer prevention by influencing the planning system and advocating for shade in the local community. Member organisations of the Shade Working Group include: Cancer Institute NSW, Cancer Council NSW, University of New South Wales City Future Research Centre, and a strategic and social impact planner consultant. This submission is being provided by Cancer Council NSW, which also is Chair of the *NSW Skin Cancer Prevention Strategy Shade Working Group.*

Skin cancer in Australia

Australia has the highest levels of UV radiation and the highest incidence rates of skin cancer worldwide, where two out of every three people are likely to be diagnosed with skin cancer by the age of 70. UV radiation causes 95% of melanomas and 99% of non-melanoma skin cancers in Australia. This means skin cancer is highly preventable.

In comparison to another important preventable social issue, nearly twice as many people die from melanoma than they do on our roads in NSW. 354 people died on our roads in 2018; while 624 people died of skin cancer in 2016[1]. We wear a seatbelt every time we get in the car, and we should think about UV radiation in the same way.

Cancer Council NSW
ABN 51 116 463 846

153 Dowling Street
Woolloomooloo NSW 2011
PO Box 572 Kings Cross NSW 1340

T: 02 9334 1900
F: 02 8302 3570
E: feedback@nswcc.org.au

Cancer Council
Information and Support
13 11 20 • cancercouncil.com.au

Byron Bay • Charlestown • Coffs Harbour • Erina Fair • Orange • Parramatta • Singleton • Tamworth • Wagga Wagga • Wollongong • Woolloomooloo

CAN205 03/18

Hawkesbury City Council can play an important role in reducing the risk of skin cancer of its residents through planning and designing shade. Good quality shade can reduce UV exposure by up to 75 per cent. Further information including the co-benefits of shade, and the *Cancer Council NSW Guidelines to Shade* are attached. They are also accessible via Cancer Council NSW's website, along with example case studies of well designed shade.

Response to the Draft LSPS

Cancer Council NSW would like to commend Hawkesbury City Council for its commitment to tree planting in public open spaces and planting shade to pedestrian routes as part of local planning priority 12 in the Draft LSPS. We have suggestions to ensure the value of shade for UV radiation protection and other co-benefits are fully recognised in the 20 year vision for the LGA.

Attached to this letter is example text developed to include in your LSPS which supports shade as a planning priority for the LGA. We recommend that Hawkesbury City Council look to include all or part of this text under Planning Priority 12 from the Draft LSPS. This text an also be accessed via Cancer Council NSW's website.

Thank you again for the opportunity to provide comment on your Draft LSPS. If you would like any further support, please feel free to contact me via [redacted]

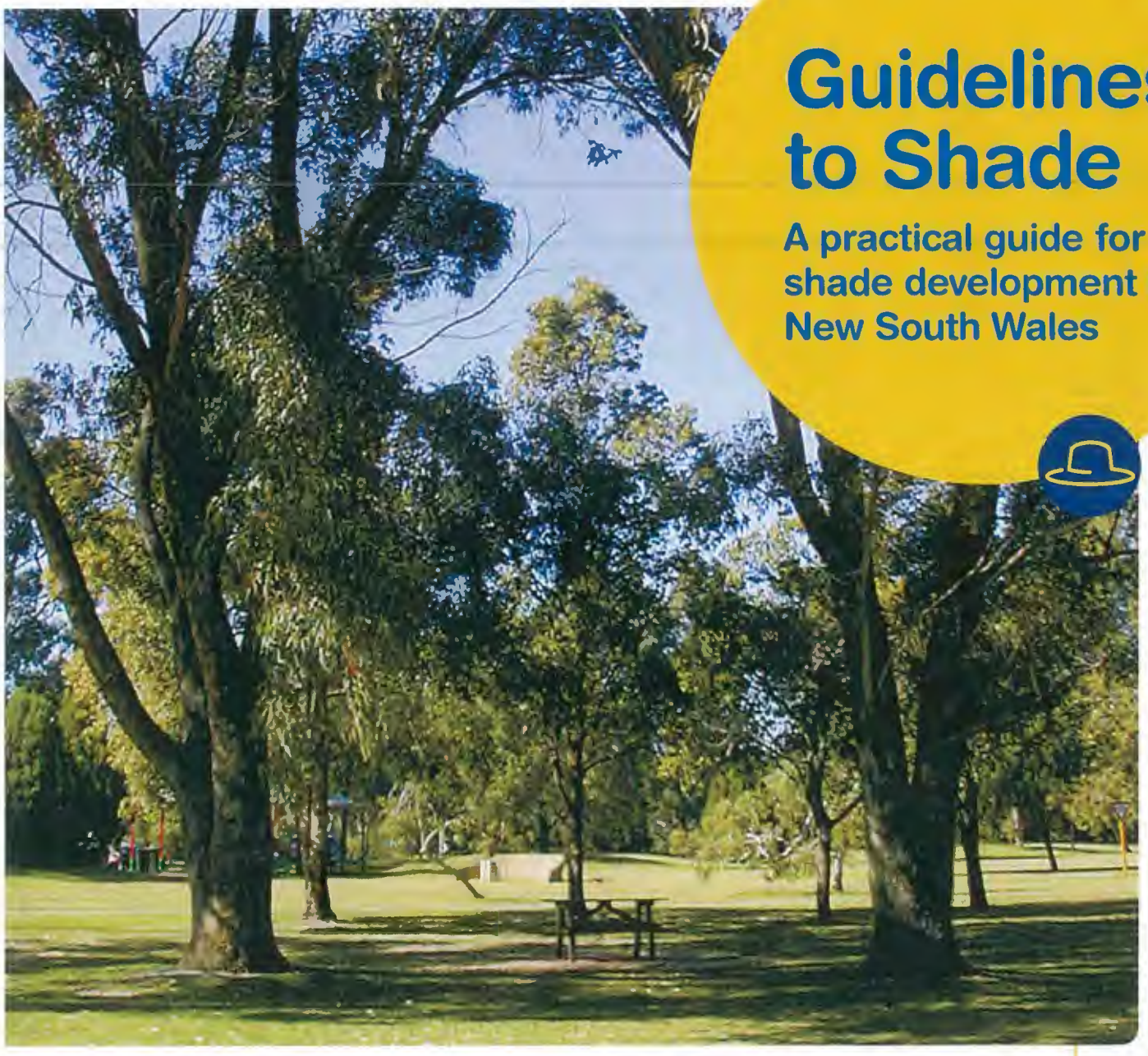
Yours sincerely,

[redacted]

Chair, NSW Skin Cancer Prevention Strategy Shade Working Group
Skin Cancer Prevention Manager
Cancer Council NSW

[1] Cancer incidence and mortality projections 2011 to 2021. Cancer Institute NSW, Sydney, May 2011. Centre for Road Safety, Transport for NSW https://roadsafety.transport.nsw.gov.au/downloads/road-toll-progress-2018.pdf

Cancer Council NSW



Guidelines to Shade

A practical guide for shade development in New South Wales

SunSmart

Acknowledgements

These guidelines including illustrations and photographs not otherwise acknowledged have been adapted from:

- Cancer Council Western Australia. 2012, *The Shade Handbook: A practical guide for shade development in Western Australia.*
- *Shade for Everyone: A practical guide for shade development.* Carlton: Cancer Council Victoria; 2004.
- Greenwood JS, Soulos GP, Thomas ND. *Under Cover: Guidelines for shade planning and design.* Sydney: Cancer Council NSW and NSW Health Department; 1998.

Illustrations (designed by Ography) on the following pages are featured courtesy of Cancer Council Victoria: 5, 9, 10

Photographs on the following pages are featured courtesy of Queensland Health: 13, 16

The photograph on page 17 is featured courtesy of Blue Gum Montessori School

Guidelines to Shade
Cancer Council NSW 2013

Website: cancercouncil.com.au/sunsmart

Cancer Council Helpline 13 11 20

Suggested citation: Cancer Council NSW. 2013, *Guidelines to Shade*, Cancer Council NSW, Sydney.

Contents

About these guidelines

These guidelines can be used by individuals, organisations and local governments wanting to increase availability of quality shade in a range of settings, such as playgrounds, pools, sporting venues, beaches, parks, schools, childcare centres and backyards.

These guidelines will help you to:

- Understand the issues associated with the sun's ultraviolet (UV) radiation
- Understand the issues associated with shade
- Identify your shade needs
- Understand how to conduct a shade audit
- Plan, implement and evaluate a shade project.

Why is shade important?

Australia has the highest rate of skin cancer in the world. At least 2 in 3 people who have grown up in Australia will be diagnosed with skin cancer (Staples et al 2006). Each year more than 2000 Australians die from skin cancer (ABS 2013). In NSW, almost 3,600 people are diagnosed with melanoma the most dangerous form of skin cancer and more than 480 people die from the disease every year (Tracey et al 2010). The Australian health system spends more money on the diagnosis and treatment of skin cancer than on any other cancer, estimated at over $500 million each year on non-melanoma skin cancer alone. (Fransen et al 2012)

The major cause of skin cancer is exposure to UV radiation from the sun. With good protection against UV radiation, most cases of skin cancer can be prevented.

Shade is one of the best and easiest ways to protect against UV radiation. Good-quality shade can reduce UV exposure by up to 75% (Parsons et al 1998). When used in conjunction with other protective measures, such as sun-protective clothing, hats, sunglasses and sunscreen, shade is the best way to provide maximum protection against UV radiation.

The provision of shade is also an important component in the design and creation of safe and healthy communities (National Heart Foundation of Australia).

How to use these guidelines

The guidelines provide general information to help you undertake a shade project. There are two parts to the guidelines. Part 1 contains background information about a range of issues relating to UV radiation and the principles of effective shade. Part 2 provides more detailed information to help you plan, implement and evaluate a specific shade project. Contact details for where to find more information and resources are provided at the end of these guidelines.

Part 1: Understanding sun and shade

The sun's ultraviolet (UV) radiation and path

What is UV radiation?

The sun emits many different types of radiation. As well as visible light (sunlight) and infrared radiation, which we feel as heat, the sun gives out ultraviolet (UV) radiation. Unlike sunlight and infrared radiation, UV radiation can't be seen or felt.

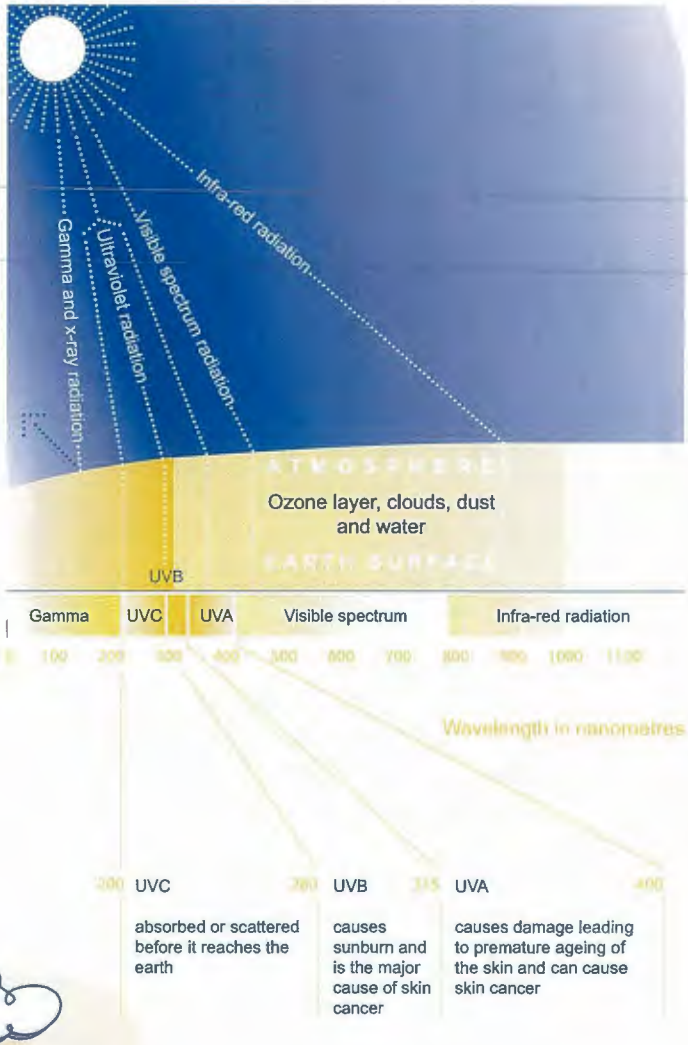
The outdoor temperature does not affect UV radiation levels, which can be high enough to cause damage to skin even on cool or cloudy days.

There are three types of UV radiation:

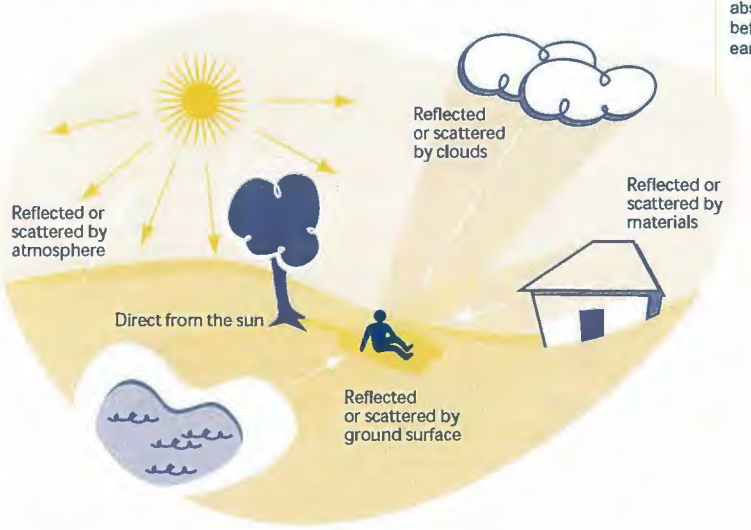
- UVA: transmits freely through the earth's atmosphere.
- UVB: about 15% of UVB transmits through to the earth's atmosphere. The rest is absorbed by ozone.
- UVC: is absorbed by ozone and does not reach the earth's surface.

UVA and UVB both contribute to sunburn, skin ageing, eye damage and skin cancer.

The sun and ultraviolet radiation



Direct and indirect sources of UV radiation



Source: Cancer Council Victoria. Shade for everyone: A practical guide for shade development, 2004.

Direct and indirect UV radiation

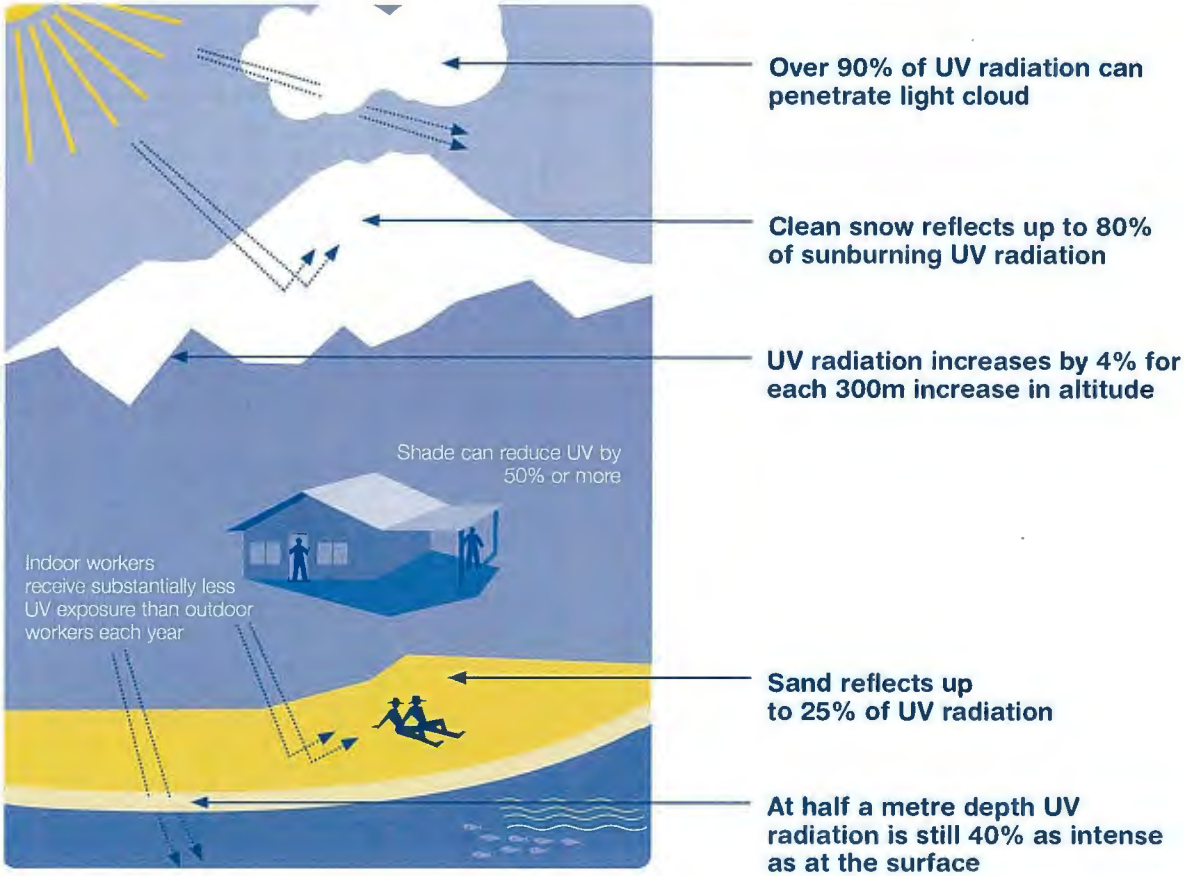
UV radiation can reach you directly, from the sun, or indirectly: scattered by clouds or particles in the atmosphere, or reflected from surfaces such as water.

Although indirect UV radiation is generally weaker than direct UV radiation, it can still damage skin and eyes. A mixture of direct and indirect UV radiation will generally result in a higher level of exposure than direct UV radiation alone.

What affects UV radiation levels?

A number of factors affect UV radiation levels during the day and throughout the year. It is important to understand and consider these when planning a shade project.

Factors affecting UV radiation levels



(Source: World Health Organization 2002)

Height of the sun above the earth

The main factor that affects UV radiation levels is the position of the sun in the sky. UV radiation is most intense when the sun is directly overhead and UV radiation has the shortest pathway through the atmosphere to earth. When the sun is lower in the sky, the radiation pathway through the atmosphere is much longer, so more UV radiation is absorbed.

Time of day

The amount of UV radiation varies throughout the day. On a cloud-free day, the maximum UV radiation level occurs at solar noon, between 12 noon and 1pm, when the sun is directly overhead.

Time of year

Generally, UV radiation levels are higher during summer, when the sun is higher in the sky, than in the winter, when the sun is lower.

The ratio of direct and indirect UV radiation varies throughout the day and through the year. There is more direct UV radiation when the sun is high in the sky, such as at noon. There is more indirect UV radiation when the sun is low in the sky, such as during the morning and evening; or during winter months, compared with summer.

Scattered UV radiation

When UV radiation passes through the earth's atmosphere, some of it will collide with molecules and particles in the air, and UV radiation is bounced around and scattered. This means that even if you are in the shade, you may still be exposed to scattered (indirect) UV radiation.

Reflected UV radiation

Some surfaces, such as water, concrete, snow and sand, reflect large amounts of UV radiation. This means that indirect UV radiation may still reach you even if you are in the shade or wearing a hat.

The following table shows the estimated level of reflected UV radiation from a range of common materials.

Table 1: Estimated reflected UV radiation from different surfaces

Material	Percentage of reflected UV radiation
Lawn, grass	2–5%
Grasslands	1–2%
Soil, clay	4–6%
Asphalt road	4–9%
House paint, white	22%
Boat deck (wood or fibreglass)	7–9%
Open water	3%
Open ocean	8%
Sea surf, white foam	25–30%
Beach sand, wet	7%
Beach sand, dry	15–18%
Snow	50–88%
Concrete	8–12%

Source: Adapted from Sliney, 1986

Geographical location

There is more UV radiation in sunlight in the north than in the south of NSW. In regions close to the equator, the sun is higher in the sky and the sun's rays have a more direct pathway to earth (straight down, not angled and pass through less of the atmosphere that acts to absorb UV radiation.

Cloud cover

Cloud cover can affect UV levels, depending on the density and type of cloud pattern present. On lightly overcast days, UV radiation levels can be similar to that of a cloud-free day – and high enough to cause sunburn. Thick cloud can reduce UV radiation; however, when cloud is scattered, UV levels rise and fall as clouds pass in front of the sun.

Ozone layer

Ozone is a gas that occurs naturally in the earth's upper atmosphere and absorbs some UV radiation. Ozone levels vary over the year and even across the day. While ozone depletion and related increases in levels of UV radiation are a major environmental issue, other factors, such as sun height and changes in cloud cover, may have more influence locally on the levels of UV radiation reaching the ground.

Altitude

UV increases by 4% for each 300 metre increase in altitude. UV radiation is stronger at higher altitudes because there is less atmosphere for the UV radiation to pass through before it reaches the ground, so less UV radiation is absorbed or scattered.

There is no such thing as 'windburn'. It is actually sunburn. The wind may dry the skin but does not burn it.

Temperature is not an indicator of UV radiation levels. The temperature does not affect the amount of UV radiation reaching the ground. Therefore it is possible to get burnt on a cool and cloudy day.

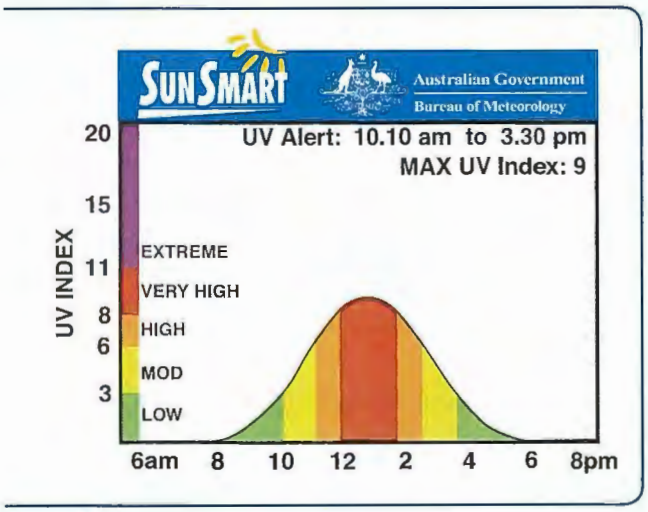
What is the UV Index?

The UV Index indicates the level of UV radiation that reaches the earth's surface on any given day. The UV Index divides UV radiation levels into: low (1-2), moderate (3-5), high (6-7), very high (8-10) and extreme (11 and above).

The **SunSmart UV Alert** is a useful tool that identifies:

- The hours of each day when the UV Index will be 3 or above - that is high enough to cause permanent damage to most skin types.
- The maximum UV forecast for the day.

How to read the SunSmart UV Alert
In the example below the SunSmart UV Alert sun protection times are from 10:10am to 3.30pm. This means that between these times UV levels will be 3 and above - strong enough to cause permanent damage to most skin types - and sun protection should be used.



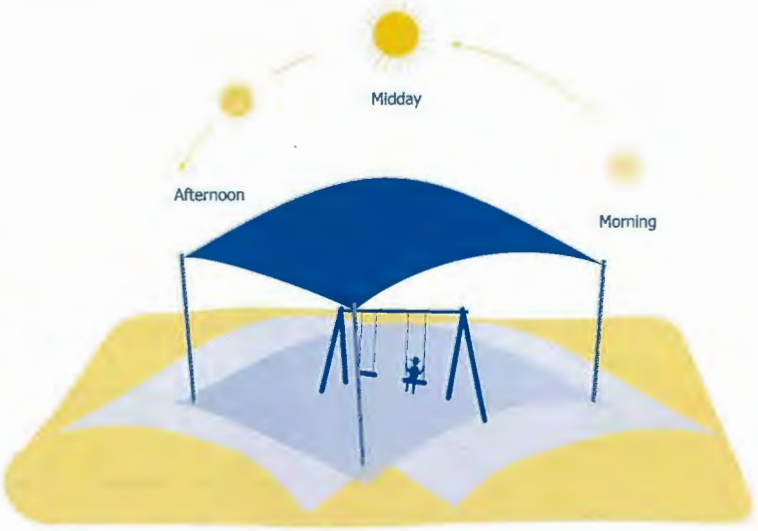
You can check UV levels in your local area with the **SunSmart UV Alert**. Look in the weather section of the newspaper or online at **www.cancercouncil.com.au**

The path of the sun and its effect on shade

It is important to understand the sun's path in order to predict where a tree or shade structure will cast its shadow. The sun moves continuously across the sky during the day, from rising in the east to setting in the west. There are three basic shade patterns every day:

- **Morning** – the shadow falls in a westerly direction away from the object casting the shadow.
- **Midday** – the shadow will be under the object casting the shadow.
- **Afternoon** – the shadow falls in an easterly direction away from the object casting the shadow.

Three daily shade patterns



The height of the sun relative to the horizon also alters with the seasons; thus in summer in the Southern Hemisphere, the sun is more directly overhead, and in winter the sun is lower in the sky.

This constant movement of the sun makes it difficult to predict where the shade cast by a shade structure, tree or other object, such as a wall, will fall. For this reason, a lot of shade is incorrectly located and poorly designed, resulting in built or natural shade that does not shade an area where it is needed most.

To ensure that your shade falls in the right place at the right time, you may decide to:

- Seek professional advice
- Use specialised software
- Conduct a shade audit.

If using a shade designer or supplier, check that they are aware of the time of day you need the shade and where you need the shade to fall.

Planning, implementing and evaluating your shade project

Planning your shade project

Once you have completed the shade audit, you will have a comprehensive picture of the needs of the site. The next step is to plan, implement and evaluate your shade project.

Effective planning is essential to the success of any shade project. While the degree of planning depends on the size and setting of your shade project, the following points outline general issues you should consider including some of the steps outlined in preceding sections:

- Form a project team to develop the project. If possible, include people with skills in areas such as architecture, engineering, horticulture and landscape architecture, and people interested in the project or affected by it.
- Read and work through preceding sections of this resource to increase your understanding of sun and shade issues as well as the characteristics of your site. Prioritise your sites needing shade and consider the specific needs of each of the selected sites.
- Draw up a detailed site plan to identify features of the site. Identify the location of the shade project and of any underground services in the vicinity, the emergency or access routes that must be maintained and any constraints on site use such as ground conditions or future plans for the site.
- Decide on the shade options for your selected site or sites.
- Estimate the costs of design and implementation. If applicable, explore sources of funding.
- Identify what permits, approvals and documentation will be required. It is important to consult the building and planning departments of your local council to ensure you comply with regulations and requirements. The regulations may vary depending on the council, the setting and type of construction. You may also need a permit to prune trees and other vegetation.
- Determine any external constraints such as heritage issues, environmental impact considerations and local community reaction.
- Develop a timetable for the shade project. Identify any time constraints, such as difficulty accessing a school site during a school term.

Preparing a design brief

You will need to draw up a detailed design brief to assist in applying for funding, tendering or constructing your shade project. The design brief should include:

- The overall site plan.
- Shade needs:
  - The Critical Protection Time
  - Where and when you would like the shade to fall
  - Preferred type of shade – for example, built or natural, permanent or demountable
  - The need for shelter from the wind or rain
  - The nature of activities – for example, children at play or vehicle movements
  - Climate of the area
  - Likely security or vandalism issues
  - Maintenance needs
  - Anticipated shade lifespan.
- Money and labour requirements:
  - Project budget
  - How the project will be overseen and monitored
  - Additional costs, such as insurance, liability and approval permits.
- Timeframe for completing the project.

Implementing your shade project

Selecting a company to implement a shade project

If you decide to engage a company to do all or part of your shade project, it is important to communicate your shade needs, project goals and budget, so that the company can deliver shade that is appropriate for your setting and requirements. The cost of engaging experts such as landscape architects and shade manufacturers needs to be included within your project budget.

When choosing the company to implement your project, consider the following questions:

- Does the company specialise in shade structures?
- In the case of built shade, is the company qualified to undertake shade structure construction work, such as building a sail-type structure? Check that the prospective contractors are Registered Building Practitioners in the field of tensioned structures. A 'Commercial – Unlimited' registration would also be acceptable.
- Can the company provide a list of previous projects and clients who can act as referees?
- Does the company's submission include certification by a structural engineer, the acquisition of permits and approvals, and outline relevant standards?
- What insurance (for example, public liability) is provided?
- Do you receive product warranties upon completion?
- What ongoing services (for example, safety checks, maintenance and cleaning) are offered, and what fees are involved?

Managing your shade project

Where more than one company or supplier has been contracted to provide services for a project, careful coordination and management are needed to ensure your project goals are met. When shade is one part of an overall venue construction or upgrade, budgets can be spent before the cost of shade construction or landscaping is included.

Keep a written record of the progress of the project. This will help if the management of the project needs to be handed over to someone else, and is also useful for evaluating the project.

Evaluating your shade project

After your shade project is completed, it is a good idea to evaluate how well it meets the shade requirements of the site and its users. Evaluation will help in planning future shade projects, and can be done using the same approach used when you identified your shade needs. Useful questions to consider include:

- Was the shade installed according to the plan?
- Does the shade meet the design requirements?
- Do people use the shade?
- Were there any unexpected costs?

References

Staples MP, Elwood M, Burton RC, Williams JL, Marks R, Giles GG. Non-melanoma skin cancer in Australia: the 2002 national survey and trends since 1985. *Medical Journal of Australia* 2006; 184(1): 6-10.

Australian Bureau of Statistics (ABS). Causes of death 2011. 3303.0. Commonwealth of Australia:Canberra, Australia 2013. Available from: www.abs.gov.au.

Tracey E et al. *Cancer in NSW: Incidence and Mortality Report* 2008. Sydney, NSW: Cancer Institute NSW; 2010.

Fransen, M., Kahalios, E., English, D., Giles, G., Sinclair, R. 2012, 'Non-melanoma skin cancer in Australia', *Medical Journal of Australia*, vol 197, no.10, pp 565- 568.

Parsons, P., Neale, R., Wolski, P. & Green, A. 1998, 'The shady side of solar protection', *Medical Journal of Australia*, vol. 168, pp. 327-330.

National Heart Foundation of Australia (Victorian Division). 2004, *Healthy by design: A planner's guide to environments for active living*, National Heart Foundation of Australia (Victorian Division), Melbourne.

Sliney, D.H. 1986, 'Physical factors in cataractogenesis: Ambient ultraviolet radiation and temperature', *Investigative Ophthalmology and Visual Science*, vol. 27, no. 5, pp 781-790.

Cancer Council Victoria. 2004, *Shade for everyone: A practical guide for shade development*, Cancer Council Victoria, Melbourne.

Standards Australia. 1996, *Sun protective clothing - Evaluation and classification*, AS/NZS 4399:1996.

For more information

Cancer Council New South Wales
153 Dowling Street
Woolloomooloo NSW 2011

Phone: (02) 9334 1900
www.cancercouncil.com.au

Cancer Council Helpline 13 11 20

Contact details for local government

Local Government NSW
Level 8, 28 Margaret Street
Sydney NSW 2000
GPO Box 7003
Sydney NSW 2001

Phone: (02) 9242 4000
Fax: (02) 9242 4111
Email: lgnsw@-
www.lgnsw.org.au

Department of Local Government Head Office
5 O'Keefe Avenue
Locked Bag 3015
Nowra NSW 2541

Phone (02) 4428 4100
Fax: (02) 4428 4199
Email: dlg@dlg.nsw.gov.au
www.dlg.nsw.gov.au

UTS Centre for Local Government
University of Technology, Sydney
Level 8 Building 10
235 Jones Street
Ultimo NSW 2007
PO Box 123
Broadway NSW 2007

Phone: (02) 9514 1659
Fax: (02) 9514 2274
Email: www.clg@uts.edu.au
www.clg.uts.edu.au

Advice on planning, designing and implementing your shade project

Australian Institute of Landscape Architects (NSW Group)
PO Box 655
Lane Cove NSW 2066

Phone: (02) 9427 4669
Fax: (02) 9427 7419
Email: nsw@aila.org.au
www.aila.org.au/nsw

Planning Institute Australia (NSW Division)
Suite 3, Level 11
221 Miller Street
PO Box 484
North Sydney NSW 2060

Phone: (02) 8904 1011
Fax: (02) 8904 1133
Email: nswmanager@planning.org.au
www.planning.org.au/nsw

The Royal Australian Institute of Architects (NSW Chapter)
'Tusculum'
3 Manning Street
Potts Point NSW 2011

Phone: (02) 9246 4055
Fax: (02) 9246 4030
Email: nsw@architecture.com.au
www.architecture.com.au/nsw

WebShade (shade audit software company)
Suite 1, 340 Darling St
Balmain NSW 2041

Phone: (02) 9818 2177
Fax: (02) 9818 3461
Email: j.greenwood@webshade.com.au
www.webshade.com.au

Your local council may also be able to help you develop your shade project.

Natural shade issues and horticultural/vegetation advice

Greening Australia (NSW)
142 Addison Road
Marrickville NSW 2204

Phone: (02) 9560 9144
Fax: (02) 9550 0576

100 Melbourne Street
Oxley Park NSW

Phone: (02) 9673 5220
Fax: (02) 9833 2550
Email: nswreception@greeningaustralia.org.au
www.greeningaustralia.org.au

Your local council parks department or a nursery may also be able to help with vegetation issues and plant selection.

Grant directories and assistance

GrantsLINK – Australian Government
PO Box 803
Canberra ACT 2601

Phone: Free call 1800 026 222
www.grants.myregion.gov.au

Your local council community services section may also be able to advise about potential sources of funding.

Australian standards relating to UV protection and play equipment

Standards Australia
Level 10, The Exchange Centre
20 Bridge Street, Sydney

Phone: Free call 1800 035 822
www.standards.com.au

Relevant standards include:

- AS/NZS 4399:1996 Sun-protective clothing – evaluation and classification
- AS 4174-1994 Synthetic shadecloth
- AS/NZS 2604:2012 Sunscreen products – evaluation and classification
- AS/NZS 1067:2003 Sunglasses and fashion spectacles
- AS/NZS 1337:1992 Eye protectors for industrial applications
- AS/NZS 4422:1996 Playground surfacing - specifications, requirements and test method
- AS/NZS 4486.1:1997 Playgrounds and playground equipment – development, installation, inspection, maintenance and operation.

Cancer Council Helpline 13 11 20

For further information on skin cancer prevention and sun protection please visit:

cancercouncil.com.au/sunsmart

CAN434 06/13

Shade provision:
Suggested text for inclusion in Local Strategic Planning Statements*

INTRODUCTION

The text below is example text that could be used by NSW councils in the preparation of their Local Strategic Planning Statements (LSPSs), required to be produced by each council under the Environmental Planning & Assessment Act.[1]

The text specifically relates to the provision of well-designed shade, from the perspective of the NSW Skin Cancer Prevention Shade Working Group, under the NSW Skin Cancer Prevention Strategy.[2]

The text will need to be considered in context with the remainder of the LSPS, particularly its structure, and its inclusion of other items relating to healthy built environments.

The text is designed to be placed under the following headings within the LSPS – headings as provided by the NSW Department of Planning's Example LSPS, February 2019:[3]

- Theme
- Planning Priority
- Rationale
- Council will
- Actions

Example text is provided in *italics* below.

EXAMPLE TEXT

Theme

Note that the NSW Department of Planning's Example LSPS, February 2019 does not contain an explicit theme relating directly to the design of healthy built environments. The themes provided in the Example LSPS are only suggestions for councils, and the themes most relevant to healthy built environments in that document are 'Thriving Places to Live and Grow' and 'A Sustainable Environment'.

It is suggested that an alternate theme could be:
'Providing Healthy Places to Live, Work and Visit'.

Planning priority

A suggested planning priority that could be placed under one of the above themes is: *'Design and provide places and spaces that are healthy to live in, to work in and to visit'.*

This generic planning priority should then incorporate other aspects of the healthy built environment, as explained in the following 'rationale' section.

Rationale

There may be many items included in this section that relate generally to healthy built environments. The following 'rationale' text relates specifically to the provision of shade, written from the perspective of providing well-designed shade for protection from ultraviolet radiation (UV).

*** Shade provision: suggested text for inclusion in Local Strategic Planning Statements**
Prepared by Jan Fallding, Registered Planner, June 2019, on behalf of the NSW Skin Cancer Prevention Strategy Shade Working Group, operating within the auspices of the NSW Skin Cancer Prevention Strategy,[2] led by Cancer Institute NSW.

Why is shade important?

Australia has the highest rate of melanoma in the world.[4] Skin cancer is the most common cancer in Australia, with 2 in 3 people diagnosed in their lifetime.[5] UV causes 95% of melanomas and 99% of non-melanoma skin cancers,[6] making it a highly preventable cancer.

The incidence rate of melanoma in the [insert name] *LGA is* [insert age-standardised incidence rate] *per 100,000. The NSW average melanoma incidence rate is 51.0 per 100,000.[7]* Go to Cancer Institute NSW Statistics Portal to find melanoma age-standardised incidence rates by LGA.

Well-designed and correctly positioned shade, both natural and built, can reduce UV exposure by up to 75%.[8]

Shade offers a number of benefits for people and the environment and has an increasingly important role to play in mitigating the effects of climate change and reducing heat in urban areas.

The co-benefits of well-designed shade and green spaces include:

Health benefits:[9, 10]

- *Reduced UV exposure and the prevention of skin cancer.*
- *Improved thermal comfort in times of heat. Evidence shows that trees can reduce temperatures by 8°C.*
- *Enhanced childhood development.*
- *Increased recreation and physical activity, and a reduction in obesity and risk of chronic disease.*
- *Faster healing times and pain tolerance for hospital patients in a room with a view of trees.*
- *Improvements in mental health and wellbeing, including stress reduction and relaxation, greater happiness, lower rates of anger and depression and improved mental function and concentration.*
- *Noise reduction.*

Environmental benefits:[9, 10]

- *Reduced build-up of heat in urban areas and consequent 'heat island' effects.*
- *Reduced air pollution.*
- *Reduced water evaporation, soil erosion, and storm water run-off.*
- *Reduced atmospheric carbon.*
- *Increased animal habitat and maintenance of biodiversity.*

Social and economic benefits:[9, 10]

- *Increased social connectivity and sense of community by providing pleasant and aesthetically pleasing places for people to meet, socialise, exercise and rest.*
- *Reduced neighbourhood aggression, violence and crime.*
- *Street trees can help define or preserve the culture and history of a place.*
- *Improved thermal efficiency of buildings through shading and energy savings of up to 12-15%.*
- *Increased land and property values. Just one tree can increase the value of a property by approximately $5,000.*
- *Opportunity to reduce socioeconomic and health inequities, which have been shown to be smaller in green areas.*

It is likely that [insert name] *LGA will experience more frequent, longer and more extreme periods of uncomfortable summertime heat and heat wave events in the future. The provision of quality shade throughout the LGA will be one of the most cost-effective ways to address this situation in the long term, and has the co-benefit of protecting us from UV exposure.*

Natural and built shade can be easily included in planning processes for developments, particularly in urban areas. Well-designed shade, effectively planned and correctly positioned, can also alleviate concerns about needing to remove or modify trees to address engineering, wiring or maintenance issues.

What is well-designed shade?

Well-designed shade uses a combination of natural and built shade to provide protection from UV radiation where it is needed, at the right time of day and at the right time of year.

The latest Guidelines to Shade from Cancer Council NSW[11] is a practical tool to aid LGA's in the design of quality shade.

In a playground setting, the Everyone Can Play Guideline from the NSW Department of Planning and Environment[12] provides a set of design principals and best practice recommendations to develop inclusive playspaces which provide well-designed shade for the comfort and protection of children and carers.

Good design is NSW Government policy, as described in Better Placed from the Government Architect NSW[13], which outlines an integrated design policy for the built environment in NSW.

Council will

Suggested text for this section is:

1. *Consider the provision of well-designed shade, both natural and built, in the provision of all public infrastructure, from large developments such as major recreation facilities, public buildings and town centre upgrades, to the smallest public domain improvements such as bus shelters.*
2. *Encourage the provision of well-designed shade in all private developments, particularly recreation facilities and those that adjoin public places, such as commercial developments.*
3. *Consider the co-benefits of shade in all decisions about infrastructure provision and maintenance.*

Actions

Suggested text for this section is:

1. *Council's* [insert relevant name] *Development Control Plan will be reviewed to:*
   a) *incorporate design considerations regarding the provision of well-designed shade, with reference to the latest shade guidelines.[9];*
   b) *require well-designed shade in any private buildings or developments that adjoin public places that are likely to have significant visitation (e.g. high pedestrian traffic or people visiting or pausing in public spaces);*
   c) *require the provision of well-designed shade in recreation facilities;*
   d) *require the provision of well-designed shade in the design of any public infrastructure;*
   e) *require the consideration of the benefits of shade in any application to remove trees or vegetation currently providing significant shade and communicate to residents the benefits of shade; and*

f) *encourage the provision of well-chosen and well-placed street trees in residential or public domain developments.*

2. *Council's Engineering Design specifications* [insert relevant document name] *will be updated to include specifications for the provision of well-designed shade.*
3. *Council will prioritise well-designed shade in its provision of new and upgraded public infrastructure and spaces.*
4. *Council will consider retrofitting current public infrastructure and spaces to include well-designed shade.*

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OTHER RESOURCES

- https://www.sunsmart.com.au/communities/local-government - a range of resources to assist councils in providing well-designed shade. Based on Victorian examples, but can be easily adapted to NSW.
- https://www.cancer.nsw.gov.au/shade-and-uv - Shade case study examples by Cancer Institute NSW
- http://www.lowcarbonlivingcrc.com.au/sites/all/files/publications_file_attachments/rp2024_guide_to_urban_cooling_strategies_2017_web.pdf Osmond, P., and Sharifi, E., 2017: *Guide to Urban Cooling Strategies.* Low Carbon Living CRC.

CONTACT DETAILS / MORE INFORMATION

- NSW Shade Working Group email: CINSW-SkinCancerPrevention@health.nsw.gov.au
- Cancer Council NSW website: www.cancercouncil.com.au/cancer-prevention/sun-protection/
- Cancer Institute NSW website: www.cancer.nsw.gov.au/shade-and-uv

This information is based on available evidence at the time of review.
It can be copied for distribution.
Latest update: July 2019

For further information contact the NSW Shade Working Group via email CINSW-SkinCancerPrevention@health.nsw.gov.au or go to https://www.cancercouncil.com.au/cancer-prevention/sun-protection/shade-and-sun-protection/

Shade offers a number of benefits for people and the environment and has an increasingly important role to play in mitigating the effects of climate change and reducing heat in urban areas.

The co-benefits of well-designed shade and green spaces include:

Health benefits:[9, 10]

- Reduced UV exposure and the prevention of skin cancer.
- Improved thermal comfort in times of heat. Evidence shows that trees can reduce temperatures by 8°C.
- Enhanced childhood development.
- Increased recreation and physical activity, a reduction in obesity, and a reduced risk of chronic disease.
- Faster healing times and pain tolerance for hospital patients in a room with a view of trees.
- Improvements in mental health and wellbeing, including stress reduction and relaxation, greater happiness, lower rates of anger and depression and improved mental function and concentration.
- Noise reduction.

Environmental benefits:[9, 10]

- Reduced build-up of heat in urban areas and consequent 'heat island' effects.
- Reduced air pollution.
- Reduced water evaporation, soil erosion, and storm water run-off.
- Reduced atmospheric carbon.
- Increased animal habitat and maintenance of biodiversity.

Social and economic benefits:[9, 10]

- Increased social connectivity and sense of community by providing pleasant and aesthetically pleasing places for people to meet, socialise, exercise and rest.
- Reduced neighbourhood aggression, violence and crime.
- Street trees can help define or preserve the culture and history of a place.
- Improved thermal efficiency of buildings through shading and energy savings of up to 12-15%.
- Increased land and property values. Just one tree can increase the value of a property by approximately $5,000.
- Opportunity to reduce socioeconomic and health inequities, which have been shown to be smaller in green areas.

For further information contact the NSW Shade Working Group via email CINSW-SkinCancerPrevention@health.nsw.gov.au or go to https://www.cancercouncil.com.au/cancer-prevention/sun-protection/shade-and-sun-protection/

Shade: A planning and design priority that prevents skin cancer*

Why do we need to protect ourselves from Ultraviolet Radiation (UV)?

- Australia has the highest rate of melanoma in the world.[1]
- Skin cancer is the most common cancer in Australia; 2 in 3 people will be diagnosed.[2]
- UV is a hazard to our health,[3] causing 95% of melanomas and 99% of non-melanoma skin cancers in Australia.[4] This means skin cancer is highly preventable.
- Across NSW, UV levels are high enough to damage unprotected skin for at least 10 months of the year.[4] During the summer months, UV hits extreme levels, making UV protection even more important.
- To prevent skin cancer, the 5 forms of sun protection are recommended when UV levels are 3 or higher. *Slip* on a shirt, *Slop* on sunscreen *Slap* on a hat, *Seek* shade and *Slide* on sunglasses.
- To be able to *Seek* shade, we need to have access to natural and built shade in the public spaces where we live, work and play.

Natural and built shade for UV protection

Good-quality shade can reduce UV exposure by up to 75%.[5]

- Quality, effective and well-designed shade provides protection from direct UV from above as well as reflected UV. It creates an outdoor space that is comfortable to use all year round and provides protection from rain and wind.

The Cancer Council NSW *Guidelines to Shade*[6] promote both natural and built shade.

- **Natural shade** is one of the most effective and attractive ways of providing shade. Where possible, include vegetation in all shade projects. Trees with a canopy that is dense and close to the ground provide the best protection from direct UV. The larger the canopy, the greater protection from both direct and indirect UV.
- **Built shade** can be stand-alone, can be added onto existing buildings or built adjacent to natural shade. Advantages of built shade are that it provides a source of 'predictable' and more immediate shade all year round. Well-designed built shade uses materials which have a UV Protection Factor (UPF) of 20 or more.[7] Built shade has alternative uses, such as helping to collect rainwater for irrigation or to support solar powered devices. The Cancer Institute NSW shade case studies provide examples of well-designed built shade.[8]
- Combining natural and built shade, by positioning trees near built shade structures provides added UV protection.

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* This summary (V1, July 2019) was prepared by the NSW Skin Cancer Prevention Strategy Shade Working Group, within the auspices of the NSW Skin Cancer Prevention Strategy[11] led by Cancer Institute NSW. A key focus of the group is to reinforce the importance of good quality shade for public spaces and the role of well-planned shade in increasing public space use.

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Understanding your shade options

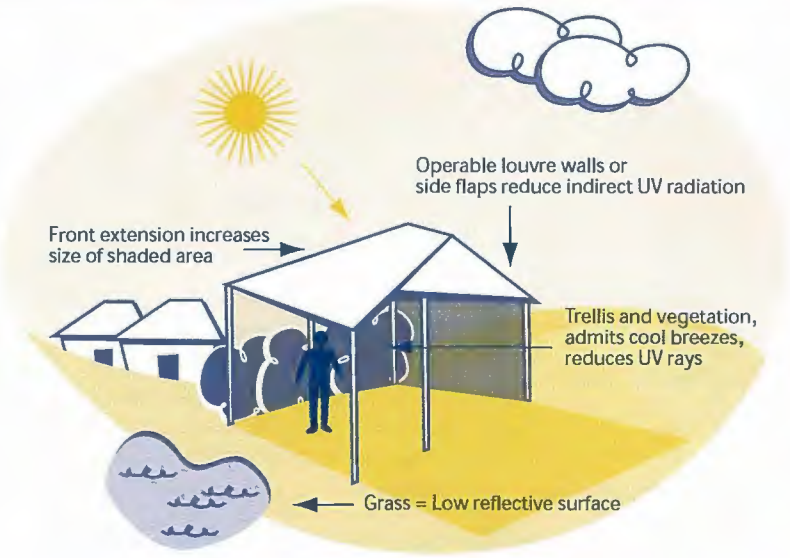
What is quality shade?

Well-designed and correctly positioned shade provides protection from UV radiation where it is needed, at the right time of day and at the right time of year.

Well-designed shade ensures that:

- The outdoor space is comfortable to use in all seasons
- A barrier protects users from direct and indirect sources of UV radiation
- The shade is attractive, practical and environmentally friendly.

Well-designed shade



Climate and comfort

It is important to consider the climate of a location in order to design effective shade.

Shade structures need to be comfortable and attractive in all seasons, so that people will want to use them all year round.

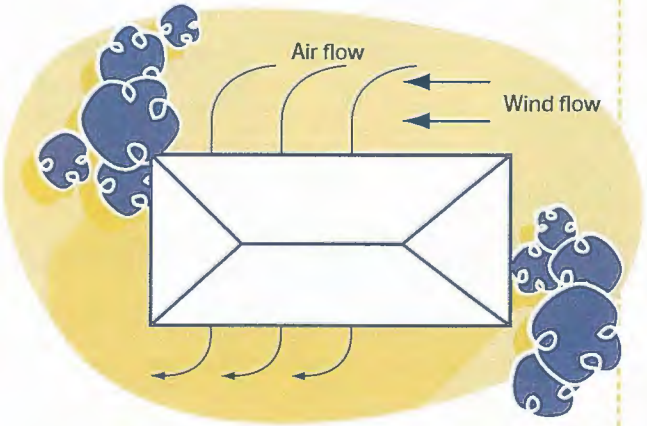
You need to consider four key elements when ensuring a shade structure is comfortable:

- Air temperature
- Humidity
- Air movement
- Heat radiated from the sun and surroundings.

You can then design the shade structure to best suit your climate. For example, if it is hot and sticky, provide shade to block out the sun and allow cross-ventilation to capture the breeze for cooling. If it is cold and windy, provide windbreaks to keep out the breeze and use north-facing openings to collect the warmth and light from the sun.

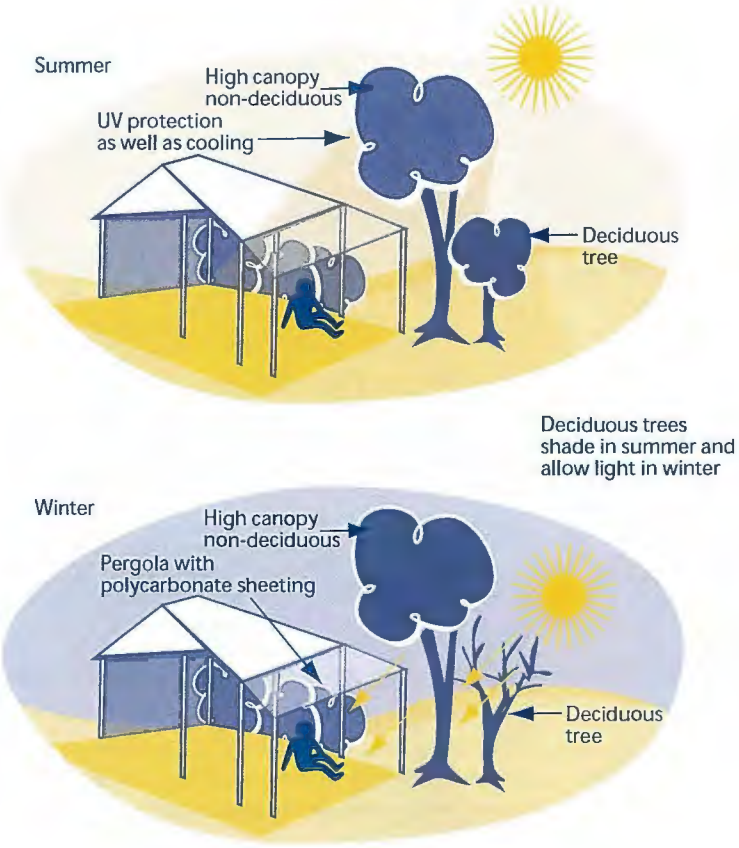
The following methods can be used to provide a cool place when it is hot:

- Design the shaded space to capture and channel breezes. For example, orientate openings towards incoming breezes.
- Provide shade to the openings of shade structures. For example, when putting up a marquee, place it so a nearby tree will shade the entrance.
- Add eaves to the design of built shade. This will cool the space immediately outside the shade structure, which will help the shaded area to be cooler.
- Prevent certain surfaces (such as sand or concrete) from heating up, as this can cause the air surrounding these surfaces to become hotter, which may make a nearby shade structure hotter too. Shade the surface, change it or select a surface that does not get too hot.



The following methods can be used to provide warmth and light when it is cooler:

- Plant deciduous trees and shrubs that lose their leaves in winter to let in the sun's warmth and light in cooler months but provide shade during warmer months.
- Plant windbreaks to stop cold winds.
- Provide shade that blocks out UV radiation but lets in warmth and light from the sun. For example, use see-through shade material.



Reducing direct and indirect UV radiation

The most common method of controlling direct UV radiation is to create a barrier (built or natural) that intercepts the sun's rays, creating shade. Extending overhead barriers past use areas reduces an area's exposure to both direct and indirect UV radiation. Important aspects to consider for such a barrier are as follows:

- **Ensure the shade structure is an adequate size**
  Larger shade structures have more area that is not affected by indirect UV radiation reflecting in from the sides.
- **Consider using barriers for side as well as overhead protection**
  Vertical screening with plants and trellises or opaque louvres can help to block indirect UV radiation, while still allowing breezes to flow through.
- **Extend overhead barriers past use areas**
  A simple rule of thumb is to make sure there is at least one metre of overhang past the actual area of use.
- **Avoid highly reflective surfaces**
  Where possible, choose surfaces that reflect minimal UV radiation. Generally, soft or rough surfaces such as brick pavers and grass reflect less UV radiation than hard or smooth surfaces such as concrete. Depending on the site, it may be possible to change an existing surface that reflects high levels of UV radiation. For example, in a playground, replace asphalt or concrete with rubber matting, which reflects less UV radiation and is also a soft-fall material. If the property next door has a large reflective wall facing your site, you will need to design a shade system that blocks the reflected UV radiation.
- **Consider the arrangement of existing structures**
  For example, if there are a large number of small umbrellas, group them together to form a single larger canopy for greater protection.

Built Shade

An overview of built shade

Built shade can be stand-alone, or it can be built onto existing buildings or structures. All built shade consists of two parts: the supporting structure that keeps the shade structure in place and holds it up, and the primary shading element – which is the material that makes up the canopy or roof of the shade device.

Built shade structures have the following advantages over natural shade:

- The shade they cast is more predictable.
- They can provide protection from the rain.
- Some types can be erected quickly.
- They have a range of alternative uses – for example, to collect rainwater for irrigation or to support a solar power device.

Some issues to consider in relation to supporting structures and primary shading elements include:

- The supporting structure required will depend on the mass and size of the shading element.
- Solid shade fabrics, which do not allow wind to pass through, require stronger supporting structures that can withstand a higher level of wind.
- The supporting structure needs to suit the site. For example, in a playground, minimising the number of support structures is important. A primary shading element will therefore need to be chosen to achieve this.
- Your budget must allow for the support structure and shading element. It is not cost effective to select a cheap shading element if it requires a costly supporting structure.
- The life expectancy of the shade structure should be determined.
- Where a site is open to the public at all times, the risk of vandalism may need to be assessed in relation to the design and location of the built shade.

For all built structures, no matter what the size, it is vital to seek professional advice. Certification from a qualified structural engineer may be required to ensure structural integrity and safety. Additionally, to build any permanent shade structure, you will need approval from your local council.

Different types of built shade

Permanent systems

Permanent shade systems are designed to last at least 10 years. Examples include pergolas, verandahs and covered decks. It is important that permanent systems are durable, as they need to withstand all weather conditions. Regular maintenance is essential to ensure their long lifespan. The components of a permanent shade system should be easy to replace.

Demountable systems

A demountable shade structure can be easily put up and pulled down. Examples include tents, marquees and lightweight shade sails.

A demountable shade system is ideal when:

- A site only needs shade occasionally
- Temporary shade is required at different places at the same time
- A permanent structure is not suitable because of the type of activities that take place at the site.

Demountable systems need to be strong enough to withstand frequent transportation, assembly and dismantling. Advantages of demountable systems are:

- Some demountable systems can be used on a variety of ground surfaces, such as grass, sand or concrete.
- Some can be adapted for use in a variety of situations, such as above-tiered seating, as well as over large surface areas.
- Some are designed in modular form that can be extended or contracted depending on the number of people who will need to use it or the space available.
- Walls can be removed depending on the setting and desired airflow.

- Most systems are easy to put up, take down and/or move around and store.
- The temporary nature of demountable systems means that they are less likely to be vandalised.

Adjustable systems

These systems can be modified to provide effective shade as the sun moves during the day and at different times of the year. Adjustable systems are often attached to buildings, and include retractable devices, such as canvas awnings or louvres. Care needs to be taken to ensure structures are correctly and safely installed and that the integrity of the building wall is not compromised.

Adjustable systems should be easy and convenient to operate. In the event of a storm or in windy weather, they need to be able to be taken down or closed quickly. When buying or making an adjustable system, ensure that parts such as pulleys and cables will not rust or wear out quickly. Stainless steel parts are best for such a system.

Tension membrane structures (TMS) or shade sails

Tension membrane structures (TMS) or shade sails are increasingly used in shade projects and can be permanent or demountable.

TMS have several advantages: they look good, usually require minimal support structures, and can be cost effective where shade is required for large areas that need to be column-free, such as playgrounds and swimming pools.

For small areas, pre-made, off-the-shelf TMSs may produce good results, provided that the item is of good quality and that care is taken with orientation.

Some important points to consider include:

- The quality of the tension membrane structure, in terms of how protective and durable it is, relates directly to the cost.
- The curve of the fabric affects how strong the structure will be.
- The curve of the fabric affects where the shade will fall. If more than one curved structure or sail is used in combination, they need to be carefully orientated to ensure protection from UV radiation.
- Care needs to be taken to ensure that the curvature of the TMS is suitable for minimising indirect UV radiation.
- Different types of fabrics are available so ensure the weight of the fabric is appropriate for the support structure while still providing protection from UV radiation. Table 4, 'Selecting the right shade material', provides more information on choosing the right fabric.
- Fabric structures may not necessarily be a cheaper solution. Lightweight steel roofing or other shade choices, such as a pergola framework supporting climbing plants, may be cheaper.

Off-the-shelf structures

Off-the-shelf structures are built shading systems that are pre-made and ready for installation on any site. Depending on the shade needs of your site, an off-the-shelf structure can offer a cost-effective, readily available shade solution. Before purchasing an off-the-shelf structure, check if the cost includes installation and compare what is on offer from various suppliers. Ensure a qualified engineer certifies the structure.

The design and construction of shade sails is a specialised field. Consult a professional if you are considering this type of shade structure.

Consider the following issues:

- Determine your shade needs before contacting suppliers. Shade suppliers may not necessarily offer independent or objective advice. Therefore, their advice about the best type of shade, location and placement may be influenced by a desire to sell you their product.
- Will the off-the-shelf structure provide shade at the right time of day and at the right time of year? How will you ensure it is orientated correctly?
- What is included with the off-the-shelf product? Is it the shading element only
  or does it include supporting structures?
- If purchasing the shading element only, how will the shade be supported at the site?

If using existing structures, such as an outside wall or verandah, to support the shade, it is essential that you seek professional advice and certification from a qualified structural engineer, to ensure safety and structural integrity.

- Inspect previous work done by the supplier, and talk to previous clients about how the product has performed over time.
- Is the contract for supply only, or supply and installation? If the contract is for supply and installation, ensure the price includes engineering certification of the installed structure. If the contract is for supply only, who will install the shade and are they qualified to do so? Remember, certification will still need to be obtained from a qualified structural engineer.

Portable shade

Portable shade is ideal for places where other shade options are not available, such as on the beach. Portable structures provide a quick and often cheap solution to a shade problem. There is a wide range of portable shade structures available in different sizes, shapes and designs, such as small tents, beach shelters and umbrellas. Keep in mind that umbrellas provide limited protection from indirect UV radiation.

The Ultraviolet Protection Factor (UPF)

The Ultraviolet Protection Factor (UPF) is a scale that rates the protection provided by clothing materials. A material's UPF rating is based on the percentage of UV radiation transmitted through the material.

A standard for sun-protective clothing (AS/NZS 4399:1996) was published in 1996. This standard describes testing methods and labelling requirements for UPF-rated clothing. Although the standard applies only to clothing, the Australian Radiation Protection and Nuclear Safety Authority (ARPANSA) has stated that for non-clothing items such as tents and umbrellas, it is reasonable to attach a label stating the UPF rating of the fabric, as long as it is clear that the rating applies to the fabric only. **The UPF rating does not apply to the shade structure.** The following table shows the rating system, as it is presented in the standard AS/NZS 4399:1996.

Table 2: The Ultraviolet Protection Factor (UPF) rating for personal clothing

UPF rating	Percentage of UV radiation blocked
15–24	93.3–95.9%
25–39	96.0–97.4%
40 and over	96.0–97.4% 97.5% or more

Source: Standards Australia 1996

What affects the UPF of a fabric?

Different fabrics have different UV radiation absorbing properties:

- Less UV radiation passes through tightly woven fabrics.
- Darker colours usually block more UV radiation than light colours.
- Heavier-weight fabrics usually block more UV radiation than lightweight fabrics of the same type.
- Fabrics that are overstretched, wet or worn out may have reduced UV radiation protection.

UPF and shade materials

As mentioned above, the UPF rating system from AS/NZS 4399:1996 does not in theory apply to non-clothing items such as shade materials. Many manufacturers choose to use a percentage figure to describe the amount of protection the material provides against UV radiation. For example:

- If the shadecloth is rated at 50%, it absorbs 50% of UV radiation (and transmits 50% and has a UPF of 2).
- If the shadecloth is rated at 95%, it absorbs 95% of UV radiation (and transmits 5% and has a UPF of 20).

The following table relates percentage of UV radiation absorbed and transmitted to the UPF rating system and may be more useful when selecting shadecloth.

Table 3: Grades and classification of UPF

Percentage UV Radiation Transmitted	Percentage UV Radiation Absorbed	Ultraviolet Protection Factor (UPF)	Protection Category
10%	90%	10	Moderate
5%	95%	20	High
3.3%	96.7%	30	Very high
2.5%	97.5%	40	Excellent
2%	98%	50+	Excellent

Source: Australian Radiation Protection and Nuclear Safety Agency 1997

Good-quality shadecloth is an important part of your shade structure. However, effective shade depends on more than the shadecloth you use. The location of the structure in relation to the area you want shaded, its size and height, and any surrounding reflective surfaces, will all contribute to the quality of shade provided.

Selecting Shade Material

Table 4: Selecting the right shade material

	Glass	Poly-carbonate/ fibreglass sheeting	Canvas or other tightly woven cloths	Knitted polyethylene or woven PVC shadecloth	Timber	Steel roof sheeting
Suitability	Good windbreak where visibility and light are required	Roofing, walling, louvre, awnings, skylights, canopies	Good for small, low-budget jobs	Canopies	Pergolas, trellis, screens	Roofing, walling; steep or low pitches
Waterproof	Yes	Yes	Yes, watertight up to saturation point	Porous, lacks rain protection	Depends on detailing and use	Yes
Light transmission	High, depending on tint	High, but varies according to thickness, profile and colour	Light colours allow more light	Light colours allow more light, but reflect and scatter more UV radiation	Depends on detailing	No light transmission
Solar heat gain*	Less heat gain if tinted	High	Dark colours are hotter	Darker colours are hotter, but reflect less UV radiation	Does conduct heat	High if not insulated
Approximate Ultraviolet Protection Factor (UPF)	Depending on thickness, house window glass can absorb 90% of UV radiation	Very high	Very high when new, lower if material deteriorates over time	Moderate UV radiation protection. Double knits or double layers may give higher protection	Very high. Direct barrier to UV radiation	Very high. Direct barrier to UV radiation
Structural implications	Need to select glass appropriate to the site	Need to incorporate wind uplift considerations into design	Guy ropes (if present) can cause obstruction	Wind drags through porous material	Need to incorporate wind uplift considerations into design	Need to incorporate wind uplift considerations into design
Life span	Long life, if does not sustain impact	About 10 years. Discolouration may occur sooner	Limited. Susceptible to breakdown due to UV radiation exposure	5–10 years	Long life if well maintained	Long life if well maintained
Maintenance requirements	Needs regular cleaning	Low maintenance. Impact resistant	Without specific treatment is not mould resistant	Susceptible to mould growth and dirt accumulation	Need to guard against termites	Subject to moisture and condensation conditions

Source: Cancer Council Victoria 2004

* Solar heat gain is an important consideration when selecting shade materials, but it must be remembered that neither heat nor temperature is related to UV radiation levels.

Natural shade

An overview of natural shade

Vegetation is an essential part of shade planning, as it is one of the most effective and attractive ways of providing shade. Where possible, include vegetation in all shade projects. The effectiveness of natural shade depends on the density of the foliage and the size of the canopy. As a general rule, trees with a canopy that is dense and close to the ground provide the best protection from direct UV radiation. The larger the canopy, the greater protection from both direct and indirect UV radiation.

Natural shade has many advantages:

- Vegetation makes an area pleasant for users – plants provide seasonal variation in perfume and colour, as well as attractive flowers, bark and foliage.
- Using vegetation for shade has environmental benefits, such as providing habitat for local wildlife, enriching the soil, and absorbing carbon dioxide in the atmosphere.
- Vegetation can be used to screen unwanted views and provide privacy.

- Vegetation can provide protection from the wind.
- Carefully chosen trees can cool an area by reducing the air temperature in summer by up to 30%.

Some issues to consider when providing natural shade

- Ensure that planting will be consistent with the character of the surrounding environment, both natural and built.
- Find out about your local conditions, such as soil type, climate and salinity, before choosing plants.
- Check that the size and shape of a plant when it is fully grown, as well as its lifespan, are appropriate for the space available.
- Avoid plants that are toxic, attract bees, drop limbs, have thorns or spikes, or cause adverse health effects such as asthma and skin irritation. Examples include: angel's trumpet (*Brugmansia* and *Datura* species), *Rhododendron* species, black locust (*Robinia pseudoacacia*), *Cotoneaster* species, *Duranta erecta*, oleander (*Nerium oleander, Thevetia peruviana*), rhus (*Toxicodendron succedaneum*) and white cedar (*Melia azedarach*).
- Contact the RSPCA for advice on plants that may be harmful to pets.
- Avoid trees with roots that may invade nearby buildings, paths and drains.
- Consider whether deciduous or evergreen plants are more suitable. Deciduous plants allow winter sun, while evergreen plants are best when permanent screening is needed.
- Your council website should provide information about plants that are classified as environmental weeds or have the potential to spread rapidly and become a weed problem in your local area.
- Take care not to use trees or plants that will obstruct thoroughfares or create tripping or slipping hazards, such as when berries or seeds fall on the ground.
- Keep large trees away from powerlines and underground services, such as water and gas.
- Consider the costs associated with maintaining natural shade, such as watering, fertilising and pruning.
- Plan natural shade requirements long before starting any construction work.

Selecting shade trees

It is important to consider trees that will suit your area. If you are considering an Australian native (indigenous) tree or an exotic (introduced) species, keep these points in mind:

- How much shade they will create
- Whether they are suited to your climate
- Whether they are suited to the physical conditions of the site, such as soil type and aspect
- How they fit into the landscape character of the setting.

You can ask for advice from local professionals, such as qualified horticulturists, landscape architects or staff in a nursery. Locally produced references or species lists are also an excellent source of information and can often be obtained from your local council.

Purchasing plants

When purchasing your plants, there are some important guidelines to follow:

- Read the plant labels. They should provide information about the plant's final size and soil, site and ongoing care requirements, as well as characteristics such as foliage, flowers and seasonal variations. This information should help you to check that it is an appropriate plant for shade and is suitable for your site conditions.
- Purchase shorter, fuller plants rather than tall flowering ones. Fuller plants become established more quickly than spindly ones.
- Choose younger plants: in general, they adapt more readily to new conditions than mature plants. Younger plants are also cheaper.
- Be aware that young seedlings that have been kept in the greenhouse or in a well-protected environment, such as under shadecloth, may need to be introduced to natural weather conditions before being planted out in their final site.
- Select plants that appear to be healthy and free of disease, pests or signs of stress. Before purchasing, gently tap the plant out of the pot and check the roots. Plants that are pot bound (causing their roots to become a twisted mass circling the pot) will have difficulty becoming established.

Talk to nursery staff, who will have extensive knowledge about the plants you are planning to buy, the best time to plant, soil preparation required, optimal planting position, and ongoing care and maintenance of plants.

Combining natural and built shade

Combining natural and built shade, such as growing plants onto a pergola or lattice, has many benefits and is often the best solution for a site:

- Built shade structures protect people from direct UV radiation while the vegetation reduces exposure to indirect UV radiation and helps cool the space by letting in breezes.
- Temporary built structures can be used to provide shade until shade trees mature.

Part 2: Designing and implementing your shade project

Identifying your shade needs

Where should shade be?

Shade is needed in all outdoor areas where people gather and spend time during the day. Some areas have a greater need for shade than others, whether they are in a private backyard or a public park. This first section will help you identify and prioritise sites for shade development. The next section outlines how to plan, implement and evaluate your shade project.

The overall process is outlined in this flow chart:

Conduct a shade inventory to identify all sites where shade is important

Prioritise the sites based on greatest need for shade

Select a site for shade development

Conduct a shade audit to identify the shade needs of the site

Plan the shade project

Implement the shade project

Manage the shade project

Evaluate the shade project

Conducting a shade inventory

The first step in developing a shade strategy is to do an inventory of sites where shade is important. This will include all sites where any outdoor activity takes place. This list should be comprehensive and include such sites as swimming pools, parks, reserves, bicycle and pedestrian paths, public mall areas, early childhood centres, playgrounds, beaches, ovals, school grounds and tennis courts.

If you are building or adding shade to your backyard, list the areas where children play and people regularly congregate. Take into account features that may be fixed permanently in place such as an in-ground swimming pool, and those that may be moved such as play equipment, tables and chairs and BBQ equipment.

Prioritising shade sites

After you've identified all potential sites, assess each site individually using these four criteria:

1. **Time of use**
   UV radiation levels are highest between 10am and 2pm (11am and 3pm during daylight saving). Sites most used between these times have a greater need for shade. UV radiation is generally highest in summer. Therefore, sites used extensively in summer have greater priority for shade than those used mainly in winter, although in northern and far western parts of NSW, UV levels remain high all year round.
2. **Duration of use**
   The length of time that an outdoor activity requires is an important factor when determining priority. Damage from UV radiation is cumulative, which means the longer the exposure to UV radiation, the greater the risk of harm.
3. **Level of use**
   Sites that have a high level of use should take priority over sites that are used less often.
4. **Nature of the site and the activity**
   Sites such as swimming pools, lakes, rivers and beaches are a high priority, because they generally involve considerable risk of sun damage due to high levels of reflected UV radiation from water and sand.

Shade Priority Checklist

Use the shade priority checklist below to prioritise each site. Score each site against the four factors mentioned above, then add up the total for each site and compare the final scores.

Table 5: Shade priority checklist

Key factor relating to shade priority	No/never	Some-times	Yes/ always	Overall score
1. Time of use:				
Activity at the site is likely to occur between 10am and 3pm	1	2	3	
The site is used over summer	1	2	3	
The site is used over spring and autumn	1	2	3	
2. Duration of use:				
Activity at the site occurs for 15 minutes or more at a time	1	2	3	
3. Level of use:				
The site is well used on weekends	1	2	3	
The site is well used on weekdays	1	2	3	
4. Nature of the site and the activity:				
Users of the site are exposed to high levels of indirect radiation	1	2	3	
Activity at the site is likely to occur in minimal clothing (i.e. beaches/ swimming pools)	1	2	3	
Grand total				

Selecting the site

Sites with the highest scores have a high priority for shade. Shade is still an important issue at sites with a lower score, but they can wait until you deal with the high-priority sites. This prioritising system can be useful when deciding on the budget and timetable.

Conducting a shade audit

Once you have decided that a site is a high priority for shade development, it is important to study the site in detail to ensure shade is placed where it will have the most benefit. A shade audit will help you to identify the shade needs of a site and will provide you with the basis of a detailed project brief, which may be used to apply for funds, to gain organisational endorsement, or to engage a contractor.

A shade audit has five steps:

Step 1: Determine the usage patterns of the site.

Step 2: Determine the amount and useability of existing shade at the site.

Step 3: Consider the effects of reflected UV radiation.

Step 4: Assess the need for improved or increased shade at the site.

Step 5: Identify possible options to improve shade at the site.

You will need a copy of a site plan to do a shade audit. The site plan should include the perimeter of the site, an outline of any buildings, and the location of any features that will affect the shade and useability of the site, such as garden beds, trees, fences and car parks.

Remember to include any underground services, as well as emergency or access routes that must be maintained. As you progress through the five stages of the audit, remember to plot any new information onto the site plan.

Critical Protection Time

The Critical Protection Time is the time of day and year when sun protection is most important at the site. UV radiation levels are highest between 10am and 2pm (between 11am and 3pm during daylight saving) each day when the sun is closest to being directly overhead.

It is important to assess shade at a site during the Critical Protection Time. It is also advisable to assess the shade at the same time of day on a 'typical' winter day so that summer shade initiatives do not negatively affect winter conditions at the site.

Step 1: Determine the usage patterns of the site

Usage patterns can be obtained by observing users during the Critical Protection Time and also by interviews with users, managers and staff.

Examples of questions you might like to ask are summarised below.

Users of the site:

- What time do you usually arrive to use the site?
- How long do you usually stay?
- How often do you visit the site?
- What areas do you mostly use?
- Do you avoid any shaded areas? If yes, why?
- Is there enough shade?
- How could the shade be increased or improved?

Managers and staff of the site:

- Is the existing shade adequate? If not, how can available shade be increased?
- Is there a need to move activities to make better use of existing shade?
- Is there a need to reschedule activities to avoid peak UV radiation times of the day between 10am and 2pm (11am–3pm during daylight saving)?
- Do you know of any future plans for the site or the general area?

Some points to consider at this stage:

- Identify the main outdoor activities at the site; as well as when and where they occur.
- Identify the time of year the site is most in use.
- Identify the time of day the site is most in use.
- Identify where people tend to gather. Consider if people gather in a location because it is the only place where they can do a particular activity, or if the activity could be moved to a shaded area.
- Note whether people are using the shade already available.
- Consider if people are wearing sun-protective clothing or using portable shade.

Step 2: Determine the amount and useability of existing shade at the site

This step involves determining the extent of existing shade structures and how often they are used.

Observe, measure and record the way existing shade changes during the day and the seasons. It may be necessary to engage a professional or use a specialised computer program to project shade patterns throughout the year.

Ensure the site plan records the existing natural shade, such as the location of trees or groups of plants. Note details of each tree or planted area, such as maturity and the density of canopy, and whether the plant material is deciduous or evergreen.

Some points to consider at this stage:

- Where is shade available at the site – for example, from buildings, verandahs, shade structures, fences, adjoining walls or neighbouring properties?
- Can people easily access the existing shade? A garden bed or car park may occupy the best-shaded position.
- Ask users, managers and staff about the adequacy of shade at the site and the need for more shade.

Step 3: Consider the effects of reflected UV radiation

When identifying existing shade, you will also need to consider the potential for adjacent surfaces (walls, roofs or flooring) to reflect UV radiation into a shaded area.

Some points to consider at this stage:

- Note the ground surface of each outdoor zone – for example, concrete or grass.
- Note the surfaces of adjacent buildings and the direction they face.
- Consider if any of these surfaces can be modified to reduce reflection.

Step 4: Assess the need for improved or increased shade at the site

The next stage of the shade audit involves comparing the amount and useability of existing shade (Step 2) to the usage patterns (Step 1), while considering reflected UV radiation (Step 3). This will indicate if there is a need for additional shade.

Some points to consider at this stage:

- Consider the amount of existing shade at the Critical Protection Time and compare this with the need for shade.
- Consider whether the location of existing shade is appropriate, given the usage patterns at the site.
- Consider the likely impact of future tree growth on the amount of shade at the site. You may need to provide interim shade until trees have matured.
- Examine opportunities to better use or access existing shade.
- If additional shade is required, consider where it should be located, keeping in mind the site usage patterns and winter shade patterns.
- Consider reflected UV radiation at the site and ways to reduce its impact.

Step 5: Identify possible options to improve shade at the site

An increase in protective shade at sites can be achieved in several ways, including:

- Building permanent shade
- Using temporary shade
- Planting trees (natural shade)
- Increasing access to shade
- Moving or rescheduling activities.

Different settings will have different issues that need to be considered when making decisions about shade design.

Information sheets can be downloaded from **cancercouncil.com.au/sunsmart** that cover three specific settings where shade is a priority:

- Early childhood centres
- Schools
- Homes

Some points to consider at this stage:

- If you've decided to create new shaded areas, you need to consider the amount of additional shade needed, where it is needed and when it is needed (the times of day and year that the shade is required). Think also about the range of shade options (both natural and built) that may be appropriate, and their likely costs.
- Make the most of existing shade. For example, move activities or outdoor equipment to shaded areas, move seating to shaded areas, prune low branches on trees to allow access to the shade beneath them, or move garden beds that take up shaded areas.
- Investigate ways to improve access to shade. For example, open up shaded areas that are out of bounds, or reschedule outdoor activities to avoid peak UV times.
- Minimise the effects of reflected UV radiation by modifying surfaces or designing shade structures that protect from indirect UV radiation.
- Ensure that shade structures do not create safety hazards. For example, support systems such as upright posts should be clearly visible and ideally have rounded edges or padding. Shade structures should not obstruct views where adults are supervising children, particularly around playgrounds, childcare centres and swimming pools.

Andrew Kearns

From: [redacted]
Sent: Tuesday, 12 November 2019 5:15 PM
To: Hawkesbury City Council
Cc: [redacted]
Subject: Cancer Institute NSW submission to Hawksbury Council Draft Local Strategic Planning Statement
Attachments: E19 22366~29 Cancer Institute NSW submission on Draft LSPS - Hawkesbury Council.pdf; Shade provision Suggested text for inclu~Planning Statements - Shade Wor.._ (002).pdf; Shade A planning and design priority tha~revents skin cancer - Shade Wor.._ (002).pdf

Dear Mr Conroy

Please find attached the Cancer Institute NSW submission on Hawkesbury Council Draft LSPS.

Please do not hesitate to get in touch with any questions.

Kind regards

[redacted]

Cancer Institute NSW
Level 9, 8 Central Avenue, Australian Technology Park, Eveleigh NSW 2015
PO Box 41, Alexandria NSW 1435

cancer.nsw.gov.au

NSW GOVERNMENT

Cancer Institute NSW

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NSW GOVERNMENT | Cancer Institute

Working together to lessen the impact of cancer

Mr Peter Conroy
General Manager
Hawkesbury City Council
PO Box 146
WINDSOR NSW 2756

Dear Mr Conroy,

Re: Submission to *Draft Hawkesbury Local Strategic Planning Statement*

Thank you for the opportunity to provide feedback on Hawkesbury City Council's *Draft Local Strategic Planning Statement* (LSPS).

The Cancer Institute NSW (the Institute) is a state government agency responsible for the delivery of the *NSW Cancer Plan* to reduce the incidence of cancer in NSW and the *NSW Skin Cancer Prevention Strategy*. The Institute works closely with key stakeholders with health and built environment expertise to reduce the incidence of skin cancer by improving access to adequate shade in NSW. The Institute also promotes healthy lifestyle behaviours, including physical activity, which reduce the risk of certain cancers.

The Institute is committed to supporting your Council to reduce skin cancer in your LGA and has prepared the following submission that will:

1. Outline the importance of well-designed shade for the prevention of skin cancer
2. Explain the role of local policy in shade provision and skin cancer protection
3. Offer specific comments and suggestions regarding your draft LSPS
4. Provide further information and contacts to assist your LGA in planning for good quality shade.

1. Skin cancer and shade

Skin cancer is the most common cancer in Australia. At least 95 per cent of melanoma skin cancer and 99 per cent of non-melanoma skin cancers are caused by overexposure to ultra-violet radiation (UVR) from the sun.[1] UVR is a carcinogen, and two in three Australians are expected to develop skin cancer before the age of 70.[2] In Hawkesbury LGA, the incidence rate of melanoma between 2011 and 2015 was 60.3 per 100,000 population, which was higher than the NSW average rate.[3]

Across NSW, UVR levels are high enough to damage unprotected skin for at least 10 months of the year.[1] Unlike temperature, UVR can't be seen or felt and damage to unprotected skin can still occur on cool or overcast days.

The good news is that skin cancer is highly preventable. In addition to personal protective behaviours (Slip Slop Slap Seek Slide), there is evidence that well-designed and correctly

positioned shade, from both natural vegetation and built structures, can reduce exposure to UVR by up to 75 per cent.[4]

The provision of good quality shade is integral to assisting the community in reducing its exposure to UVR. However, quality shade needs to be planned and provided with careful thought if it is to be effective. This is where your Council can play an important role through the planning and design of good quality shade.

2. The role of local policy in shade provision and skin cancer prevention

Local planning provisions have a key place in ensuring the practical planning and delivery of shade, as does other policy that encourages the retention and addition of shade in a range of settings. The Institute recognises, through the LSPS, that Council already has a commitment to 'encouraging tree planting in open spaces', but urges Council to 'step up' its priority for natural and built shade by:

1. recognising shade as a key planning, design and health issue for your LGA
2. recognising the range of co-benefits of shade in addition to protection from UVR ie comfort, shelter, aesthetics, biodiversity, reduction of the urban heat island effect, less evaporation, climate resilience, cooling of surrounding areas, improvements in health and wellbeing etc.
3. preparing policy to specify high quality design principles for shade in new private developments (for example by updating Development Control Plans for residential and commercial development)
4. preparing policy to ensure the provision of adequately budgeted and well-designed shade in public spaces and as part of public infrastructure eg in playgrounds, recreation areas, commercial and activity centres, transport interchanges, bus and tram stops, along footpaths and streets etc.

Shade: A planning and design priority that prevents skin cancer, 2019 provides a summary of the benefits of shade.

Guidelines to Shade - A practical guide for shade development in New South Wales, 2013 provides practical design details and guidance for Council.

The Institute also notes that Council is preparing or implementing a number of other strategies, including the *Sustainability Strategy* and *Town Centre Masterplans*. The Institute suggests that the above references and list of shade actions will also be of relevance to those documents.

3. Specific comments and suggestions regarding Hawkesbury Council's draft LSPS

The Institute recognises the LSPS as the key strategic land use planning document for your LGA for the following 20 years, and hence considers it vital to include within it specific references to shade provision.

The Institute would like to commend Council on recognising in the LSPS the importance of a 'whole of health' approach to planning for its future housing and infrastructure, and suggests that more specific actions can be developed around this theme. It also suggests that many of the issues raised in the 'discussion' parts of the document should be specifically recognised in

the Planning Priorities and relevant Actions. The LSPS document would also benefit from judicious editing, so that there are no misunderstandings of terminology or intent, especially in many of the actions.

The attached example LSPS text relating to shade provision provides detailed suggestions to assist you in finalising your LSPS. The example text outlines:

- Why shade (both natural and built) is important
- The co-benefits of well-designed shade and green spaces
- What is well-designed shade?
- Detailed LSPS actions relating to review of DCPs, consideration of shade in specific types of DAs and public infrastructure assessment, and commitment to shade provision in Council projects and infrastructure provision.

The Institute would also like to provide suggested improvements to the Planning Priorities and Actions within the LSPS to ensure the issue of well-designed shade, both built and natural, is adequately addressed. Suggestions are also made relating to the implementation of the Priorities and Actions. Please refer to the comments in the table following.

Themes and Planning Priorities	Relevant Actions	Cancer Institute NSW comments and *suggestions*
Infrastructure		
PP1: Bridge the shortfall of infrastructure through stakeholder collaboration to support current and future growth.	Seek funding, investigate and deliver leisure, and sporting related facilities at appropriate locations.	The provision of well-designed and appropriately located built and natural shade is a type of infrastructure that must be included in the consideration of any infrastructure planning and budgeting. *As such, planning for shade should be included in Council's:* • *Consideration of all local infrastructure needs* • *provision of open space and leisure facilities* • *Development Contributions framework* • *Infrastructure funding strategies and budgeting* *The following documents provide practical advice to Council in this regard:* • *Shade: A planning and design priority that prevents skin cancer, 2019* • *Guidelines to Shade - A practical guide for shade development in New South Wales, 2013* It is noted that "Council will continue to inform the community about the infrastructure of the future and their benefits towards reversing global warming." (p 33) *See comments relating to PP14 below.*
PP2: Collaborated investment in infrastructure that will support existing and future industries.	All	*See comments relating to PP1 above.*

PP3: Deliver timely and robust infrastructure to support the town centres and villages of the LGA.	Connect the suburbs through cycle and pedestrian parts [paths] where feasible. Investigate and advocate with State agencies for adaptive infrastructure that will meet the future Mega Trends.	Shade contributes to people feeling more comfortable in being outside, encourages walking and cycling as a form of transport, and protects them from UV radiation while they are being active. *Well designed shade should be planned and budgeted for in the provision of cycle paths and walkways throughout the LGA.* *(Please note the spelling mistake of 'paths' as shown in the first action.)* *The action relating to 'adaptive infrastructure to meet future mega trends' is not clear. It is suggested that it be rephrased to communicate its exact intent.*
Community		
-	-	*(Please note regarding the dwelling structure graph at p39 –the column relating to detached dwellings is incorrectly labelled.*
-	-	At p40 it is noted that Council recommends a future 'Whole of Health' approach to be used in its future planning for housing and community infrastructure, and also notes a 'Whole of Community' approach, alluding to a 'Village' Lifestyle and Liveability Model. However, this is not followed through by any of the Planning Priorities or specific Actions. *The Institute recommends that specific planning priorities and/or actions be placed in the LSPS relating to planning for a healthy environment. Shade planning should be one of these considerations. These should then be*

		followed through into other policies and the Development Control Plan. *The following documents provide practical advice to Council in this regard:* • *Guidelines to Shade - A practical guide for shade development in New South Wales, 2013* • example LSPS text relating to shade provision
-	-	It is noted that "Council will commit to champion more sustainable buildings and building materials" (p47 last paragraph). *The Institute suggests that "well designed natural and built shade" should be added to the list of examples in this text.* *Council should consider the role of shade in cooling external urban surfaces, and its subsequent contribution to lower carbon emissions and energy costs of adjacent buildings.*
PP7: Enhance and celebrate the distinctive heritage character of our towns, villages and open spaces.	Update the DCP to include local character statements and area specific development controls for the distinctive towns and villages within the LGA. Implement the Vibrant Towns and Villages Master Plan to enhance the public domain and distinctive heritage character of Windsor and Richmond Town Centres.	The provision of well-designed and appropriately located built and natural shade is a fundamental contributor to: • local character • the increased enjoyment and comfortable use of the public domain • a high quality urban environment • thoughtful urban design • enjoyment of outdoor events *As such, shade planning should be an integral part of Council's:* • *Local Character Statements* • *Area-specific development controls for towns and villages* • *Town and Village masterplans* • *Event planning*

	Maintain and promote the open spaces to the residents and tourists by hosting community events at different parks.	
Productivity		
-	-	Council states that "A high quality urban environment is critical to the success attracting and retaining knowledge workers and supporting a vibrant town centre" (p65) *See comments relating to PP7 above.*
PP9: Support our industries to grow and meet current and future trends.	Promote and implement good urban design and public domains in the Windsor and Richmond Town Centres.	*See comments relating to PP7 above.*
Sustainability		
-	-	*The Institute notes that no specific mention is made in the planning priorities or actions about the Sydney Green Grid or increasing the urban tree canopy, although there are some related actions listed.* *The Institute suggests that the LSPS priorities be reconsidered to place a greater focus on these issues, with specific accompanying actions.*
-	-	Council lists some design techniques for new buildings that 'minimise reliance on mechanical heating and cooling' (third last paragraph p80). *The Institute suggests that the following should be added to this paragraph: "well-designed shade, either built or natural".*

PP12: Educate and adapt to natural hazards of flood, bushfire and climate change.	Create on-going community preparedness and resilience against natural hazards of flood, bushfires, and climate change. Develop specific natural hazard chapters to include planning controls to protect and mitigate development in areas prone to natural hazards.	*The Institute suggests that Council recognises UV radiation as another type of natural hazard that Council can assist in mitigating in its community.* *By way of explanation: "Ultra-violet (UV) radiation is a type of natural hazard. At least 95 per cent of melanoma skin cancer and 99 per cent of non-melanoma skin cancers are caused by overexposure to UV radiation from the sun. Well-designed and correctly positioned shade, from both natural vegetation and built structures, can reduce exposure to UV radiation by up to 75 per cent. Council can assist in the provision of shade throughout its public and open spaces, and can advocate for its provision in private developments."* *Specific provisions about planning for shade to assist in UV protection should be included in Council's Development Control Plan. The following documents may assist Council in this regard:* • *Guidelines to Shade - A practical guide for shade development in New South Wales, 2013* • Example LSPS text relating to shade provision *Council could also consider the development of a shade and UV protection strategy or policy, either on its own or in collaboration with WSROC.* *The Institute would be willing to assist Council in the implementation of these actions.*
PP12: Educate and adapt to natural hazards of flood, bushfire and climate change.	Encourage tree planting [in] public open spaces and providing shade to pedestrian routes.	*(Please note the missing word in the action, where shown to the left.)* *See the comments above in this table (in the first row of the 'sustainability' section). The LSPS could better articulate a wider commitment to increasing the urban tree canopy.*

		See also the comments at PP3 regarding the value of shade for pedestrians and cyclists.
PP14: Commit to urgent action to respond to the global climate emergency.	Review the Hawkesbury Sustainability Strategy. Adopt policies to reduce carbon footprint through land use development and other activities within the LGA Commit to and champion the global warming reversing solutions through Council policies and initiatives.	Well-designed built and natural shade can be used effectively to cool a range of urban surfaces and hence contribute to higher energy efficiency of adjoining buildings and spaces, in turn contributing to lower energy use, reduced emissions and carbon footprints. *As such, planning provisions (especially DCP provisions and engineering standards) should be updated to require effective use of shade. See comments above relating to a DCP review.* *See also the comments at PP12 above regarding a possible UV protection strategy or policy, which would include shade.*
Implementation		
		The Institute suggests that the Implementation section be reframed so that "Solar UV radiation and skin cancer incidence" and a range of other health indicators be added to the performance indicators. This should be done in recognition of the monitoring framework of Action 13 in 'A Metropolis of Three Cities'.

4. Summary

The Institute's key message is that the provision of well-designed, appropriately located and properly budgeted built and natural shade is integral to assisting the community in reducing its over-exposure to UVR, and hence in reducing the risk of skin cancer in the community.

Local planning strategies and DCP provisions have a key place in ensuring the practical planning and delivery of shade, as does policy that encourages the retention and addition of shade in a range of settings. Council's draft LSPS is critical to setting the agenda for the development of such policy in the future, and the Institute has welcomed the opportunity to provide practical suggestions on how this can be done.

5. Further information and assistance

Resources regarding how to design good quality shade for UVR protection, tools for performing shade audits, and shade case studies are provided in the *Additional Information* section below.

We can provide assistance in developing local government policy and strategy relating to shade, and can refer you to technical documents for the planning and construction of shade. A consultant Registered Planner, Jan Fallding RPIA, has been engaged to assist in preparing this submission and to offer further support to Council via the Institute.

Further information and assistance can be obtained from the Institute:

> Nikki Woolley or Nicola Groskops, Skin Cancer Prevention & Healthy Lifestyles
> Email: CNSW-SkinCancerPrevention@health.nsw.gov.au or Phone: 8374 3661

Thank you for the opportunity to comment on Council's draft LSPS. Please keep the Institute informed as to the progress of the LSPS and any further relevant planning policy related to shade.

Yours sincerely,

Ms Sarah McGill
Director of Cancer Screening & Prevention, Cancer Institute NSW

12 November 2019
Copy: Nepean Blue Mountains Local Health District

References

1. Armstrong BK, Kricker A. 1993. *How much melanoma is caused by sun exposure?* Melanoma Research 3(6):395-401.
2. Australian Institute of Health and Welfare 2016. *Skin cancer in Australia. Cat. no. CAN 96. Canberra: AIHW*
3. Cancer Institute NSW Statistics Portal https://www.cancer.nsw.gov.au/data-research/access-our-data/cancer-statistics-nsw#//
4. Parsons, P., Neale, R., Wolski, P. & Green, A. 1998, *The shady side of solar protection*, Medical Journal of Australia, 168: 327-330.

Additional information

i. Cancer Council NSW, 2013*: Guidelines to Shade - A practical guide for shade development in New South Wales*
ii. Cancer Institute NSW, 2017: *NSW Skin Cancer Prevention Strategy*
iii. Cancer Institute NSW, 2019: *Shade: A planning and design priority that prevents skin cancer* (also attached to this submission)
iv. Cancer Institute NSW, 2019: *Sun protection behaviours in NSW, 2017*
v. Cancer Institute NSW, undated: *How schools, councils, community groups and sporting organisations created shade: 10 Case Studies*
vi. Fallding, J for NSW Skin Cancer Prevention Strategy Shade Working Group, 2019: *Shade Provision: Suggested text for inclusion in Local Strategic Planning Statements* (also attached to this submission)
vii. *cancer.nsw.gov.au/shade-and-uv*
viii. *cancercouncil.com.au/cancer-prevention/sun-protection/shade-and-sun-protection*
ix. *healthstats.nsw.gov.au*

Andrew Kearns

From: [redacted]
Sent: Tuesday, 12 November 2019 6:38 PM
To: Hawkesbury City Council
Subject: Fwd: Draft Strategic Housing Plan - Hawkesbury City Council - Submission

Please find below our Submission to Hawkesbury City Council from [redacted] to Draft Strategic Housing Plan. Not sure which email address to use. Thank You.
Lorraine and George Charnas

---------- Forwarded message ---------
[redacted]
Date: Tue, Nov 12, 2019 at 6:22 PM
Subject: Draft Strategic Housing Plan - Hawkesbury City Council - Submission
To: <hawkesbury@parliament.nsw.gov.au>, Robyn Preston <rapreston@bigpond.com>

13 November, 2019

TO: Hawkesbury City Council
Hawkesbury@parliament.nsw.gov.au

[redacted]

RE: SUBMISSION - *DRAFT STRATEGIC HOUSING PLAN - HAWKESBURY CITY COUNCIL*

To Whom It May Concern,

This submission from Lorraine and George Charnas of Sedema Pty Ltd concerns the *Hawkesbury City Council Draft Strategic Housing Plan* and proposes that **low constraint areas** of Oakville NSW 2765 be re-zoned to allow the sensitive further development of residential housing for the following reasons:

1. Low Bush Fire Hazard.

2. Flood Free areas

3. Low impact Environmental Issues

4. Proximity to Public Transport and proposed Rouse Hill Hospital and other facilities.

5. Changed dynamic regarding nearby development of multiple housing estates such as the Gables and others in Box Hill and Vineyard.

6. *Draft Strategic Housing Plan* does not currently include Oakville, but has included other areas that are not as low constraint. We would respectfully request that the Draft plan be reviewed to include the low constraint areas of Oakville NSW 2765.

7. The Ratepayers of Oakville are expected to pay extremely high rates (5-10 times average rates) BUT **do not have the same subdivision rights as other Residential Ratepayers**. Re-zoning would resolve the current inequity and provide more ratepayers to share the huge Rates burden of Oakville while increasing the total Rates revenue to Council.

Thank you for taking the time to consider this submission.

Yours Sincerely,

[redacted]

Andrew Kearns

From: [redacted]
Sent: Tuesday, 12 November 2019 4:26 PM
To: Hawkesbury City Council
Cc: [redacted]
Subject: Hawkesbury Local Strategic Planning Statement Submission
Attachments: 191112 - Kemsley Park LSPS Submission.pdf; 191112 - Hambeldon Park LSPS Submission.pdf

To whom it may concern,

Please see two separate submissions the Draft Hawkesbury Local Strategic Planning Statement attached.

Kind Regards,

[redacted]

architecture
urban design
planning

08 November 2019

General Manager
Hawkesbury City Council
366 George Street
PO Box 146
Windsor NSW, 2756

Dear General Manager,

Submission to Draft Local Strategic Planning Statement

Introduction

This submission has been prepared by ae design partnership on behalf of [redacted] in response to Hawkesbury City Council's (Council) exhibition of the Draft Local Strategic Planning Statement (Draft LSPS) for the Hawkesbury Local Government Area (LGA).

Background

[redacted]s of a large site located at 393 Terrace, North Richmond which comprises of the following lots:

- 102/DP1129051
- 101/D P1129051
- 25/DP16781
- 24/DP16781
- 23/DP16781
- 22/DP16781
- 1/DP927337
- 1/DP245824
- 7/DP202803
- 1/DP202803

Figure 1. Site Context

[redacted]

Site Summary

The site has an area of 253.5 hectares and is currently occupied by the owner. It is centrally located between five towns being Richmond, North Richmond, Kurmond, Glossodia and Freemans Reach.

The site is bound by Kurmond Road to the north, Terrace Road to the south, Wire Lane to the east and neighbouring large lot properties to the west.

The site is currently zoned as RU1 Primary Production under the Hawkesbury Local Environmental Plan 2012 (HLEP2012) but is suitable for residential development as it:

- is a large land holding, not constrained by fragmented ownership;
- has direct road access to Kurmond Road and Terrace Road which provide direct access to the neighbouring towns of North Richmond, Freemans Reach and Kurmond.
- will not impact environmentally sensitive land;
- will contribute housing choice and affordability for Hawkesbury's growing and changing population, consistent with the Draft LSPS; and
- is an unconstrained site not affected by flooding, heritage conservation or ANEF contours.

Site Constraints

1. A large portion of the site is classified as bushfire prone land with the majority classed as 'Vegetation Category 3' (see figure 2). However, this can be managed by providing compliant bushfire protection measures such as hazard separation and adequate access satisfying the Ministerial Direction No. 4.4 – 'Planning for Bush Fire Protection' and the requirements of Planning for Bush Fire Protection 2006 and Planning for Bush Fire Protection 2018.

2. The site also contains pockets of significant vegetation which will need to be managed accordingly (see figure 3). To avoid and minimise potential impacts of residential development on the significant vegetation, a Biodiversity Development Assessment Report would need to be prepared.

Towns and Villages

The Hawkesbury population primarily live in 65 towns and villages located throughout the LGA. However, a high proportion of towns and villages are situated in the south-eastern section of the LGA, at the base of the Blue Mountains. Towns within this area are generally located within a few kilometres of each other and provide all the essential services within an 800m walking catchment.

The site is located centrally between five residential towns being Richmond, North Richmond, Kurmond, Glossodia and Freemans Reach as well as the RAF base. The distance of these towns from the site's boundary ranges from 2.25km to the nearest town being North Richmond, up to 5km to the RAF base.

The site presents a unique opportunity to create a new town/village within the LGA in an area which provides no services to existing residents. The site is situated far enough from other towns to warrant the proposal of a new town centre, yet close enough that future residents will be able to access these towns for services such as high schools, specialist medical facilities, service stations, etc.

This option provides an alternative to the continuous sprawl of towns and villages within the LGA, ensuring that these existing towns can retain their rural character.

In April 2019 the federal government announced a $200 million commitment to deliver a third Hawkesbury River Crossing between Richmond and North Richmond. This bridge will provide greater road capacity, ensuring residents in towns located north of the Hawkesbury River will not experience traffic congestion as the LGA's population grows.

Review of Draft LSPS

We have undertaken a detailed review of the Draft LSPS and have identified local priorities we support as well as issues that we recommend should be further considered in the finalization of the LSPS.

1. General

We note and support the Council's 20 year vision for Hawkesbury, as a vibrant, diverse, economically sustainable community which embraces and supports its heritage and distinct character. We note that the Draft LSPS indicates that an additional 18,050 residents will live in the Hawkesbury LGA by 2036. To accommodate this projected growth, 5,350 new dwellings will need to be constructed over the next 20 years.

2. Towns and Villages

We note that the Hawkesbury population is primarily located in 65 towns and villages which currently exist with the LGA and understand that each has its own unique and distinctive feel.

We recommend a new town which has the capacity to accommodate a significant portion of the 5,350 dwellings needed over the next years should be established. This would negate the need to further expand existing towns and villages, ensuring they retain their rural character and all residents have access to essential services within walking distance.

3. Planning Priority 4: Provide a diversity of housing types to meet the needs of the changing demography.

We acknowledge and support the actions listed under this planning priority and note their consistency with the possibility to rezone the site to allow for residential development.

- **Identify unconstrained sites to deliver housing in flood plain areas within lands above 1 in 200 year ARI.**

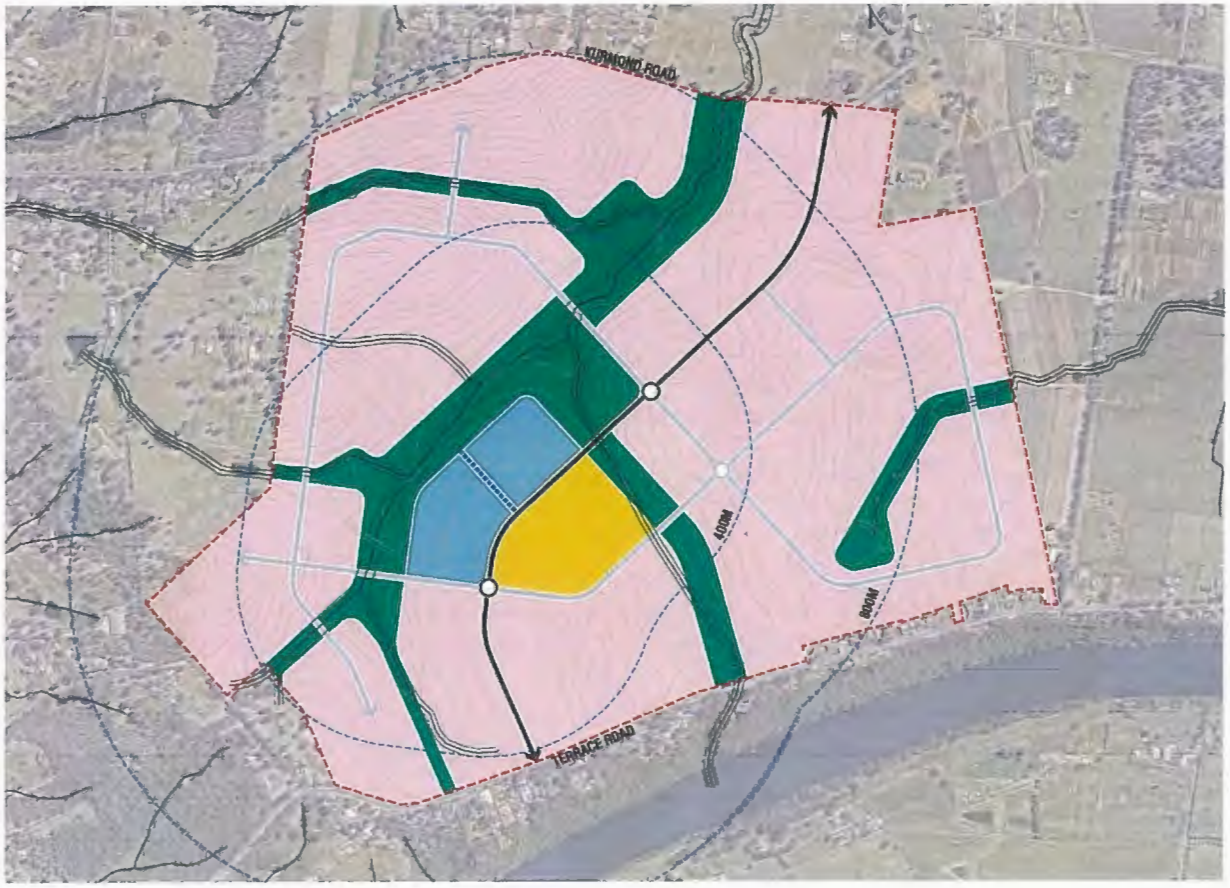
The plan acknowledges the significant number of constraints that affect development in the LGA which include:

- flooding;
- bushfire;
- heritage conservation; and
- ANEF contours.

Of the four constraints listed above the site is only impacted by bushfire prone land. The Hawkesbury-Nepean Regional Flood Study map (figure 3) shows that the site is not affected by a 1 in 200 year ARI flood. This makes it an ideal location to deliver future housing stock.

- **Encourage and mandate new residential developments to respect the local character and landscape amenities of the existing areas through siting, design and layout of the building forms.**

The site currently exists as an undeveloped parcel of land and has potential to provide a range of different land zones and minimum lot sizes ensuring that future development respects the existing character and landscape amenities of the site and its surrounds.



LEGEND

Site Boundary	Indicative Open Space Network	Indicative Major Collector Road
Contours (2.0m Intervals)	Indicative Local Centre	Indicative Collector Road
Existing Waterways	Indicative Primary School	Indicative Main Street
Riparian Corridor Buffer	Indicative Residential	

Indicative structure plan

An indicative structure plan produced by ae design shows the site has potential to accommodate 1,500 new dwellings while retaining the riparian corridors which run through the site and providing a town centre and public primary school.

Movement and Access

- Access to the site is provided from Terrace Road and Kurmond Road.
- A main road runs north-south through the site and along the proposed town centre.
- The town centre is within an 800m walking catchment of the majority of residential land which encourages walking and cycling within the town.

Landuses

- Residential land uses have the potential to provide a range of lot sizes and typologies which respect the rural character of the site.
- A commercial town centre with a local main street character will provide all the essential services for future residents.
- A public primary school is proposed as the site has the capacity to deliver 1,500 new dwellings, consistent with the guide for social infrastructure outlined in the Growth Centres Development Code.

Environmental Features and Open Space

- Existing first and second order streams on the site can be revitalised and protected by providing appropriate buffer zones.
- Large open space of high amenity located next to the town centre will provide an area of active open space for future residents.

Conclusion and recommendations

We support the key provisions of the Draft LSPS, in particular Planning Priority 4 and its relevant actions. We note the site's location and relatively unconstrained nature creates an ideal opportunity to provide housing and recommend that Council support the proposal for a new town/village within the LGA. ae design is of the opinion that the site is an ideal location for a new town/village as it:

1. Is relatively unconstrained, only affected by bushfire prone land and significant vegetation which can both be managed accordingly.
2. Is situated in an area of the LGA which is not serviced by existing towns.
3. Currently exists as an undeveloped parcel of land and has potential to provide development that respects the existing character and landscape amenities of the site and its surrounds.
4. Will be located in proximity to a new Hawkesbury River crossing ensuring future residents can easily access the LGA's main centres being Richmond and Windsor as well as the rest of Greater Sydney.
5. Is bound by Kurmond Road and Terrace Road which provide direct access to neighbouring towns.

Accordingly, the site at 393 Terrace, North Richmond is supported for residential development based on urban design grounds.

Sincerely

[redacted]

Director

Appendix 1 – Constraint Diagrams

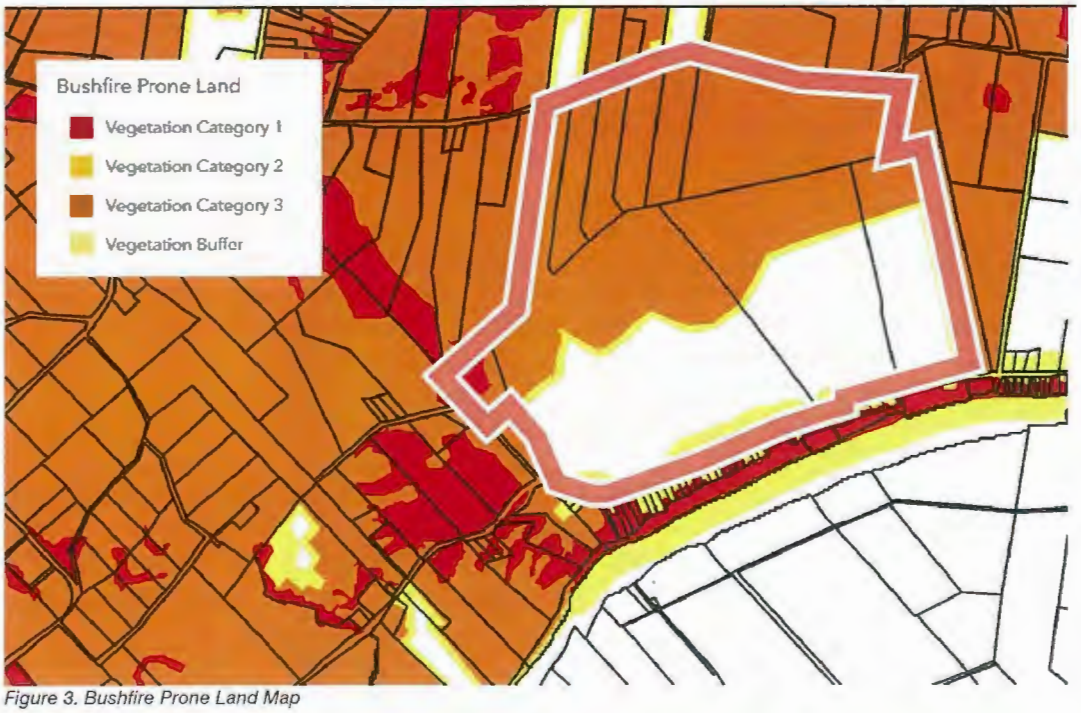


Figure 3. Bushfire Prone Land Map

Figure 4. HELP 2012 Terrestrial Biodiversity Map

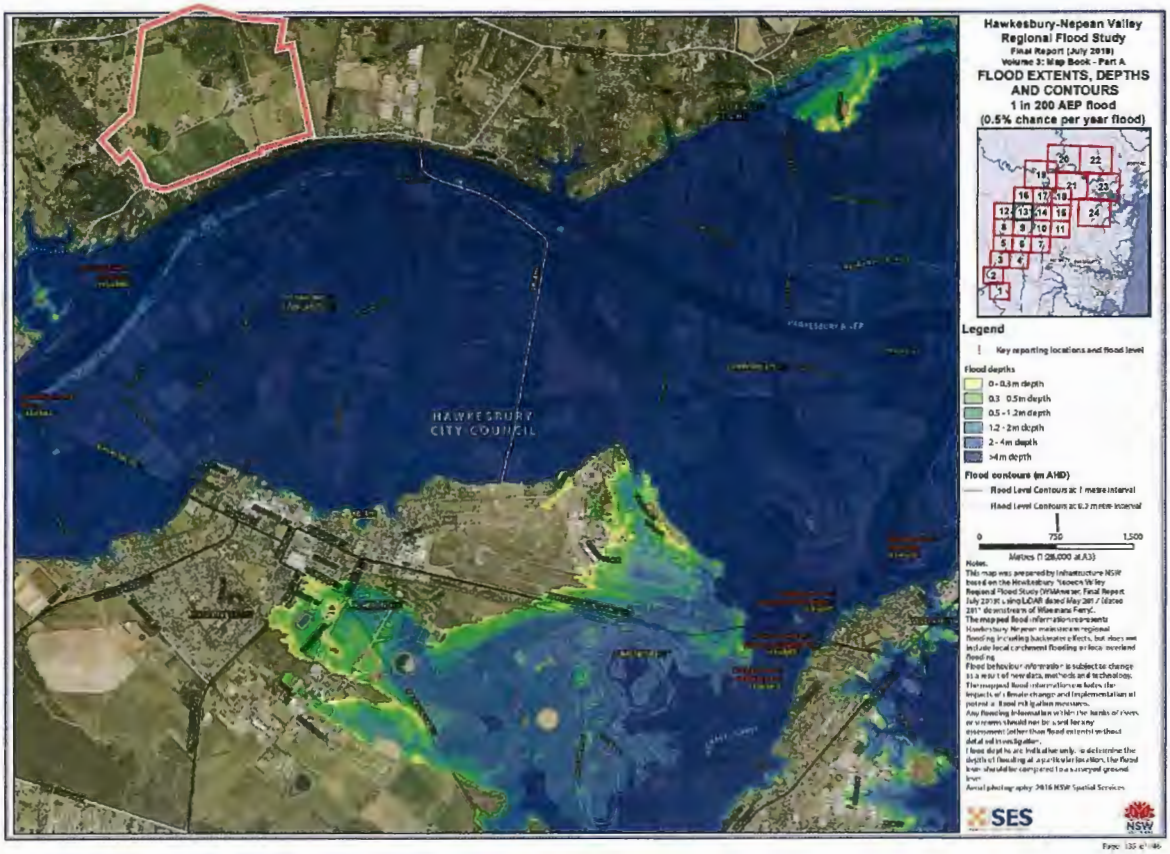


Figure 5. Hawkesbury-Nepean Regional Flood Study – 1 in 200 year flood map

34

07 November 2019

General Manager
Hawkesbury City Council
366 George Street
PO Box 146
Windsor NSW, 2756

Dear General Manager,

Submission to Draft Local Strategic Planning Statement

Introduction

This submission has been prepared by ae design partnership on behalf o[redacted] in response to Hawkesbury City Council's (Council) exhibition of the Draft Local Strategic Planning Statement (Draft LSPS) for the Hawkesbury Local Government Area (LGA).

Background

[redacted] are the owners of a large site located at 322 Grose Vale Road, Grose Vale, legally described as Lot 260 DP1237271. Following recent development surrounding the site, the owners are seeking to explore the possibility of rezoning the land to support residential development.

Figure 1. Site Context

Site Summary

The site has an area of 35.41 hectares and is currently occupied by two dwellings located at the west of the site. It is situated approximately 2.5km west of the North Richmond Town Centre and 6km north-west of the Richmond Town Centre.

The site is bound by the new residential release area titled 'Redbank' on its north-west, north-east and south-east boundaries. Grose Vale Road runs along the site's south-west boundary. The site presents a clear and logical opportunity to fill in the 'missing tooth' of the Redbank Development.

The site is currently zoned as RU4 Primary Production Small Lots under the Hawkesbury Local Environmental Plan 2012 (HLEP2012) but is suitable for residential development as it:

- is a large land holding, not constrained by fragmented ownership;
- is not currently used for intensive primary industry enterprises;
- has direct road access to Grose Vale Road which runs through North Richmond to the Town Centre;
- is surrounded by an existing residential release area providing an opportunity for logical expansion of residential development;
- will contribute housing choice and affordability for Hawkesbury's growing and changing population, consistent with the Draft LSPS;
- is an unconstrained site not affected by flooding, heritage conservation or ANEF contours; and
- will not create a land-use conflict with valuable agricultural and environmental land.

Site Constraints

1. Almost the entire site is classified as bushfire prone land with the majority classed as 'Vegetation Category 3' and small parts classified as 'Vegetation Category 2' (see figure 2).
   However, this can be managed by providing compliant bushfire protection measures such as hazard separation and adequate access satisfying the Ministerial Direction No. 4.4 – 'Planning for Bush Fire Protection' and the requirements of Planning for Bush Fire Protection 2006 and Planning for Bush Fire Protection 2018.

2. The site also contains large areas of significant vegetation which will need to be managed accordingly (see figure 3).
   To avoid and minimise potential impacts of residential development on the significant vegetation, a Biodiversity Development Assessment Report would need to be prepared.

3. There are three dams located on the site which contribute to the Keyline Irrigation System and would need to be retained.

Review of Draft LSPS

We have undertaken a detailed review of the Draft LSPS and Draft Hawkesbury Housing Strategy Synopsis and have identified local priorities we support.

1. General

We note and support the Council's 20 year vision for Hawkesbury, as a vibrant, diverse, economically sustainable community which embraces and supports its heritage and distinct character. Additionally, we support the intention to focus housing development in locations that are within existing urban areas with good access to existing services such as education, health and commercial services that minimise risks associated with flooding and bushfires.

2. Draft Hawkesbury Local Housing Strategy – Synopsis (Draft HLHSS)

We note that the Draft LSPS indicates that an additional 18,050 residents will live in the Hawkesbury LGA by 2036, To accommodate this projected growth, the Draft HLHSS states that 5,350 new dwellings will need to be constructed over the next 20 years. We support the proposed strategic objectives to deliver this housing, listed in the Draft HLHSS which include:

- maximising the potential of existing urban lands;
- focusing new housing in centres; and
- continuing release areas.

We also support the investigation of potential rezoning scenarios within centres in order to focus new housing in areas with existing or planned services.

3. Planning Priority 4: Provide a diversity of housing types to meet the needs of the changing demography.
We acknowledge and support the actions listed under this planning priority and note their consistency with the possibility to rezone the site to allow for residential development.

- **Identify unconstrained sites to deliver housing in flood plain areas within lands above 1 in 200 year ARI.**

The plan acknowledges the significant number of constraints that affect development in the LGA which include:
- flooding;
- bushfire;
- heritage conservation; and
- ANEF contours.

Of the four constraints listed above the site is only impacted by bushfire prone land. The Hawkesbury-Nepean Regional Flood Study map (figure 3) shows that the site is not affected by a 1 in 200 year ARI flood. This makes it an ideal location to deliver future housing stock.

- **Encourage and mandate new residential developments to respect the local character and landscape amenities of the existing areas through siting, design and layout of the building forms.**

The site currently exists as an undeveloped parcel of land in an existing urban area. There is adequate infrastructure currently in place to support residential growth on the site and development of the land will create an opportunity to improve the surrounding residential release area by:
- continuing the road network, creating an additional access point of Grose Vale Road;
- developing the pedestrian network of the locality;
- providing additional open space and public recreation areas; and
- improving the quality of existing riparian corridors.

The character of the land surrounding the site is characteristic of:
- low density residential to the SE and NE with detached houses located on lot sizes of 375m^2;
- low density residential to the NW with detached houses located on lot sizes of 1500m^2; and
- large lot environmental living to the SW.

The site's large size affords an opportunity to provide a range of different land zones and minimum lot sizes for future lots ensuring that development respects the existing character.

4. Town Centre
We note that the Hawkesbury population is primarily located in the 65 towns and villages which currently exist within the LGA and understand that each has its own unique and distinctive feel.

North Richmond is one of the principal towns within the LGA of which the Draft LSPS provides the following description:
- an emerging area in the LGA with newer medium and low density housing stock;
- range of services including supermarket, liquor land, pharmacy, cafes and restaurants, dentists and post office; and
- a centre with retail and industrial opportunities.

Based on this description, the town is an ideal location for future housing stock as it is well serviced and emerging as one of the major centres within the LGA.

POTENTIAL MASTER PLAN

This structure plan illustrates how potential development could create an integrated land use outcome that carefully considers the site's surrounding land uses, movement network and ecological constraints.

Opportunities:

- Continue existing road network.
- Fill in 'missing tooth' of Redbank development which surrounds the site on three sides.
    - Continue block pattern and associate lot size.
    - Extend buffer around riparian corridor.
- Provide a transition from residential land uses to rural land uses.
- Retain vegetation through the provision of 10,000m² lots along Grose Vale Road which lie adjacent to large lots to the west of the site.
- Continue pedestrian links through the site.

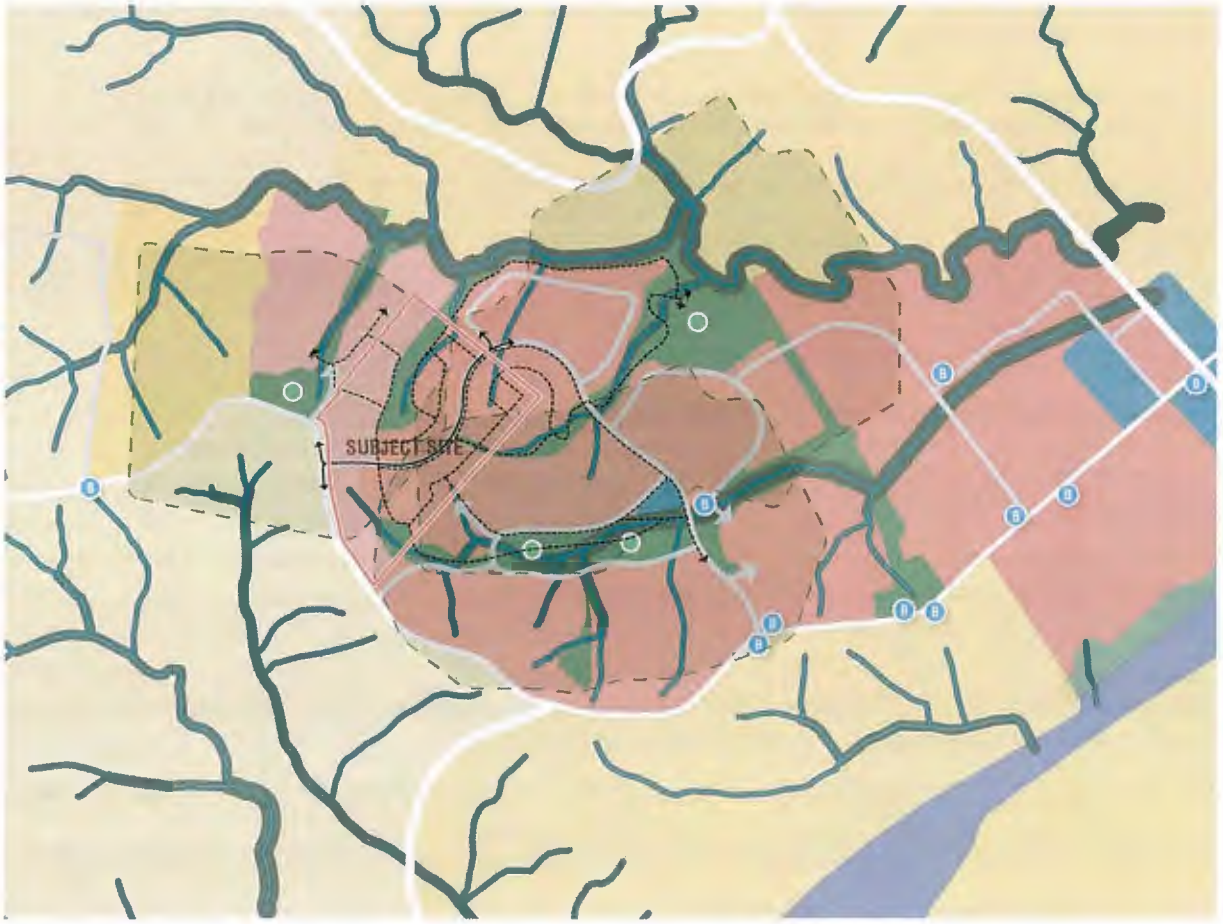


Figure 2. Structure Plan

Land Use

The site is has the capacity to be rezoned from RU4 Primary Production Small Lots to a mixture of:

Land Zone	Justification
R2 Low Density Residential	Low density residential lots within the site will be a continuation of the lots of the Redbank development surrounding the site and allow for a consistent built form
R5 Large Lot Residential	Land zoned R5 Large Lot Residential will be located along the site's western boundary to provide an appropriate transition from residential land uses to rural land uses.
RE1 Public Recreation	RE1 zoned land is located along existing streams which flow into the site and will allow for a necessary buffer zone around these riparian corridors.

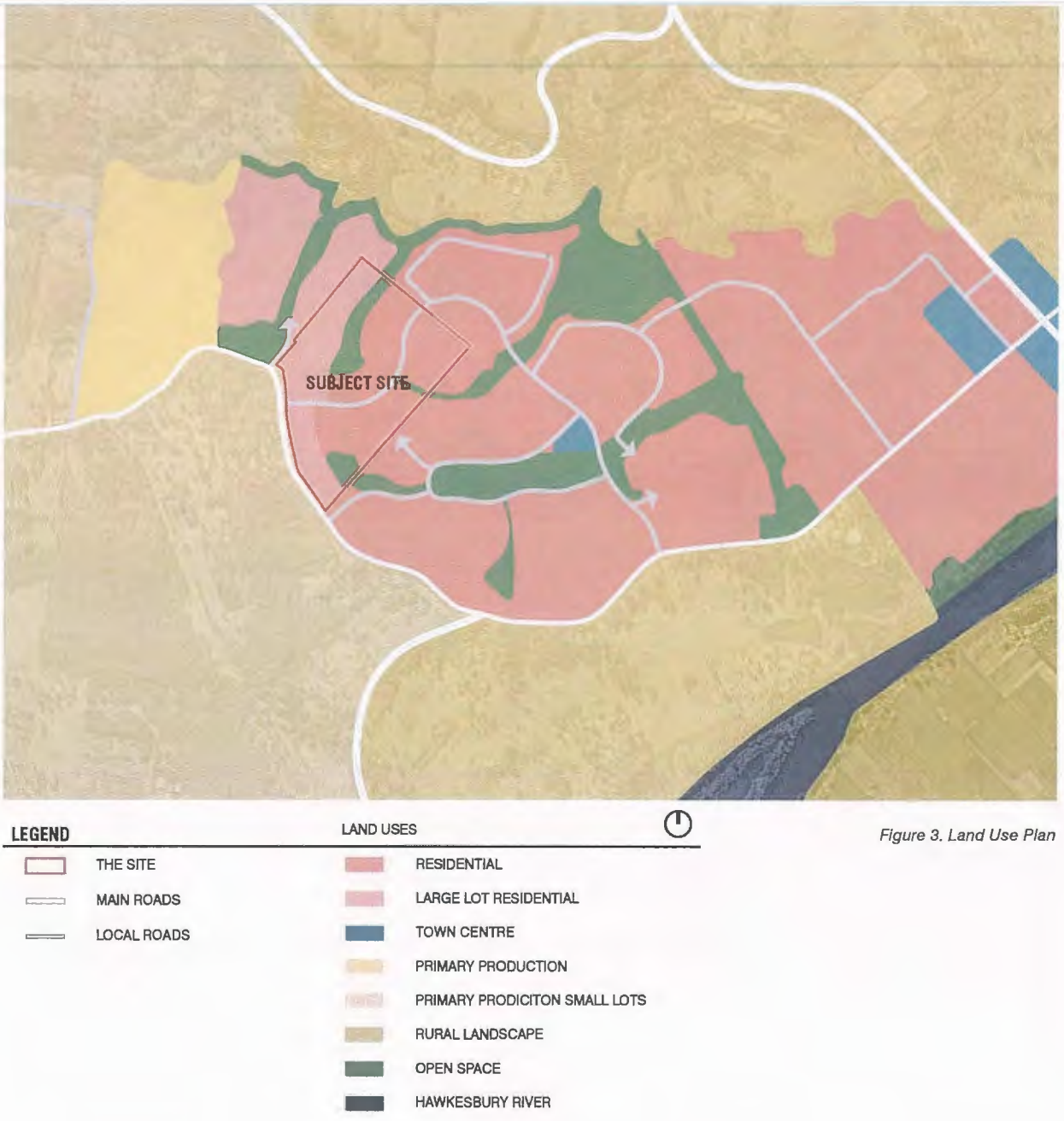


Figure 3. Land Use Plan

Minimum Lot Size

The minimum lot size of 200ha could be be changed to a mixture of 375m², 500m², 700m², 1,500 m² or 10,000m².

Land Zone	Lot Size	Justification
R2 Low Density Residential	375m² 500m² 700m²	Range of lot sizes will provide options for different low density buildings to be constructed.
R5 Large Lot Residential	1,500m² 10,000m²	Allows for a transition from rural to residential land uses and a greater retention of vegetation, particularly within the 10,000m² lots along Grose Vale Road which lie adjacent to large lots to the west of the site.
RE1 Public Recreation	NA	Ensures the protection and preservation of existing riparian corridors.

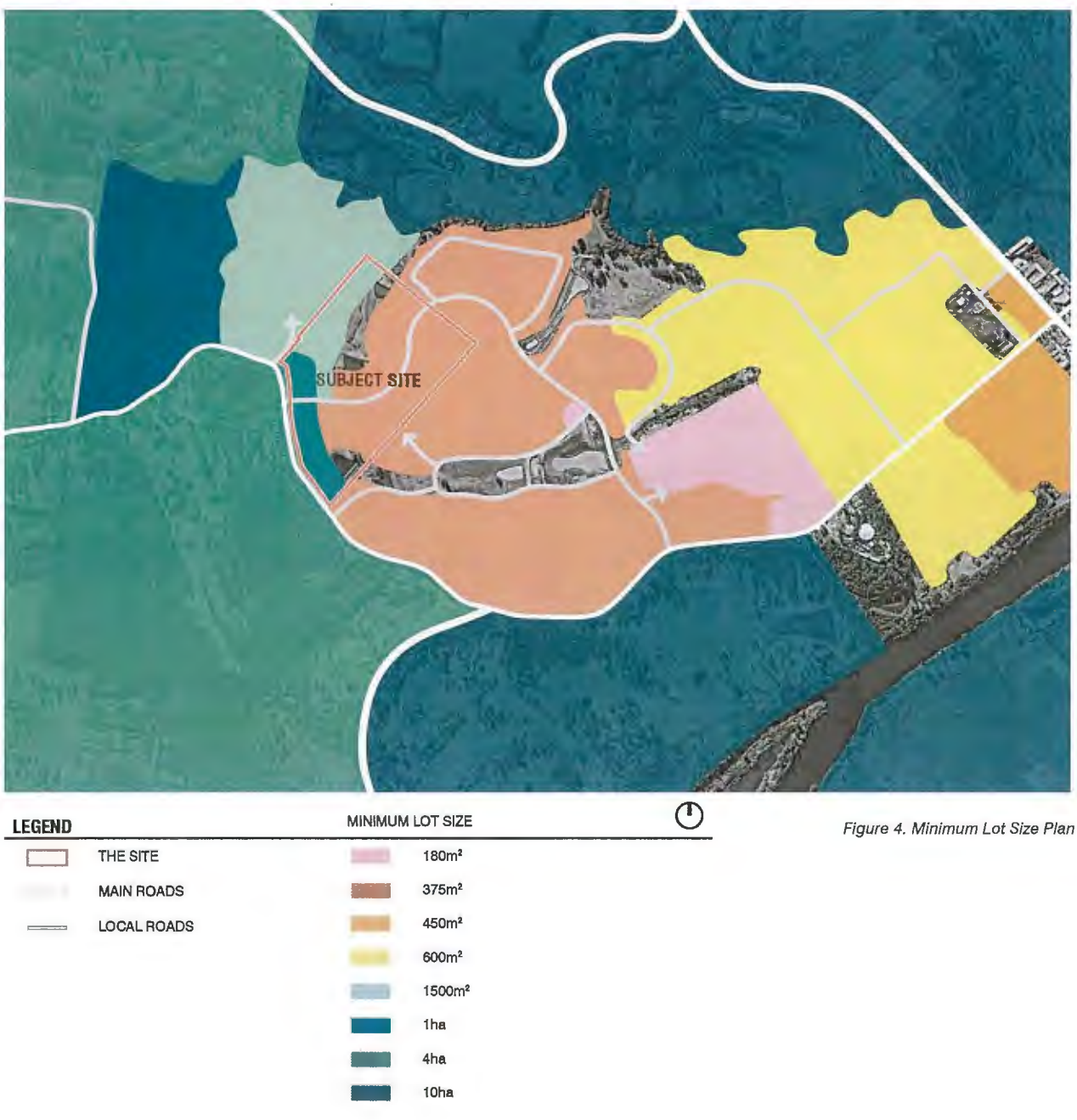


Figure 4. Minimum Lot Size Plan

Open Space Network

Almost all of the site is located within a 400m radius of a local park. This distance equates to a 5 minute walk ensuring residents have access to active open spaces within a close proximity to their home. There is potential for additional passive and/ or active open space to be provided within the site in the buffer zone which surrounds the two riparian corridors within the site.

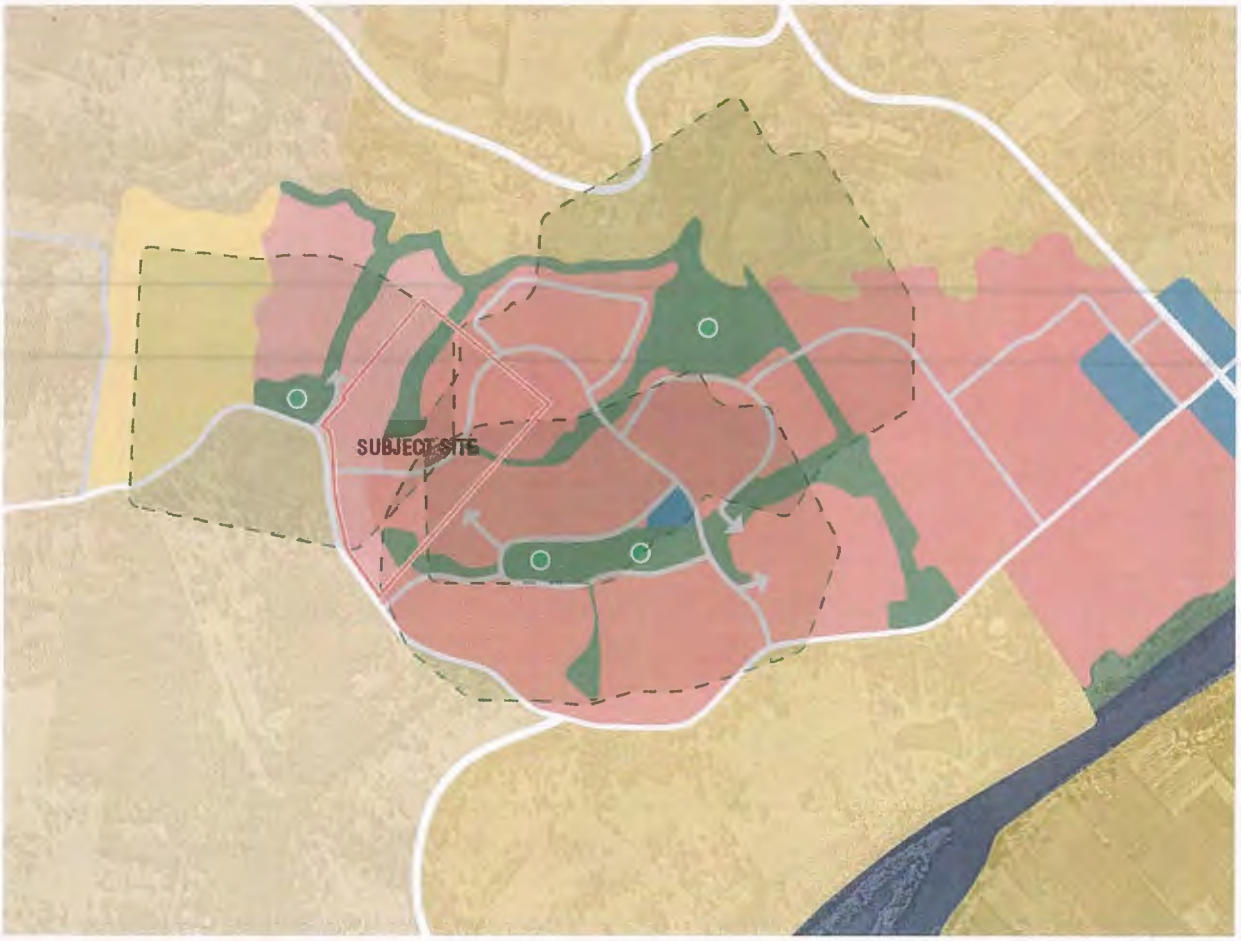


Figure 5. Open Space Network

Conclusion and recommendations

We support the key provisions of the Draft LSPS, in particular Planning Priority 4 and its relevant actions. We note the site's location and relatively unconstrained nature creates an ideal opportunity to provide housing which aligns with the aforementioned actions.

We also support the strategic directions of the Draft HLHSS and recommend that the site be identified as a location where future housing demands can be met for the following reasons:

1. The site is surrounded by an existing residential release area providing an opportunity for logical expansion of residential development.
2. The site is not suitable for agricultural purposes.
3. The site is only affected by bushfire prone land and significant vegetation which can both be managed accordingly.
4. The site is bound by a new residential release area and has the potential to improve the road and pedestrian network of the locality.
5. The site is located within an emerging town within the LGA which contains essential services and employment opportunities.
6. The potential masterplan demonstrates the site is suitable for residential development.

Accordingly, the site at 322 Grose Vale Road is supported for residential development based on urban design grounds.

Sincerely

Director

Appendix 1 – Constraint Diagrams

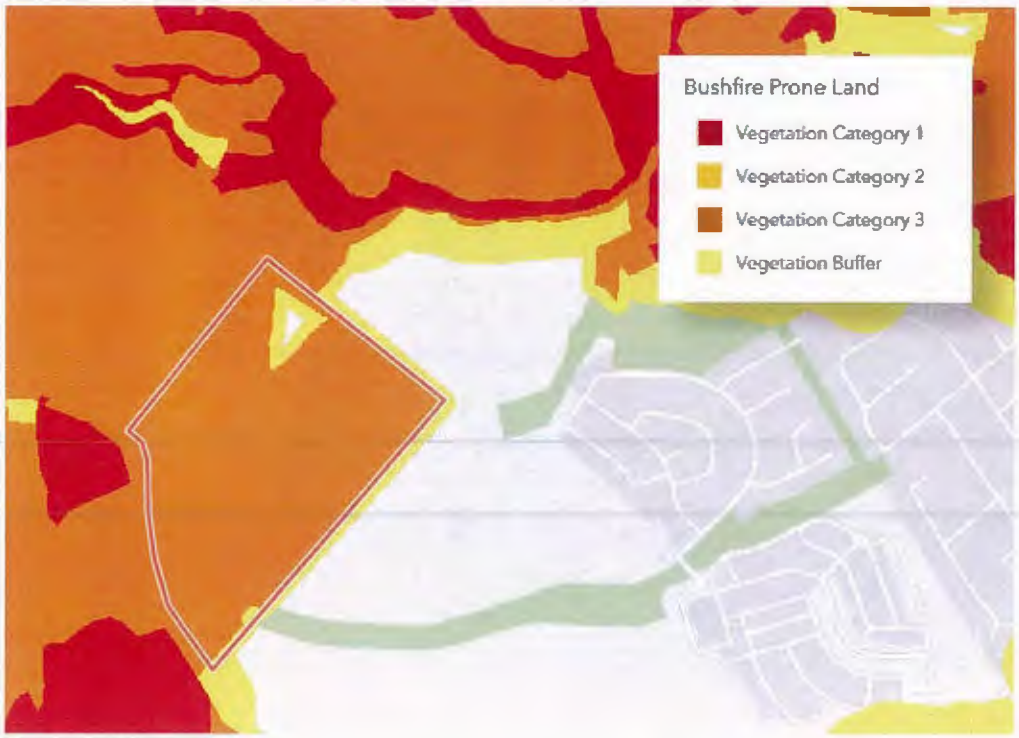


Figure 6. Bushfire Prone Land Map

Figure 7. HELP 2012 Terrestrial Biodiversity Map

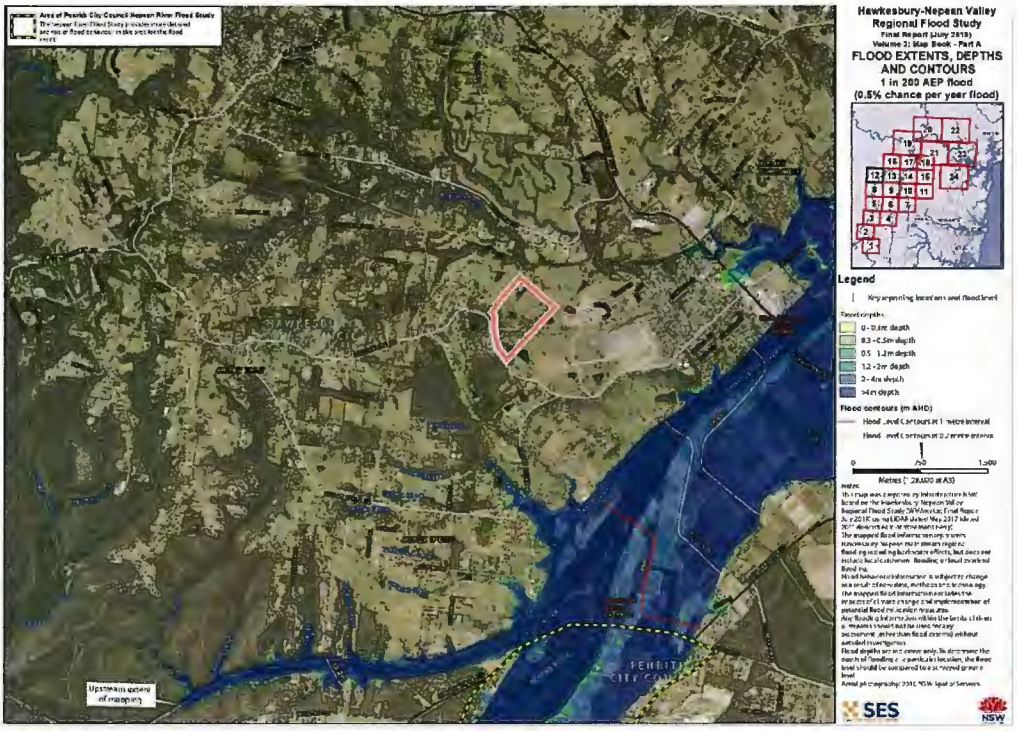


Figure 8. Hawkesbury-Nepean Regional Flood Study – 1 in 200 year flood map

(35)

WESTERN SYDNEY
UNIVERSITY

18 November 2019

The Chief Executive Officer
Hawkesbury City Council
366 George Street
Windsor NSW 2756

Sent via email: council@hawkesbury.nsw.gov.au

Dear Sir/Madam,

DRAFT HAWKESBURY LSPS: WESTERN SYDNEY UNIVERSITY SUBMISSION

1. INTRODUCTION

Western Sydney University (the University) welcomes the opportunity to make a submission on the *Draft Hawkesbury Local Strategic Planning Statement* (draft LSPS), September 2019, which is currently on public exhibition (24 September to 13 November 2019).

The draft LSPS sets out Council's land use vision, planning principles, priorities and actions for the next 20 years, and is consistent with the Greater Sydney Commission's (GSC) Western City District Plan. The University supports the overarching elements and vision of the draft LSPS which align with our vision to enhance education, research and employment in Hawkesbury, and in particular the planning priorities to:

- **Develop Hawkesbury's Position as a Leading Peri-Urban Centre in Economic and Sustainable Regional Development:** Allow agricultural-related businesses to grow and create new economic opportunities.
- **Create a 30 Minute City**: Empower people to have close access to education, jobs, and services within 30 minutes and leverage from new infrastructure investment;
- **Develop Innovative and Diverse Agri-Businesses within the Clarendon Precinct**: Focus new employment, business and industry partnerships linked to research on lands between Richmond and Windsor, and encourage an agglomeration of activities that supports the economic growth of Hawkesbury and the region.
- **Co-Locate Emerging Industries Close to the Western Sydney University**: Develop an Agri-knowledge precinct that can leverage from existing and emerging specialisations in agricultural technology and related businesses.

- **Foster Strategic Partnerships and Strong Effective Governance**: Continue to collaborate and build partnerships with Council, the RAAF Base, TAFE NSW Richmond, new Hurlstone Agricultural High School, and other stakeholders to develop educational pathways and business synergies that leverages from opportunities from the Western Sydney Airport and Aerotropolis new global markets.
- **Explore and Advocate for Sustainable Futures**: Investigate opportunities in renewable energy, water recycling, biodiversity, and research the impacts of bushfire and flood.

The University is committed to the people of Hawkesbury and recognises that the next 30 years will be an exciting time, with the new Western Sydney International (Nancy-Bird Walton) Airport and Aerotropolis opening and providing new opportunities for the growing local community. The University can assist Council to ensure Hawkesbury is equipped for the future and will benefit from the predicted growth in the region.

This submission provides an overview of the University and Western Growth, the University's transformational strategy to repurpose our existing campus network, creating new technology-enabled learning, teaching, and research facilities. This submission also provides detailed comments on the draft LSPS for Council's consideration.

The University looks forward to continuing discussions and working collaboratively with Council and other key stakeholders on strategic planning opportunities for Hawkesbury, along with plans to increase our presence and further benefit the local community.

The University looks forward to working with Council to finalise the LSPS and to participating in the next stages of the Hawkesbury Local Environmental Plan (LEP) Review.

2. WESTERN SYDNEY UNIVERSITY

The University is a leading advocate and champion for Western Sydney, and is the 'University for the region'. This region is the third largest economy in Australia, home to almost 150,000 businesses and more than 2 million people, and is experiencing rapid growth. Over the next 20 years, Western Sydney's population is expected to grow by another million, contributing to over half of Sydney's overall expected population growth.

The University is one of Australia's largest and most dynamic universities, with a significant geographic footprint across one of the nation's most economically important and culturally diverse metropolitan regions. The University is one of the most comprehensive in the nation, offering an extensive range of disciplines that are tailored to the needs of Western Sydney.

Rapid population growth, the changing structure of the economy and increased higher education participation rates have created a strong demand for higher education in the region. The University is the largest education provider in Western Sydney, with 76 per cent of its students residing in the region[1]. The University is stepping up to the challenge of a growing Western Sydney, acting as a catalyst for development while simultaneously building

[1] Deloitte Access Economics, 2017

a sustainable future for the University as a world-class institution. Serving more than 48,500 students and representing over 170 nationalities, we are an institution that is a significant economic contributor to Western Sydney, with an estimated 1.1 per cent of the region's GDP created by the University.

Universities are centres of innovation and entrepreneurship. In partnership with government, business, academic research and technology, universities help to drive an array of vital industries. Universities provide students with the skills to compete in an increasingly global workplace, and are also major employers themselves.

Learning is increasingly linked with industry; thus, connections to workplaces have been found to be an important factor in study choices. Study patterns are changing too, with students seeking accessible, connected learning hubs close to industry, that enable opportunities for future employment.

Some other potential benefits of these plans include:

- An increased capacity to conduct and showcase research and teaching relevant to the region;
- The exhibition of current research along with its impact and relevance to industry;
- The enabling of industry led research and development, simultaneously providing a unique opportunity for local businesses to exchange knowledge as well as link with other national and international research precincts; and
- Linking joint venture and start-up businesses, contributing to the objectives of the region's economic development.

Hawkesbury needs future thinking, modern learning and teaching environments that facilitate connections to industry through key partnerships and experiential learning that allows active participation and linkages with industry. The University is committed to working with Council, other tertiary providers, business and industry, to build stronger collaboration and job pathways for students, which is directly integrated into the design of its learning environments.

3. WESTERN GROWTH

Western Growth is a large-scale transformative program led by the largest tertiary educational institution in the region, to provide the highest quality learning opportunities and world-class research expertise in Western Sydney.

As Western Sydney advances towards a population greater than the rest of Sydney's, the University is transforming its delivery model to improve access to higher education by reshaping its campus network. Under the Western Growth strategy, the University is establishing a hybrid network of traditional campuses and new vertical campuses in key and emerging centres of Western Sydney. Integral to this transformation is the role of the University in co-creating precincts through an innovative partnership approach.

As the anchor institution of the region, the University's approach in contributing to the development of Hawkesbury is to engage with key stakeholders to explore and develop multiple opportunities for partnership and collaboration.

The Western Growth strategy will respond to the changing needs of Western Sydney for decades to come, aligning with the draft LSPS, and the strategic vision for Hawkesbury CBD as an established major centre with a strong connection to the emerging Aerotropolis.

The University's experience in delivering education within the fastest growing urban region in Australia has shown that the suburban campus format, which is dependent upon cars and physically separates education uses from communities, will not work in the future and is in the process of transforming.

The University is committed to continuing to grow and expand the range of higher education opportunities available to the region, through the renewal and expansion of existing facilities, as well as new facilities that are aligned to the strengths of the University and development of the Hawkesbury community.

The Western Growth strategy is: supporting the growth of the local community; encouraging business, industry and research collaboration; preparing for the knowledge jobs of the future; and building a strong local economy in Hawkesbury.

4. WESTERN SYDNEY UNIVERSITY AND HAWKESBURY

The University's Hawkesbury Campus forms an important part of the University's long and distinguished educational history. Established in 1891, the Hawkesbury Campus was an agricultural college that the Campus has now developed into a vital science, agriculture, technology and health precinct that is home to some of the most outstanding research facilities anywhere in Australia. Situated on peri-urban land adjacent to Richmond, Windsor and the North West Growth Centre, the Hawkesbury Campus is ideally placed to drive economic growth in a key 'next wave' industry for NSW.

The Hawkesbury Campus Farm is a key asset of the Campus, reflecting the continuing contemporary relevance of agriculture and associated environmental management in a peri-urban context. The farm operates in close association with resources such as that provided by the Hawkesbury Water Recycling Scheme. The Hawkesbury Campus gives students access to cutting-edge facilities, and its experimental field sites include farm dams, climate-controlled plant-growth cabinets, a post-harvest controlled environment system and physiology labs, orchards, a vineyard, and an olive grove. Animals kept on Campus include cattle, sheep, reptiles, marsupials and deer. The Campus is home to extensive biological and molecular sciences research laboratories that explore the fascinating worlds of cell and molecular biology, animal science, microbiology, terrestrial and marine ecology, food and plant science, and forensic biology.

The Hawkesbury Institute for the Environment (the Institute) is home to some of the most acclaimed climate change and energy researchers from Australia and the world. The Institute is researching a suite of crucial environmental problems and is having a global impact; it is the leading centre of research excellence in ecosystem function and environmental responses to changing climates, with a strong reputation for delivering research outcomes of the highest quality. Research includes landscape revegetation and reforestation, biofuel production, remediation of contaminated soils and adaptation to climate change. With extensive national and international collaborations and partnerships, the Institute offers access to world-class research facilities and scientific talent to address the most important questions facing our changing world.

A $7.5 million greenhouse research and teaching facility on Campus, completed in 2016, allows students the opportunity to be involved in learning and research training in a world-class, high-tech agribusiness facility. The greenhouse facility is a partnership between the University and Horticulture Innovation Australia (HIA). With a bold vision to enhance national and international food security for an energy and water constrained future, this new facility will help Australian growers tap into the latest research and practices within greenhouse crop production to make their operations more efficient, and meet the increased demand for fresh food that can be delivered quickly to markets. The facility has a strong education and training focus, working in partnership with industry and TAFE to produce career-ready graduates through engaged learning, projects and research in their studies.

The new Hurlstone Agricultural High School (Hawkesbury) will be an academically-selective agriculture and STEM (science, technology, engineering and mathematics) school, catering for 1,500 students spanning years 7-12. A shared university and high school precinct will give school students exposure to the University's world-leading science, agricultural, STEM, and environmental research and facilities, as well as access to the University's extensive tracts of farm land, suitable for both intensive and progressive farming practices.

As part of the University's own Innovation Corridor economic development strategy, it has consolidated key agricultural, STEM and innovation-themed expertise into an 'Hawkesbury Agripark' at the Campus, which includes the Hawkesbury Institute for the Environment, an Intensive Horticulture Greenhouse Technology project, and the development of an Agritech 'LaunchPad' business accelerator in collaboration with corporate and Government partners. According to figures provided by the NSW Department of Education, agriculture is a key driver for the state's economy, contributing $12 billion to NSW, with agricultural exports adding another $5.6 billion. Agriculture and related industries also employ some 65,000 people across the state. The Hawkesbury Campus Agripark will deliver the next phase of agribusiness growth though the co-location of leading agricultural providers on one campus, presents a one-stop-shop for knowledge exchange, educational integration, research investment, professional development for the people of Hawkesbury.

The University has a vision for the Hawkesbury Agripark to create a world-class greenhouse facility and generate a cluster of research expertise in food technology, land use management and consumer demand. A proposed state-of-the-art commercial facility will incorporate innovation and technology for use in protected cropping, as well as be environmentally

sustainable in design and operation. The design will link protected cropping research and the commercial application of the proposed facility, highlighting the internationally renowned research already occurring within the Agripark and its commercialisation. This facility will allow students to undertake research and apprenticeships in areas such as logistics, operations management, marketing, food science and agriculture.

This vision is underpinned by the University's education and training priorities, which includes:

- Educating a highly qualified workforce to drive the 'next wave' of agribusiness and associated industry;
- Developing and promoting thought leadership in sustainable peri-urban futures;
- Creating a networked Centre for Sustainable Agriculture Education & Research; and
- Partnering with government, business and industry to identify synergies and opportunities associated with the 'Agri-Park' and "Western Sydney Aerotropolis".

5. SUBMISSION: DRAFT HAWKESBURY LSPS

This section of the submission provides comments on the draft Hawkesbury LSPS priorities and actions that are relevant to the University.

The University understands the vision for Hawkesbury under the draft LSPS is for *'a planned city of sustainable growth, supported by essential infrastructure, efficient transport, a prosperous economy and equitable access to a vibrant lifestyle'*:

- Develop Hawkesbury's position as a leading peri-urban centre in economic and sustainable regional development;
- Create a 30-minute city;
- Develop innovative and diverse agri-businesses within the Clarendon Precinct;
- Co-locate emerging industries close to the Western Sydney University;
- Foster strategic partnerships and strong effective governance; and
- Explore and advocate for sustainable futures.

Key Planning Directions and Actions of the draft LSPS are addressed below. The University is willing to assist Council to implement these priorities and to continue to collaborate with Council to strengthen the education foundation and research competitiveness of Hawkesbury.

5.1 INFRASTRUCTURE AND COLLABORATION

Planning Priority 1: Bridge the shortfall of infrastructure through stakeholder collaboration to support current and future growth.

Action 1.1: Advocate for improved health and education facilities with State Government and key providers.

- As a strong advocate for the deliverer of education facilities, the University supports this action and willing to collaborate and find synergies with Council's vision for the LGA.
- The University is opening up the Hawkesbury Campus by sharing resources and developing new collaborative educational pathways between the new Hurlstone STEM High School, Richmond TAFE, the University's Sustainable Agriculture and Food Security Program and the Office of Estate and Commercial as a 'Centre of Excellence in Peri-Urban Futures'.
- The University is working with the Education Department to utilise the farm as a case study for all HSC students across the Sydney Basin.

Planning Priority 2: Collaborated investment in infrastructure that will support existing and future industries.

Action 2.1: Collaborate with TfNSW/RMS to ensure that transport decisions promote the best outcome for the Hawkesbury LGA.

- The University supports this action and the need for efficiency in public transport to allow Hawkesbury to become a 30-minute city.
- An objective of the Western Growth strategy is to utilise existing and planned public transport services in order to improve equitable access to education for the people of Western Sydney; a 30-minute city shares this vision.
- The University is willing to collaborate with Council and TfNSW to promote improved access to education facilities, with a focus on local active and public transport connections, and rapid regional connections to Penrith, the North West Growth Centre and Western Sydney strategic centers.

Action 2.2: Lobby for efficient bus routes between Blacktown, Rousehill, Windsor, Richmond, St Marys and Penrith.

- The University is willing to collaborate with Council and TfNSW to promote more frequent bus services to the Hawkesbury Campus from; Blacktown, Rousehill, Windsor, Richmond, St Marys, Penrith, and investigate rapid bus services connecting to Western Sydney strategic centers including Parramatta, Liverpool, Bankstown, Campbelltown and the Multiversity at the Aerotropolis.

Planning Priority 3: Deliver timely and robust infrastructure to support the town centres and villages of the LGA.

Action 3.1: Investigate opportunities for the agglomeration of the Clarendon Precinct and inclusion of high technological related activities in the precinct.

- The University is willing to work with Council, business and industry, and key stakeholders to investigate opportunities for the agglomeration of the Clarendon Precinct, and welcomes discussion around the inclusion of high technological related activities in the precinct.

Action 3.2: Connect the suburbs through cycle and pedestrian paths where feasible.

- The University supports the improvement of active walking and cycling infrastructure and access to public transport to improve access to education facilities and promote active healthy lifestyles
- The University provides end of trip facilities at all Campus locations including Hawkesbury and encourages the use of public transport infrastructure, and active transport modes such as walking and cycling.
- Students rely on public transport to access the University's campus network; the provision of cycle and pedestrian infrastructure throughout the Hawkesbury LGA where feasible supports the University's vision for safe and equitable access to education for the people of Western Sydney, and will increase accessibility to our campuses.

5.2 COMMUNITY

Planning Priority 5: Protect Aboriginal heritage and promote European heritage and its transition into innovative, creative and adaptive re-uses.

Action 5.8: Include heritage adaptive re-use controls in the DCP.

- The Hawkesbury Campus is rich in heritage, and is filled with built form that is protected for future enjoyment. This is reinforced through the use of heritage signage across the Campus detailing the history of the built form or locality.
- The Hawkesbury Campus capital works program focuses on the adaptive re-use of historical buildings, most recently the refurbishment of multiple heritage building within the 'R' precinct for educational, research and professional staff use.
- The University will continue to work with Council to protect built environment and will to provide input into adaptive reuse controls in the DCP.

Planning Priority 7: Manage, enhance and celebrate the distinctive heritage character of our towns, villages and open spaces.

Action 7.3: Maintain and promote the open spaces to the residents and tourists by hosting community events at different parks.

- Hawkesbury Campus is open for use by the Hawkesbury community and primary/secondary schools from across the region.

- The Campus Oval is home to the Hawkesbury Agriculture College(HAC) Rugby Club. In August 2019, the Campus hosted the NSW PSSA Rugby Union Championships. The event saw the state's top 11 and 12-year-old players compete in some memorable matches. More than 200 players competed, and in attendance all week was Waratahs' head coach Daryl Gibson, joined by members of the Waratahs staff.
- Community groups including Earthcare and Secret Garden regularly host events for the general public on the Campus.
- The Greater Sydney Local Land Services hosts events for agriculturalists on the Campus.
- The University believes in lifelong learning, and has established a series of ongoing programs to engage and inspire primary and secondary school students in order to open the doors to community groups both local and state wide.
- The Campus' gym and childcare centre are also open to the community.

5.3 PRODUCTIVITY

Planning Priority 8: Promote agricultural and food industry and growth of agri-business sector and invest in Agro-knowledge/Agronomics research through the Western Sydney University.

Action 8.2: Support the development of the STEM school and agricultural related research at the Western Sydney University at Richmond.

- The University welcomes Council support for the new Hurlstone STEM High School and Agriculture related research.
- The University has formed collaborative precinct arrangements for educational pathways, innovation, engagement and shared precinct assets with Richmond TAFE and Hurlstone STEM High School as part of the Centre of Excellence in Peri-Urban Futures.
- The University provides a networked centre for sustainable agriculture and research incorporating protected cropping, sustainable agriculture practices, digital agriculture, and livestock genetics and production.
- The University is a partner in the Future Food Systems Cooperative Research Centre which has the goal "*to work across the food supply chain, incorporating innovations in protected cropping, advanced manufacturing, smart logistics and food science to underpin high value industries in agrifood hubs.*"
- The Hawkesbury Institute of Environment hosts multi research projects, including:
    - Benefits from Below: Using Plant Silicon to Resist Stress
    - Supporting Healthy Bees and Healthy Crops - Hort Frontiers Pollination Fund
    - Greening Cities 150
    - Pastures and Climate Extremes Facility (Meat & Livestock Australia and Dairy Australia)
    - Smart Management of Disinfectant in Chlorinated Water Supplies
    - How Past Rainfall Shapes Australia's Dryland Ecosystems
    - Improving Our Ability to Clean Up Contaminated Environments

- EucFACE Shrub and Grass Growth
- Hawkesbury Forest with Chambers

Action 8.3: Foster and encourage agricultural technology innovations in the LGA.

- The University supports this action and seeks to foster and encourage agriculture technology. The $7.5 million greenhouse research and teaching facility on Campus, completed in 2016, allows students the opportunity to be involved in learning and research training in a world-class, high-tech agribusiness facility. The facility promotes best practice commercial protected cropping though developing commercial greenhouse precinct.
- Living Lab initiatives on the Hawkesbury Campus focus on areas such as precision agriculture through the application of The Yield Sensor and IoT platform.
- The University has adapted and is reusing the historical dairy precinct buildings on Campus as an Agri-industry Living Lab for Hurlstone, TAFE WSU, and streaming to agricultural schools.

Planning Priority 9: Support our industries to grow and meet current and future trends.

Action 9.1: Collaborate with Hawkesbury Chamber of Commerce to encourage apprentice opportunities to enhance, foster and promote Hawkesbury's industries and economic viability locally and globally.

- The Hawkesbury Institute of Environment has multiple research links and collaborations regionally, nationally and internationally. The introduction of the peri-urban greenhouse and potential spin of agribusiness will increase pathway opportunities for students.
- The educational precinct of Centre of Excellence in Peri-Urban Futures, including Richmond TAFE in skills development for agri-industries, will develop multiple student pathways from K-12 high school, apprenticeships, tertiary education to PhD.
- The Hawkesbury Campus is ideally placed to drive economic growth in a key 'next wave' industry for NSW, and develop a highly skilled local workforce educate in the jobs of the future.

Planning Priority 10: Explore opportunities at the Western Sydney University and Richmond RAAF Base to create value chain at the Western Sydney Airport and STEM Industry.

Action 10.1: Collaborate with the Richmond RAAF, Western Sydney University and the Equine Industry to facilitate the development of the Clarendon Agglomerated Precinct.

- The University is willing to build and strengthen the existing relationship between ourselves, Richmond RAAF and the Equine Industry to facilitate the development of the Clarendon Agglomerated Precinct.
- The University is willing to work with key stakeholders to form new partnership agreements and identify synergies that facilitate the development of the Clarendon Precinct.

- Regional synergies include the recognition by the Australian Centre of Excellence in Food Innovation (ACE-FI_ for 3 integrated innovation zones (north around Richmond, core around Aerotropolis, and south around Campbelltown)), with mission including catalyzing "*...integrated education model being developed in ACE-FI North by Hurlstone STEM, TAFE and WSU is a template for education pathways*".

5.4 SUSTAINABILITY

Planning Priority 12: Educate and adapt to natural hazards of flood, bushfire and climate change.

Action 12.1: Create on-going preparedness and resilience against natural hazards of flood, bushfires, and climate change.

- The University's Bushfire Unit is actively engaged in bushfire preparedness and response in collaboration with NSW Rural Fire Service.
- The established Hawkesbury Water Recycling Scheme in collaboration with Sydney Water Corporation, and with stormwater harvesting component is a collaborative project between the University and Hawkesbury City Council.
- The Preliminary Resilience Assessment developed by the University seeks to address climate change risks to campus infrastructure and communities.
- The University is willing to collaborate further with Council.

Action 12.4: Ensure development at the interface of areas of significant biodiversity has minimal environmental impact.

- The University has large portions of Cumberland Plain on the Hawkesbury Campus and is exploring the opportunity for a biodiversity stewardship agreement that integrates with the Hawkesbury Campus Masterplan.

Planning Priority 13: Protect areas of high environmental value and significance.

Action 13.2: Protect natural assets and ensure the biodiversity of the LGA is identified and preserved.

And;

Action 13.3: Maintain environmentally sensitive places in their natural condition through protection from encroachment by sensitive land uses.

- The University, in collaboration with the NSW Biodiversity Conservation Trust, is exploring the opportunity to establish of a pilot Biodiversity Stewardship site.
- The University landholding is responsible for the management and protection of the third largest remnant of Cumberland Plain bushland in Western Sydney.
- The University utilises and protects natural assets through land management, research and teaching within these protective sites. At the Hawkesbury Campus examples includes the flux tower and EucFACE site.

Planning Priority 14: Commit to urgent action to respond to global climate emergency.

Action 14.3: Encourage water and waste recycles.

And

Action 14.4: Commit to and champion the global warming reversing solutions through Council policies and initiatives.

- The University is leading the response to climate change on many fronts through research, teaching and campus operations and redevelopment.
- The University is working to reduce emissions and manage energy, water and waste efficiently. This includes seeking high performance building standards and Greenstar ratings for new buildings.
- The University is investigating the future installation of a solar farm to support the Campus, Peri-Urban Greenhouse and AgriPrecinct.
- The Hawkesbury Institute of Research is focused on multiple sustainability research projects including leads large-scale initiatives across the environmental, life sciences and agricultural sciences agenda.
- The University's Hawkesbury Campus is focused as best practice peri-urban landscape management with recycled water and harvested stormwater supporting landscape amenity, agricultural productivity, bush fire mitigation, and urban cooling.
- The University champions sustainable living lab initiatives, which includes undertaking a Preliminary Resilience Assessment to climate change risks.

6. CONCLUSION

Thank you for the opportunity to provide comment on the Hawkesbury Council's draft Local Strategic Planning Statement. The University is embedded in and committed to the growth and development of the Hawkesbury region and supports the vision of the draft LSPS, which generally aligns with the vision that the University has for continuing to develop partnerships and invest in the provision of education and research in Hawkesbury and the Western Sydney Region.

The synergies and opportunities created through collaboration between the University Hawkesbury Campus Agri-Precinct vision and Councils vision for the Clarendon Precinct are clear. The focus on sustainable agriculture in Hawkesbury is embedded in education and research. The University supports the vision to develop an innovative and diverse agri-business Precinct in Clarendon, focused on new employment, new business and new industry partnerships linked to a highly educated local workforce, enabling the development of an Agri-knowledge precinct that can leverage from existing and emerging specialisations in agricultural technology and related businesses.

The University is committed to contributing to social, economic and environmental sustainable futures, fostering agricultural-related businesses to grow and create new

economic opportunities where people have access to education, jobs, and services within 30 minutes. The University continues to investigate opportunities in renewable energy, water recycling, biodiversity, and the impacts of bushfire and flood, to ensure that Hawkesbury thrives as a leading peri-urban centre in sustainable regional development.

The University agrees that forging strong strategic partnerships and effective governance is key, and that through collaboration and building partnerships with Council, the RAAF Base, TAFE NSW Richmond, new Hurlstone Agricultural High School, and other stakeholders we can develop educational pathways and business synergies that leverage from opportunities presented from the Western Sydney Airport, the Aerotropolis and new global markets.

The University looks forward to continuing discussions and working collaboratively with Council and other key stakeholders on strategic planning opportunities for Hawkesbury, as well as the University's plans to increase its presence, continuing to improve outcomes for the growing local community.

I have arranged for Michelle Lee, Director, Estate Planning and Strategy, to assist you if you would like to discuss this submission in more detail. [redacted] can be contacted by email via [redacted]

Yours sincerely,

[redacted]

Executive Director, Estate and Commercial
Western Sydney University

[redacted]

13 November 2019

The General Manager
Hawkesbury City Council
Attention: Strategic Planning Staff

Dear Strategic Planning Staff,

Draft Hawkesbury Strategic Planning Statement ('LSPS') 2040 - Planning Review
Site: 27 Park Road, Vineyard and 41 Park Road, Mulgrave NSW
Proposed Rezoning RU4 (Primary Production – Small Lots) to IN1 (General Industrial)
Submission Requesting to Allocate Land and Contribute Land as Employment Lands

Introduction

This submission has been prepared for the owners of the abovementioned properties in relation to the Draft LSPS. This submission is provided in response to the recent draft statement and is made in addition to our Planning Proposal which is under consideration.

The owners seek to rezone Lot 340 in DP 752061 (No. 27 Park Road Vineyard) and Lot 215 in DP 752061 (No. 41 Park Road, Mulgrave) ('The Site') from RU4 (Primary Production – Small Lots) to IN1 (General Industrial) to match the area located across the other side of Park Road and to maximise the opportunity of being well located to roads, transport and the North West Growth Area.

The subject land has been earmarked for inclusion as an extension of the existing industrial area within the SGS *Employment Lands Strategy*. The site is within an established business/industrial precinct in Mulgrave. It is not unduly constrained by environmental issues such as flooding, bushfire or biodiversity and is considered suitable for rezoning to assist with creating the '30 minute'/well connected city. These aspects are dealt with in detail as part of our Planning Proposal report (Revision 3 dated 3 May 2018).

Growing the local economy and promoting local employment for the expanding population accords with the aims of rebalancing the city and increasing jobs close to home for the Hawkesbury.

It is submitted that the rezoning of this land would accord with the directions for 'Productivity' in the *Western City District Plan* including providing jobs in the right locations, creating a well-connected city, increasing the range and diversity of skills and increasing economic diversity. Also, utilising land to maximise on land use/transport integration and to use these key areas to build internationally competitive industry sectors.

In summary, the merits of the proposed zoning update include:

- Whilst being currently 'outside' of the existing industrial/business zones, the site has been earmarked for further investigation under the 2008 SGS *Hawkesbury Employment Lands Strategy* review.
- The change provides a logical extension of the area for industrial/business which is not likely to result in adverse environmental impacts or a significant reduction in rural zones.
- The site is easily accessible by road and rail which was identified as a beneficial factor and reason to expand employment uses in the 2008 *SGS Hawkesbury Employment Lands Strategy.*
- Given the interface with industrial uses opposite and the site presentation, the site is not considered particularly suitable for agricultural purposes.
- Servicing of the site can be provided by existing/future owners, boosting the viability and potential of the land in line with Council's planning objectives.
- The area is attractive to businesses and investors. The proposal will boost the take up of industrial land as the owners or future developers can finance necessary servicing. This is considered an economic benefit for the area.
- The site is capable for the purpose. Being large and level and is not considered to be unduly constrained by environmental issues (bushfire, flooding, biodiversity or the electricity easement). It is considered that with careful planning and design that these issues could be effectively resolved. Supportive bushfire advice has been provided.
- Rezoning of the site presents the opportunity to provide for a range of permissible uses which will enhance employment potential within close proximity to developing residential communities.
- An employment zoning will create more opportunities for working close to home.
- The site has the potential to support a sustainable and well-designed development/future use with appropriate floor levels, infrastructure improvements, access and landscaping. Developable space exists on the site to create a sustainable, sympathetic, aesthetically appropriate development in the future.
- The rezoning is consistent with the strategic planning aims and objectives of state and local planning frameworks.
- The proposal is in keeping with Council's employment lands, zoning and environmental objectives and provides a balance between desired employment generating and rural uses.
- The use of this appropriate and central land (around existing/already planned employment areas) will assist in protecting scenic, constrained and rural/productive areas, to maintain the character and sustainability of the Hawkesbury.
- It is submitted that rezoning represents the efficient use of land in keeping with metropolitan development objectives. It allows the sustainable use of suitable land, providing for the orderly and economic use of land in accordance with Section 5 of the *Environmental Planning and Assessment Act, 1979* and the *Hawkesbury Local Environmental Plan, 2012.*

We look forward to receiving more information about strategic planning in the Hawkesbury. Please be in contact with the undersigned on 0438 828 972 should you require any further information or to discuss this submission further.

Yours sincerely,

[redacted]

NSW GOVERNMENT | Department of Primary Industries

OUT19/14969

Manager Strategic Planning
Hawkesbury City Council
PO Box 146
Windsor NSW 2756

Dear Sir

Hawkesbury Local Strategic Planning Statement

Thank you for the opportunity to comment on the Hawkesbury LSPS. DPI Agriculture is charged with building stronger primary industries, so one component of our work focuses on enhancing the productive and sustainable use of NSW's agricultural resources.

DPI Agriculture is interested in making comment on the Hawkesbury LSPS to determine the value placed on agricultural production and rural lands as this Council area includes rural zoned land and parts of the identified Metropolitan Rural Area (MRA).

Although there is a focus on the semi - rural amenity of this local government area, there are specific Planning Priorities to protect agricultural production and to minimise land use conflict. DPI Agriculture supports the general intent of the LSPS and specifically the following commitments and actions:

- Protect agricultural land across the LGA from land use conflicts by implementing minimum lot size for rural lands.
- Support the development of the STEM school and agricultural related research at the Western Sydney University at Richmond.
- Foster and encourage agricultural technology innovations in the LGA.
- Encourage tourism experiences that do not compromise agricultural land.
- Form partnership and alliance with neighbouring LGAs and State government agencies to explore opportunities to enhance export capability for farmers in the LGA.
- Limit rural residential developments in areas identified for agricultural activities shown on rural dwelling opportunity map.
- Support land use planning outcomes for rural residential development for areas recommended through the Hawkesbury Rural Lands Strategy.
- Undertake measures to limit land use conflicts through deliberating DA assessments.
- Promote sustainable design and local character retention in new rural residential housing.
- No additional rural residential housing will be supported unless there is sufficient infrastructure capacity to sustain the development.
- Support and actively provide community awareness of potential land use conflict from living in or near agricultural land through newsletters, Council Facebook and new resident welcome packages.

Overall Hawkesbury's position on agricultural and rural land uses is aligned with the Greater Sydney Region Plan – A Metropolis of Three Cities Objectives 24, 28, and 29; and the Western City District Plan theme W17 – better managing rural areas.

[redacted]

DPI Agriculture would be keen to have input to the implementation of the Rural Lands Strategy and specific parts of the LSPS that cover priorities for agriculture and actions to minimising land use conflicts, as outlined in the Local Strategic Planning Statement: DPI Agriculture Advice.

Should you require clarification on the information contained in this response, please contact [redacted]

Yours sincerely

[redacted]

Manager Agricultural Land Use Planning
DPI Agriculture

NSW GOVERNMENT

OFFICE OF SPORT

D19/123110

General Manager
Hawkesbury City Council
PO Box 146
WINDSOR NSW 2756

Draft Hawkesbury Local Strategic Planning Statement

Thank you for the opportunity to provide feedback on the Draft Local Strategic Planning Statement.

The importance and value of community sport infrastructure

Community sport, active recreation and social infrastructure are essential to building well connected and healthy communities. Sport increases social cohesion and provides a range of physical and mental health benefits. A recent report published by Sport Australia estimates that community sport infrastructure generates annual value of more than $16.2 billion with:

- $6.3 billion worth of economic benefit
- $4.9 billion worth of health benefit, and
- $5.1 billion worth of social benefit.

The report is available at:
https://www.clearinghouseforsport.gov.au/__data/assets/pdf_file/0007/804067/VoCSI_Final_June_2018.pdf

The importance of community sport infrastructure has been outlined in the 'Australian Infrastructure Audit, 2019' which states:

'Green, blue and recreation infrastructure contributes significantly to the liveability and resilience of places and the wellbeing of people. These spaces and facilities are essential services that, along with other infrastructure, can help create economically-productive, socially-cohesive and sustainable places.'

This report is available at:

https://www.infrastructureaustralia.gov.au/australian-infrastructure-audit-2019

Draft Local Strategic Planning Statement (LSPS)

The Office of Sport supports the Draft LSPS. We acknowledge and support the nine Local Planning Priorities and associated short, medium and long term actions from Council's LSPS.

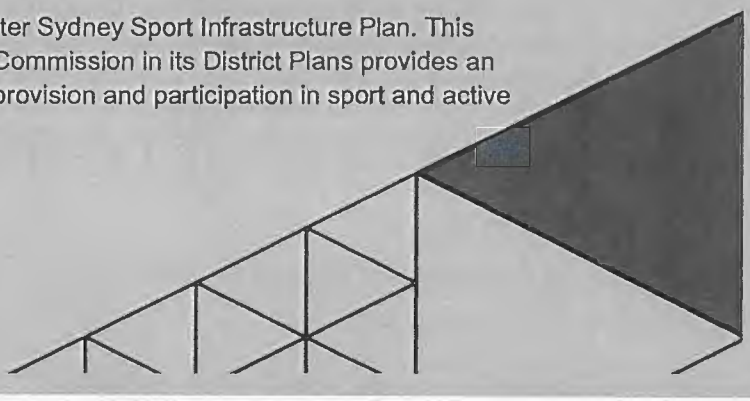
OFFICE OF SPORT

Locked Bag 1422, Silverwater NSW 2128
13 13 02 www.sport.nsw.gov.au
ABN 31 321 190 047

The Office of Sport provides the following comments, additions, and/or recommended amendments to the LSPS in the ***red, italic, bold font***, to strengthen the planning intent for active recreation and sport opportunities and outcomes for your community:

Planning Priority	Actions
1: Bridge the shortfall of infrastructure through stakeholder collaboration to support current and future growth	*1.2 Seek funding, investigate and deliver leisure, and sporting related facilities **identified in the Hawkesbury Regional Open Space Strategy for current and future communities** at appropriate locations.*
	1.## Review the Development Contributions Plan to fund local infrastructure needs identified in the Hawkesbury Regional Open Space Strategy for current and future communities.
	1.## Investigate innovative options to create partnerships and fund local infrastructure for the community e.g. Australian Sports Foundation https://asf.org.au/donate-to-sport/
	1.## Work with the Department of Education/School Infrastructure NSW and the Office of Sport to identify opportunities for 'Joint Use' projects such as shared sports infrastructure, at schools.
	1.# Council support and assist in the implementation of the Greater Sydney Sport Infrastructure Plans (once released).
	1.## Collaborate with state agencies and key landowners to deliver other opportunity areas e.g. district level sports facilities.
	1.## Collaborate with neighbouring councils on cross-boundary issues e.g. district level sports facilities.
4: Provide a diversity of housing types to meet the needs of the changing demography.	***4.## Provide a variety of quality passive recreation spaces including river foreshores, water-based sporting opportunities, bushland reserves and civic spaces connected by the local green grid and active transport routes to enhance our community's health and lifestyle.***
	4.## Provide a variety of quality active recreation spaces including playgrounds, sporting facilities, pool, and multipurpose centres connected by the local green grid and active transport routes to enhance our community's health and lifestyle.
7: Manage, enhance and celebrate the distinctive heritage character of our towns, villages and open spaces.	***7.## Develop LEP and DCP controls that respond to the findings of the Hawkesbury Regional Open Space Strategy and connect to the local green grid and active transport routes.***
12: Educate and adapt to natural hazards of flood, bushfire and climate change.	*12.5 Encourage tree planting public open spaces and providing shade to pedestrian routes **as part of the Green Grid Strategy.***
	12.## Ensure public spaces and sports facilities are suited to our local climate and environment, to reduce urban heat and enhance biodiversity.
	12.## Collaborate with state agencies and key landowners to prepare a Green and Blue Grid Strategy, including sport and active recreation opportunities.

The Office is currently developing the Greater Sydney Sport Infrastructure Plan. This initiative, identified by the Greater Sydney Commission in its District Plans provides an evidence based rationale for future facility provision and participation in sport and active recreation.



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In preparing the Greater Sydney Sport Infrastructure Plan, the Office has collected extensive data and insights. These insights can be used to inform and deliver LSPS actions including plans of management, open space studies and strategies for other placed based plans.

The Office of Sport looks forward to our continued co-operation with Hawkesbury City Council and other agencies in the delivery of the Local Strategic Planning Statements related to community sport infrastructure.

Should you require further information on this submission, please contact [redacted] Principal Advisor, Facilities Strategy and Planning on [redacted]

Yours sincerely

[redacted]

A/Executive Director, Sport Infrastructure Group

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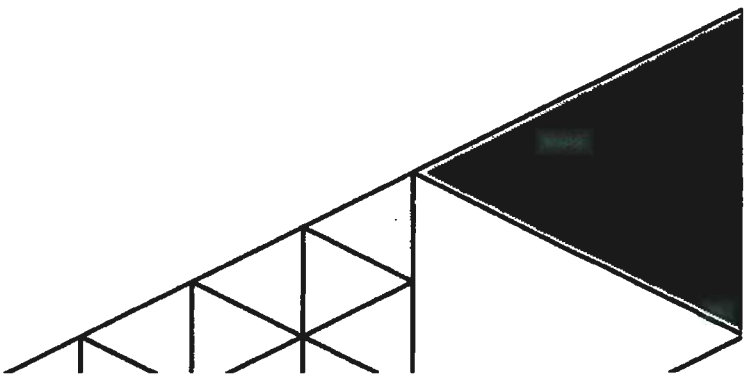

Andrew Kearns

From: [redacted]
Sent: Monday, 18 November 2019 2:47 PM
To: Hawkesbury City Council
Subject: Hawkesbury Local Strategic Planning Statement

Attn: Peter Conroy
Hi,
I am a resident of Hawkesbury Council, living a[redacted]
I have been attending our Oakville Progress Association meetings in regard to our rates as well as the proposed M9 Orbital Motorway issues.
I am writing this email in regard to councils future planning for our area.
In attending these meetings, it has become clear to me, and other members, that almost all are waiting and wishing for council to look seriously at rezoning.
At a recent meeting, we were made aware of a submission to council regarding the Hawkesbury Local Strategic Planning Statement, and although we are not in this immediate area, I believe as our block is adjacent to already rezoned areas, we can also be considered.
Our area is bounded by the North West Growth Centre at Vineyard and the Gables on the eastern side of Boundary road.
It is clear of flooding, and bushfire areas, and I believe is ideal for rezoning.
Infrastructure is either already in place, or will be, when these areas are developed.
Bus services and trains are already in place, and hospitals, shopping centres and schools are planned for nearby development.
The benefits to council will be enormous with development contributions, and future rates from new residents.
I urge council to consider in any future planning.

Regards

[redacted]

Submission North Richmond and District Community Action Association (NRDCAA) Draft Hawkesbury Local Strategic Planning Statement- (DHLSPS) (item179).

The NRDCAA is an active community group that has members and supporters from the Northern and Western Districts of HLGA ps 86 and 87 DHLSPS.

The Policy position of the NRDCAA has been tabled in Council with regards to strategic planning in the form of a petition.

The theme of the tabled petition is: *Do not approve any rezoning west of the River until the infrastructure has been up graded significantly.*

The community calls for action by the relevant authorities to improve infrastructure NOW, not simply make promises for future improvements but implement actual upgrades to alleviate the existing problems. Until this time the area west of the river cannot sustain any further rezoning.

There were over 4,400 petitioners in support of the NRDCAA petition. The NRDCAA adopted this petition as a policy on rezoning of land west of the River.

The DHLPS is a large and complex document. We understand the strategies are built on the 15 Planning Priorities (PP). The commentary from various sources supplements the reasoning behind the strategies. Is this correct?

In our view it is essential the DHLSPS be made easier to read, digest and understand by community members who are not planners or work in the Government sector?

Recommendation 1:

The DHLSPS be made easier to read, digest and understand for community members.

The NRDCAA is very supportive of the number 1 ranking of **local history, heritage buildings or features** by the community p13.

Recommendation 2:
The DHLSPS to throw a "blanket" over the four Macquarie Towns and truly

adopt as a strategy that Governments only allow development that architecturally reflects our local history, heritage buildings or features.

This includes the protection, identification and improvement of aboriginal sites, rivers, exceptional landscapes, rural character, rural and environmental assets and flora and fauna.

This will take time. Tourism will flow into our LGA in time should we adopt this recommendation.

The opening paragraph at p23 is supported.

Greater Sydney Regional Plan @p24 sets a housing target for HLGA of 1150 new homes over the period 2016-2021. The DHLSPS indicates that existing zoning accounts for **4,480 lots**.

The NRDCAA is aware of rezoning in the Kurmond Kurrajong area is in excess of 150 lots.

Accordingly the number lots in the HLGA from 2016 must be accurate and published in Report to a Council Meeting in response to this submission.

HCC is in surplus of at least 3330 lots/dwellings with regards to the target for the HLGA.

Recommendation 3:

That the accurate number of lots/dwellings be published in a Report to a Council meeting in response to Item 179.

Further, no more rezoning in the HLGA till the surplus lots are reduced to double figures.

Hawkesbury Housing and Employment Strategy @ p25 refers to **housing development in the right location.**

The right location is not defined. Terms like "the right location" (second paragraph) need to be identified.

All similar terms in the DHLSPS need to be defined.

The four dot points refer to the North West Growth Centre, less than 50% of the approximately 4000 dwelling/ lots are already rezoned.

The second dot point refers to existing transport connection. None of the locations that have been rezoned west of the River would meet **the right location** test.

We note in the Transport Traffic modelling Report the second crossing of the Hawkesbury River and Grose River are scheduled for 2027.

Neither crossing has been approved nor finance allocated.

No rezoning west of the River must be spelled out loud and clear.

The final dot point says in part **existing urban areas.**

The NRDCAA submits urban areas need to be named.

Why?

Some would say North Richmond is an urban area. It is not in **the North West growth area,** it is not **near existing transport connections or centres,** it does not have **access to** (higher) **education, health and commercial services....flooding and bushfires** p25.

Recommendation 4:

That terms like "right location" "existing urban areas", "Protect areas of high environmental value" need to be named along with other such terms to ensure consistency and transparency.

Infrastructure- Planning Priority 1 p26.The DHLSPS strategy is to **bridge the shortfall of infrastructure through stake- holder collaboration to support current and future growth.**

For Local Government to be successful with this strategy, guaranteed funding from State and Federal Governments is a must.

The income from Rates and Charges and developer contribution will never raise enough revenue to provide the infrastructure and services required.

A fixed share of the GST from the State Government would be a good start. Until a fixed income from the Federal and State Governments over and above rates and charges is agreed there will be a gap in the Planning Priorities strategy for funding the infrastructure needs now and into the future.

The NRDCAA notes the commentary on ps 30 and32.

Recommendation 5:

That separately Council through the LGA demand from Federal and State Governments that funding will be guaranteed in the short and long-term.

Confusion. At p40 of the DHLSPS dwelling targets are identified. Just below those targets dwellings for SAH (in lieu of Social Affordable Housing we think) indicates **for Hawkesbury as follows:** the figures seem to indicate there will be more SAH- target 4015 dwellings than dwellings overall 2450 in 2036.

Recommendation 6:

Clarification requested.

Productivity p52. Productivity can only be improved if infrastructure is part of the solution.

We acknowledge infrastructure takes up a section on its own, but infrastructure needs to be part of the solution to improve productivity.

Infrastructure covers an array of tools to perform our functions, examples: services, technologies, telecommunications, transport, roads, ports, water, educational facilities and lots more.

Recommendations 7:

Acknowledge infrastructure is a significant contributing factor to improving productivity.

Tourism at p62 is covered in **recommendation1**.

Further comment, continuing to create walking tracks along our rivers would add to reason for visitors to come to the Hawkesbury.

Windsor, Richmond and North Richmond. At p65 North Richmond should be deleted from the heading and the third paragraph in the second column.

In the **Draft Hawkesbury Local Housing Strategy-Synopsis, at p 12** it says **As part of the Greater Sydney Region Plan, the Greater Sydney Commission has identified land that should be preserved for rural uses, which it has designated the Metropolitan Rural Area (MRA). At the preparation of this report, a detailed strategy for these areas is not yet available, however it is understood that repurposing of lands currently employed for rural uses, particularly those with rural zoning, is strongly discouraged within the MRA.**

Figure 13 shows that Hawkesbury LGA lies entirely within the MRA, meaning that repurposing of rural lands for additional residential capacity is unlikely.

The NRDCAA noted the synopsis was not referring to employment lands. However, the comment is emphasising the direction of the Greater Sydney Commission. And, North Richmond in this section seems like an after though with just two paragraphs that are insignificant and irrelevant.

Recommendation 8:

Delete all references to North Richmond at p65 of the DHLSPS.

At p 73 of the DHLSPS, the Rationale is explained. The NRDCAA supports the Rationale and makes the follow point.

There are two wild rivers identified, the Grose and the Colo Rivers. Council should not be pursuing the construction of a bridge across the Grose River.

Council should not proceed with this construction when the DHLSPS indicates the **Hawkesbury LGA is made of these natural and man made heritage structures and landscapes including the five rivers; Hawkesbury, Nepean, Colo, Grose and Macdonald rivers;**

.....lifestyles.

At p72 of the DHLSPS **3.1 the natural environment is protected and enhanced—Value, protect and enhance our unique natural environment.**

Recommendation 9:

Council must seriously rethinks its position to build a bridge across the Grose River which will further decimate our natural environment.

There are duplicate paragraphs at p75.

At p 90, the Kurmond box, we are not aware of the grocer in Kurmond.

We have read the submission by Christopher Hallam and support his submission except for his first sentence at 5. See recommendation 9 above.

With regards to measuring traffic moments the NRDCAA asked Denise Wilson Director of ID Planning for information on trip rates.

She supplied the following:

The RMS Guide to traffic generating developments provides information on how many daily and peak hour vehicle trips are generated by different land uses based on traffic surveys.

For low density residential:

Daily vehicle trips = 10.7 per dwelling in Sydney and 7.4 per dwelling in regional areas
Weekday average morning peak hour vehicle trips = 0.95 per dwelling in Sydney and 0.71 per dwelling in regional areas
Weekday average evening peak hour vehicle trips = 0.99 per dwelling in Sydney and 0.78 per dwelling in regional areas

In the Richmond Bridge traffic model we have assumed the Sydney rates to determine traffic growth from new developments.

This confirmation adds weight to the traffic study should be reviewed in light of MR Hallam's submission.

The NRDCAA thank Andrew Kearns and Linda Perrine for their briefing on the Planning documents Monday 18th of November 2019 and their agreement to give us a week-10days to lodge a submission.

Authorised by Beatriz Insausti President NRDCAA Inc 25 11 `19

NSW EPA

DOC19/874292-1

Hawkesbury City Council
PO Box 146
WINDSOR NSW 2756

Email: council@hawkesbury.nsw.gov.au

Dear Sir/Madam

Draft Hawkesbury Local Strategic Planning Statement

I am writing in response to Council's Draft Local Strategic Planning Statements (LSPS) and supporting information received by the Environment Protection Authority (EPA) on 8 October 2019.

The EPA provides the following comments (**Attachment A**) for Council's consideration. These comments relate to the following matters:

- Air Quality
- Noise
- Water Quality
- Waste and Resource Recovery
- Contaminated Land.

The EPA has also recently developed the attached planning guidance notes (**Attachment B**) on the following matters:

- Contaminated Land Management
- Waste and Resource Recovery
- Air Quality and Land-use Conflicts
- Healthy Waterways for Community and Environment Value
- Noise and Land-use Conflicts.

These notes are intended to assist the Greater Sydney Commission as part of their Assurance process, as well as Councils when developing LSPS's to help deliver key sustainability planning priorities and actions in the District Plans. They include principles, resources, examples and suggested contacts.

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Should you require further information regarding the above, please phone [redacted]

Yours sincerely

[redacted]

Manager Regional Operations Illawarra
Environment Protection Authority

Attachments A & B

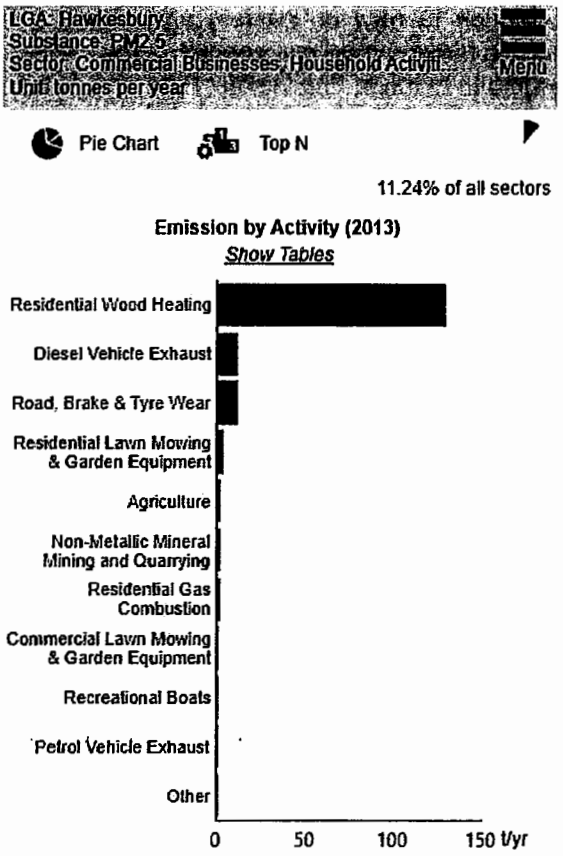
Attachment A

Air Quality

The District Plan includes as an objective under a sustainable and resilient city, *"exposure to natural and urban hazards is reduced"*, and states that, *"effective planning can reduce the exposure to natural and urban hazards"*. Urban hazards are identified as including: noise, air pollution and soil contamination. Council has an important role to help preserve amenity and protect the health of the community by managing exposure to air and noise pollution through using complementary planning approaches. The draft Hawkesbury LSPS provides an opportunity to recognise air pollution as an urban hazard that needs to be addressed in order to achieve a resilient city.

As part of the Sydney basin, the Hawkesbury local government area (LGA) can be subject to episodes of poor air quality when national health-based goals are exceeded. This is likely to be exacerbated due to climate change. These result from local and regional natural and human-made emissions. Council has opportunities through its planning to reduce air pollution emissions that impact on local and regional air quality and also to reduce exposure to air pollution within its community.

Data on sources of air pollution are being updated in the *NSW Air Emissions Inventory* .They show that the most substantial source of human-made fine particle emissions (PM2.5) in Hawkesbury LGA is domestic wood heaters (76.5%). Planning for energy efficient development with cleaner forms of heating will reduce this form of pollution. Actions under Council's draft LSPS Priority 15 to champion the transition to renewable energy will be valuable in reducing polluting emissions. Specific consideration could also be given to controls on wood heater installation.



There are important opportunities for delivering actions with multiple benefits – for example, enhancing the blue and green grid, increasing canopy and expanding active transport networks for walking and cycling. For example, the draft LSPS appears to make limited reference to planning for public and active transport, including cycling. Actions on these will be important to delivering a sustainable, healthy, liveable and efficient city and are integral to achieving the Western Sydney Parklands City. The draft LSPS also appears to make limited reference to addressing tree canopy and improving the green grid. These are similarly priorities for delivering a sustainable and resilient city and will help deliver air quality improvements.

In the context of a smart city, the draft LSPS includes valuable directions for smart buildings and smart transport. Further consideration could be given to Council's role in supporting smart and electric transport, including for example by planning charge points for electric vehicles.

As new housing is developed and communities change, Council strategic land use planning is critical to minimise adverse public health outcomes. These can arise from co-location of sensitive developments (such as residential, child care, aged care) and land uses with high air and noise emissions such as agriculture, industry and major road corridors.

The LSPS focuses on the shifts and growth in agriculture and agribusiness and identifies the need to manage potential land use conflicts. Importantly, it includes actions both to protect agriculture and, under Planning Priority 6, "*Provide rural housing with great deliberation and consideration of land use conflicts in appropriate locations.*" Implementing this is necessary to support growth of sustainable agriculture and liveable communities.

An important consideration in any Rural Lands Strategy should be the identification of management approaches to address any potential risks from land use conflicts. Rural lands and peri urban areas require careful planning in relation to new or existing agricultural activity or adjoining sensitive development (such as housing) to prevent land use conflict. Such conflict not only affects the viability of this land but is also challenging to resolve. The District Plan includes some suggested approaches that Council should consider in any Strategy. In addition to these approaches Council may also want to explore other management options in addition to buffers. These could include:

- Consulting the discussion paper: *The Future of Agriculture and Food Production in Sydney* (March 2017) prepared by Sydney Agriculture Strategic Approaches (SASA) Working Group which is facilitated by NSW DPI (Agriculture). This paper discusses a range of options in relation to the management of land use conflict.
- Consulting Chapter 5 of the *Technical Framework: Assessment and Management of Odour from Stationary Sources in New South Wales*. This chapter provides guidance on some of the options available for avoiding and mitigating potential or existing odour impacts including, but not limited to avoiding odour through land use planning; and
- Considering innovative approaches such as *"reverse sensitivity analysis"*. This approach is used successfully in the New Zealand planning system to help inform the planning of areas as they transform to manage land use conflict. Further information on this approach can be obtained at: *http://www.tba.co.nz/kete/PDF_files/ITP406_reverse_sensitivity_analysis.pdf*.

There are some key areas of industrial/rural land in the LGA which have a high and moderate potential for land use conflict (see GSC Sustainability Profile Map. 37 *employment and urban service lands that present a high or moderate potential for land use*.)These lands also require careful planning in relation to new industrial/rural activity or adjoining sensitive development such as housing in order to prevent land use conflict. Any actions to review employment lands would also benefit recognition and inclusion of supporting approaches to address Action 88 of the District Plan.

Avoid locating new urban development in areas exposed to natural and urban hazards and consider options to limit the intensification of development in existing urban areas

Ensuring that proponents address the air quality protection principles in *Development near rail corridors and busy roads – interim guideline* for residential and other sensitive developments along major transport corridors will improve health and liveability in these developments. Council may wish

to adopt these principles in its planning controls to respond to any future growth around existing or future transport corridors. Further protections for children are provided in the Child Care Planning Guideline available at *https://www.planning.nsw.gov.au/Policy-and-Legislation/Education/Child-care-facilities*.

It is suggested Council review the EPA guidance notes to incorporate further content on managing hazards into its final LSPS.

Noise

The Draft LSPS recognises the importance of placemaking that supports and maintains the local character of areas while delivering high levels of amenity. There appears to be no discussion on the management of noise other than aircraft noise associated with the RAAF Base at Richmond.

Coordinated strategies that consider land-use compatibility upfront in all planning processes to prevent the generation of noise and its impacts on public health and amenity should be encouraged. Implementing noise control at a strategic planning level provides the most effective means of minimising noise impacts on communities. Retrospective control options are usually limited and more expensive.

This is best achieved by applying the following hierarchical approach to noise control.

1. Spatial separation of incompatible land-use through appropriate zoning and placement of activities to minimise noise-related land use conflicts, for example:
   - Separate residential areas and tranquil recreational areas from industrial/commercial areas and major entertainment or sporting precincts.
   - Separate vulnerable land-uses such as hospitals, schools and childcare centres from industry and major transport routes.
2. Minimising noise emissions at source through best practice selection, design, siting, construction and operation as appropriate.
3. Reducing noise impacts at receivers through best practice design, siting and construction, for example:
   - Encouraging design solutions for residential buildings and sensitive receivers that takes account of noise from industry and busy roads and railways.
   - Encouraging use of natural barriers to existing sources of noise.
   - Designing shielded external tranquil areas and soundscapes to provide respite from noise.

There are a range of opportunities in the Draft LSPS that could be used to help better address noise management approaches to improve local amenity and health and wellbeing priorities. For example, noise can interfere with daily activities including conversation, entertainment and studying and can result in increased annoyance and stress. Noise can also interfere with sleep. The World Health Organization (WHO, 2009) indicates that 'sleep is a biological necessity and disturbed sleep is associated with a number of adverse impacts on health.

The Draft LSPS includes actions to encourage and mandate new residential developments to respect the local corrector and landscape amenities of the existing areas through siting, design and layout of building form. While further actions are proposed to investigate areas to deliver medium density housing and shop-top housing near train stations.

The Draft LSPS recognises key centres such as Windsor and Richmond as being locally important hubs with a mix of co-located uses (including retail, commercial, entertainment, employment and residential uses) in connection with a key transport hub. There are a range of challenges when delivering mixed use development that require careful planning. This includes the encroachment of residential development on commercial uses or alternatively expanding commercial uses and activities which encroach on residential uses. For example, commercial activities can produce a range of noise related impacts (including mechanical ventilation, refrigeration, hotel/live music event noise, sirens and for shopping centers, night-time cleaning/blowers/truck movements). To support

amenity and livability outcomes, Council may want to strengthen actions to also include a review of any existing planning controls or supporting codes, to assess if they are contemporary, prevent land use conflict and are able to meet the community expectation for these new places.

Careful planning is also required where new housing/sensitive land-uses is proposed in the vicinity of major road and rail infrastructure and where there is expected future traffic growth. The I-SEPP, and the advice in the *Development in Rail Corridors and Busy Roads – Interim Guideline* is applicable where the average daily traffic volume is 20,000 vehicles per day. Any planning adjoining existing or future rail and major road corridors should include a review of supporting development controls. This is to ensure that any sensitive land uses, such as residential uses that is encroaching on road or rail infrastructure are adequately designed for acoustic amenity. The SEPP is only activated however once the above traffic volumes are triggered. For roadways where there are predicted increases in traffic growth that could trigger the above requirements, Council may wish to plan these areas early to ensure development is appropriately designed for traffic noise related impacts.

Planning Priorities that address hazards would also benefit a broader discussion and inclusion of urban hazards to support the planning priorities in the District Plan. For example, these could include potential noise impacts. Where practicable, consideration should be given to identifying, creating, and preserving areas of quiet amenity, particularly in urban areas to improve liveability.

It is suggested that Council review the EPA guidance notes to incorporate further content on managing these hazards into its final LSPS.

For further advice on addressing air quality and noise hazards in LSPSs, Councils can contact Alethea Morison ((02) 9995 5833; alethea.morison@epa.nsw.gov.au) or Judith Greenwood ((02) 9995 5888; Judith.greenwood@epa.nsw.gov.au).

Water Quality

As identified in the District Plan the draft LSPS provides an opportunity to identify strategies to protect and improve the health and enjoyment of the District's waterways. The draft LSPS does provide a range of actions that will contribute to this priority however these could be strengthened to also include actions to review Councils planning controls to make contemporary to help deliver key waterway health outcomes that help deliver the community uses and values for these waterways.

For example, the EPA promotes development that maintains or restores the community's uses and values of waterways. Where these values are being achieved in a waterway, they should be protected; and where they are not being achieved, all activities should work towards their achievement over time. Council may also want to recognise this concept in its draft LSPS as a guiding principle to help strengthen Councils waterway heath directions.

As per the District Plans, Councils are encouraged to use the *Risk based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions (Risk-based Framework)* to determine appropriate actions for managing waterways within their local government areas (LGA). For example, the draft LSPS could include objectives to maintain or enhance water quality and waterway health to achieve the high-level goals and meet community environmental values and uses for waterways set out in the *NSW Water Quality and River Flow Objectives*. Further information is included in the attached guidance on managing healthy waterways for community and environmental value. In this regard, Council may also want to consider reviewing any WSUD or stormwater controls, policies and guidelines to make them contemporary to ensure they deliver key waterway health outcomes.

Council may also want to consult DPIE (Policy, Strategy and Science) recently released mapping of waterways and water dependent ecosystems that are defined as high ecological value. This may assist Council in updating any supporting natural resource mapping in their LEP. The purpose of this mapping is to identify strategic planning priorities for protecting and improving the health of high

value waterways and water dependent ecosystems in the Greater Sydney Region LGAs. Once identified, the priorities can be used as a basis for identifying aquatic biodiversity refugia, stream rehabilitation efforts and setting management targets and/or land use planning controls that would protect or improve the health of waterways and water dependent ecosystems. This is to help provide the essential services and functions expected of a cool blue-green corridor. These mapping data sets can be obtained at: *https://datasets.seed.nsw.gov.au/dataset/hevwater-greater-sydney-region*

Council may also wish to have a conversation with Sydney Water more broadly regarding the role of treated wastewater and stormwater as part of an investigation into promoting integrated water cycle management. In particular how the draft LSPS could compliment Sydney Waters Western Sydney waste water strategy. For example, Actions are proposed involving collaboration with Sydney water to provide sewer lines where not connected in the established residential areas. However, this could be broadened to include a conversation on the role of IWCM more generally for new precincts/ key centres and the provision of treated water to the rural lands to help support existing and new agricultural activities. This information could also be used to help inform Councils Rural Lands Strategy.

The draft LSPS should also include information on Councils South Windsor and McGraths Hill wastewater treatment plant and supporting reticulation system. The draft LSPS provides an opportunity to review the capacity and performance of these existing systems. This includes whether any strategies are needed for their upgrade/augmentation as part of a broader discussion on future infrastructure needs for the LGA in response to growth and delivery of key waterway health outcomes. In addition, Council may also want to consider the implications and potential impacts of expected increases in tourism may have on existing infrastructure and whether any upgrade or additional infrastructure is needed.

The role of water more generally in the landscape should be an important consideration by Council, with its recognition as underlying element that will help the delivery of greener infrastructure, open space (including ovals) and tree canopy. While there is discussion on the benefit of approaches such as green infrastructure and increase in tree canopy, there appears to be no supporting actions to assist their delivery. For example, the successful establishment of a street tree will be dependent on water and if appropriately designed, a street tree pit can also provide water quality improvement to stormwater. While Council may wish to consider the development of green plans especially for key centres that are underpinned by IWCM for key areas undergoing transformation in the LGA. An example of such a plan was recently done for Arncliffe and Banksia, see attached link:
https://www.planning.nsw.gov.au/-/media/Files/DPE/Plans-and-policies/Attachment-G---Arncliffe-and-Banksia-Green-Plan.pdf?la=en

While the proposed actions to encourage water and waste recycles could be strengthened by a review of planning controls to ensure they are contemporary and would enable delivery of these important sustainability outcomes. For example, the delivery of approaches such as Water Sensitive Urban Design (WSUD) can achieve multiple benefits. This could include opportunities to deliver greater permeability for areas in both the public and private domains. This will help reduce stormwater flows especially from sealed areas that can help deliver improved waterway health outcomes. However, any such initiative would need to be mindful of constraints such as potential contamination, salinity and acid sulfate soils.

Actions to improve the sustainability of the urban environment are supported. However, Council may not want to limit actions to only businesses and tourism operators but expand this approach more broadly as a concept that unpins the LGA in response to change and transformation. This could also include Council infrastructure. Council may also wish to explore the role of incentives to help drive higher sustainability outcomes. This could also include the use of proposed design excellence competitions to help drive innovative sustainability solutions. Council may wish to explore and promote the use of green building ratings tools, for example NABERS, Green Star Communities and programs such as Sustainability Advantage. Alternatively, Council may also wish to explore precinct-based sustainability standards, to ensure new development contributes to improved environmental performance.

The Draft LSPS recognises the importance of contributions in delivering key infrastructure, but these are limited, and other funding sources are needed. Any review of contribution or funding approaches should also include stormwater infrastructure and associated water quality devices. This is because growth and associated development will result in greater pressure on aging infrastructure that may require replacement. Water quality devices will also require ongoing maintenance to ensure ongoing performance. This may only increase with new and more efficient contemporary WSUD controls, for example water gardens requiring maintenance every six months.

To help refine these and other waterway health actions in the Draft LSPS, it is recommended that Council review the EPA guidance notes to incorporate further content on managing healthy waterways for community and environmental value.

Waste and Resource Recovery

The draft LSPS includes some actions to support better waste management outcomes, however these are limited or high-level. These could be strengthened to include specific actions relating to key waste streams or activities for the LGA. With consideration for waste prevention measures and waste-infrastructure planning to support service outcomes.

Shared or community space and place-based design also presents opportunities for circular economy outcomes, that share products and resources. This could include food donation or organic waste management infrastructure (such as community composting), or reuse and repair centres.

It is suggested that Council review the EPA guidance notes on Waste and Resource Recovery to incorporate further content, that strengthen waste-related actions and resource recovery outcomes, into its final LSPS.

Contaminated Land Management

The draft LSPS does not appear to include any discussion on the management of contaminated land. The District Plan objectives states that *"Exposure to natural and urban hazards is reduced"*. The District Plan also recognises soil and groundwater contamination as an urban hazard which will require careful management as the District grows, and as land-uses change.

The above considerations are important when planning for more sensitive land-uses such as primary schools and low-density residential neighbourhoods, in or around areas with the potential for pre-existing contamination. While State Environmental Planning Policy No 55 – *Remediation of Land* and its associated guidelines help to manage the rezoning and development of contaminated land, the LSPS process can be used to help support meeting these requirements.

The LSPS process provides an opportunity to review current planning approaches undertaken by Council for the management of contaminated land. For example, Councils could develop their own policy on contaminated land management (for example, developing Council's procedures when assessing development application on areas that have pre-existing contamination). A LSPS could also set directions for enhanced planning controls, especially when planning for more sensitive land-uses such as schools and low-density residential neighbourhoods, in and around areas with the potential for pre-existing contamination.

Further information is provided in the attached *EPA Guidance on Contaminated Land Management* which includes information and suggested approaches to help in the development of the LSPS.

Attachment B

CONTAMINATED LAND MANAGEMENT	
Policy action type	**Actions to include in LSPS (and flow on to LEP, DCP)**
District Plan context	The Local Strategic Planning Statement needs to consider contaminated land in planning for sustainability and resilience under these sections of the relevant District Plans: • Planning Priority: *"Adapting to the impacts or urban and natural hazards and climate change"* • Objective: *"Exposure to natural and urban hazards is reduced".* District Plans recognise soil and groundwater contamination as an urban hazard which will require careful management as the District grows, and as land-uses change. This is particularly important when planning for more sensitive land-uses such as primary schools and low-density residential neighbourhoods, in or around areas with the potential for pre-existing contamination.
Descriptions of the desired policy outcome for the LGA	The LSPS should support meeting the requirements of *State Environmental Planning Policy No. 55 – Remediation of Land* and its associated guidelines to manage the rezoning and development of contaminated land.
Data to consider	• See rtan for a list of sites notified to the EPA under s60 of the *Contaminated Land Management Act* (CLM Act). • See Contaminated Sites Public Record of Notices for a list of sites regulated by the EPA under CLM Act. • See Appendix A of the *Managing Land Contamination Planning Guidelines – SEPP55 Remediation of land* for a list of potentially contaminating industries and contaminants. • Council records on sites with contaminated land issues notated in s10.7 certificates. • Risks of land-use conflicts that need to be minimised through careful zoning and planning as new development occurs, especially where there are employment and urban service lands that present a high or moderate potential for land-use (see map at link, p.37).
Land-use plans and development controls	At a minimum, the LSPS should include an action to consider contaminated land in all local planning instruments. The LSPS can also set directions for enhanced planning controls, especially when planning for more sensitive land-uses such as schools and low-density residential neighbourhoods, in and around areas with the potential for pre-existing contamination. Key areas for the LSPS to consider may include: • Councils to develop their own policy on contaminated land management (for example, developing Council's procedures when assessing development application on areas that have pre-existing contamination). • Councils to include contaminated land data (or spatial layer) in their land-use plans and/or development control plans (for example, spatial mapping of sites with s10.7 notation on contaminated land issues). • Planning, siting and design of sensitive land-uses (avoiding whenever possible, areas where contamination could exist). For example, low density residences, and primary schools should be located away from sites with pre-existing contamination. Alternatively, there should be systems in place to mitigate any risks associated with land-use change to a more sensitive land-use. • Council to require use of EPA accredited site auditor when change to a more sensitive land-use is proposed.

	• Planning provisions to be made to properly manage any identified contamination risks.
Educate for action	Support planning actions with council community and industry education programs that help residents and businesses to be informed about contaminated land management.
Collective action	Work with council joint organisations and other collectives for regional planning of contaminated land management initiatives.
Advocate for action	Advocate for state and national plans, policies and programs that support actions by councils and joint organisations to have a policy on contaminated land management, for example, include mapping of contaminated land within their local jurisdiction, which will trigger alerts when assessing planning applications for land-use changes and new developments.
Act within own operations	Identify areas with contaminated land by mapping the list of contaminated sites notified to the EPA under s60 of the CLM Act. Identify areas with risk of contamination by considering historical land-use information and potentially contaminating industries and contaminants such as those listed in Appendix A of the *Managing Land Contamination Planning Guidelines – SEPP55 Remediation of Land.* Council to consider contaminated land and the surrounding area of the contaminated land in its decision-making for development applications in and around areas with the potential for pre-existing contamination. Council to invest in building the knowledge of planning/assessment officers in evaluating contaminated land issues within the jurisdiction. Council can seek training workshops to increase the officers' knowledge and understanding of contaminated land processes and procedures, and improve the long-term contaminated land capacity of the Council. Council to prepare a risk matrix of known contaminated sites within the area and to consider if any known sites should be notified to the EPA in accordance with s60 of the CLM Act. Council to develop its own policy on contaminated land management in areas of pre-existing contamination, or its immediate surrounding area. Sample policy may include (but not limited to) the following: • In development consent conditions, Council to consider requiring use of EPA accredited site auditor when contaminated land is identified. • Council should require a Section A Site Audit Statement whenever an application to develop land into more sensitive land-use is proposed. • Planning, siting and design of sensitive land-uses to avoid whenever possible, areas where contamination could exist. Alternatively, there should be systems in place to mitigate any risks associated with land-use change to a more sensitive land-use.

More information

Go to: https://www.epa.nsw.gov.au/your-environment/contaminated-land, or contact the NSW EPA at email: contaminated.sites@epa.nsw.gov.au.

WASTE AND RESOURCE RECOVERY Policy Direction, Information and Action	Actions to include in LSPS (and flow on to LEP, DCP)
District Plan context	The local strategic planning statement (LSPS) needs to consider waste and resource recovery in planning for sustainability and resilience under the relevant District Plans: • Planning Priority: "Reducing carbon emissions and managing energy, water and waste efficiently", and • Objective: "More waste is re-used and recycled to support the development of a circular economy." This is supported by the following actions: • Protect existing and identify new locations for waste recycling and management • Support innovative solutions to reduce the volume of waste and reduce waste transport requirements. District Plans recognise that there is diminishing capacity for land filling in Greater Sydney, with more waste being landfilled outside the region. The Plans recognise that there are a number of existing waste and resource recovery facilities but as Districts' population grows, new recycling and resource recovery infrastructure is needed to manage the growth in waste. Additional waste processing and resource recovery facilities, as well as enabling infrastructure like transfer stations, within greater Sydney could help reduce waste going to landfill and reduce the associated transport costs. The planning and design of new developments should also support the sustainable and effective collection and management of waste and resources. Appropriate employment and urban services lands should be zoned to allow a range of waste and resource recovery facilities to help move to a circular economy. These include but not necessarily be limited to materials recovery facilities, plastic pelletising facilities, composting facilities, re-use and repair facilities and other waste processing facilities including waste transfer stations. However, it is important that any such activities are appropriately located and carefully planned to avoid land use conflicts. In higher density neighbourhoods, the delivery of innovative precinct-based waste collection, systems such as advanced waste collection systems (vacuum systems) and local re-use and recycling facilities (such as reverse vending machines) provide an opportunity to improve efficiency, reduce truck movements and boost the recycling economy. Estimated total waste, recycling and organics arisings for the precinct and the final destination of this material must be considered upfront in the planning process. Where possible, additional land to manage waste and resource recovery should be identified upfront (especially if the nearest facilities will be at capacity by the time the development becomes operational) such as transfer stations or bulky stations, reprocessing, re-use and recycling facilities.
Descriptions of the desired policy outcome for the LGA	The LSPS should identify outcomes for waste and resource recovery that help support and deliver: • the waste and recycling targets in the NSW Waste and Resource Recovery Strategy , noting further targets and principles are being developed through the 20 Year Waste Strategy • the NSW Circular economy policy including approaches such as: - Procuring recovered materials in construction, operation and maintenance

	- Allocating space and infrastructure for community sharing libraries (tools, etc.) and repair centres - Ensuring new residential and commercial developments allocate enough space for best-practice waste management - Protecting existing local waste and resource recovery infrastructure • the National Food Waste Strategy target to halve food waste by 2030 • the United Nations Sustainable Development goals, including Goal 12: "Ensure sustainable consumption and production patterns" includes amongst its objectives to "halve per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains by 2030". • local or precinct-specific outcomes, e.g. Inner West Council's zero-waste target and Lendlease's Barangaroo targets construction waste target
Data to consider	• Local council waste and resource recovery data is available on the EPA website here.
Land-use plans and development controls	The LSPS should provide a vision that encourages the consideration of waste and resource recovery with a circular economy perspective in all local planning instruments and supporting controls. Key areas for the LSPS to consider may include: • Zoning and development controls for circular economy precincts: - Protect local waste and resource recovery infrastructure and land zoned for future waste and resource recovery infrastructure - Protect community/council-owned land to enable future expansion of community services (e.g. share/reuse/repair centres) • Zoning for community purposes e.g. the Addison Road community centre with multiple social enterprises including food rescue, farmers market, community garden and composting, repair and reuse centres • Consideration of the types of organic waste that may be generated in a precinct such as commercial and residential food waste, garden waste, oils and options for precinct-level waste management across multiple land uses, e.g. the Pyrmont Ultimo Precinct • Recognising the aims, objectives, assessment criteria and controls in the Model Waste Not DCP, Better Practice Guide for Multi-unit Dwelling, Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities; Construction and Demolition Waste: a Management toolkit; and Owner's Guide to Lawful Disposal of Construction and Demolition waste (NB an updated MUD guide will be published in 2019 with more emphasis on organic waste management). • Develop regional spatial strategies for waste, recycling, and organics transfer stations to enable bulking of collected materials prior to transport to processing facilities. For example, in more densely developed areas where garbage trucks will reach weight limits quickly, local transfer stations would enable efficient waste collections. • Consider future rail opportunities for waste management options. The Veolia Clyde and Banksmeadow transfer terminals allow use of freight rail of waste 250km southwest of Sydney for treatment and landfilling. The development of Parkes National Logistics Hub and East West link may result in similar opportunities for Western Sydney. • Recognise waste and resource recovery as essential services and important infrastructure. Include safeguards for current and future waste management facilities and protect existing employment and urban service lands in particular those lands having important waste needs. Consult employment and urban service lands that present a high or moderate potential for land use (see map at link, p.37).

	• Planning conditions could, when economically and environmentally sustainable, require a minimum content of recycled materials to be used in the construction of new and significant developments. • Recognise the former Department of Environment and Conservation (DEC2004) Environmental Guidelines: Composting and Related Facilities for details of environmental consideration for management and licensing. • Consider what are locally appropriate controls for home composting type activities at community gardens and for food waste from multi-unit dwellings and small cafes e.g. community composting hubs, compost huts and composting collectives.
Co-benefit actions	These suggested actions will also provide co-benefits to the community, including: • Reduced greenhouse gas emissions o Through reduced consumption (circular economy sharing and reuse initiatives), reducing embodied emissions o Through reduced organics to landfill, which minimises methane emissions from landfills • Local job generation o Repair centres and tool libraries generate skilled and unskilled jobs • Increased access to products o Repair centres and tool libraries reduce the cost of goods • Local waste-to-feed efficiencies o Such as local sports fields using locally generated compost to increase durability
Educate for action	The LSPS should provide a vision that encourages community education, examples of programs are: Council engagement programs with SUD residents and local building management organisations (for MUDs) to engage with residents on recycling practices; community composting; use of the recycling systems; recycling processes and destinations for recycled materials; and the benefits of transitioning to a circular economy. Wider community educational programs that help residents and businesses reduce their food waste, donate good quality leftover food and recycle unavoidable food and garden waste. For example: The NSW EPA's Love Food Hate Waste program, making the most of resources such as the Food Smart Kit for households, Your Business is Food Kit for cafes and restaurants, Addison Road Community Centre's War on Waste, Cumberland Council's Love Your Leftovers.
Collective action	Work with ROCs and other collectives for knowledge/resource sharing, looking at regional access to circular economy initiatives (such as share libraries and repair services), sharing resources/grants or funding programs for circular economy initiatives Work with ROCS and other collectives for regional planning of organics processing facilities, transfer stations, food donation projects. For example NE Waste Regional Voluntary Waste Group food rescue hub feasibility study WSROC Western Sydney Waste and Recycling Infrastructure Needs Assessment WSROC has also prepared guidance for Councils *Project: Escalating planning provisions for waste and recycling* This work was commissioned by WSROC to provide guidance on suggested waste and recycling provisions within their Local Strategic Planning Statement and Local Environment Plan (LEP) Unfortunately when this work was undertaken by WSROC the Draft NSW Circular Economy Policy had not been released. To strengthen the suggested LSPS in this guidance

	and to address circular economy considerations it's recommended it be amended as follows: *Waste outcomes that are safe, efficient, cost effective, maximise resource recovery, encourage waste avoidance, and that contribute to the built form and liveability of the community. This is supported by well-planned waste and circular economy infrastructure that is responsive to future needs, and provides equitable access to waste, reuse, repair, sharing and recycling services.* WSROC has also commissioned an assessment of waste and recycling infrastructure needs for the Western Sydney region. This report was made available to Western Sydney councils to assist with planning for the processing and disposal of household waste through to 2021. A copy of the report can be downloaded here: Western Sydney Infrastructure Needs Assessment
Advocate for action	• Advocate for support to transition to a circular economy, guided by federal, state and local strategies. • Advocate for State and National building performance standards that support source separation of waste, recycling and organics for highest value recycling eg a NABERs waste rating for shopping centres • Advocate for use of quality compost from source separated organics in local projects such as catchment and roadside rehabilitation, sporting fields, urban amenity, and open space management to suppress weeds, improve soil structure, improve water holding capacity and healthy vegetation cover. • Advocate for protecting existing waste and resource recovery facilities and forward planning for future waste and resource recovery facilities that will be needed to manage future waste arisings.
Act within own operations	Lead by example in Council's own (corporate) operations. This includes sustainable procurement strategies that prioritise waste avoidance, reuse and repair in addition to recycling. E.g. buying goods with recycled content, encourage vehicle and equipment leasing over purchasing where possible, banning single use plastics at all council owned facilities, set up zero waste council run events and composting of food waste generated from council run facilities. For example from Parramatta Council – 90% Diversion rate for council waste by 2038

AIR QUALITY AND LAND-USE CONFLICTS	
Policy action type	**Actions to include in LSPS (and flow on to LEP, DCP)**
District Plan context	The local strategic planning statement (LSPS) needs to consider air quality in planning for sustainability and resilience under these sections of the relevant District Plans: • Planning Priority: *"Adapting to the impacts or urban and natural hazards and climate change"* • Objective: *"Exposure to natural and urban hazards is reduced"*. District Plans recognise air pollution as an urban hazard with significant public health impacts. There are risks of air quality impacts increasing due to urban growth and climate change, particularly in north-west and south-west Sydney as well as in other areas where communities are exposed to human-made emission sources such as wood-heaters, vehicles and construction and freight activities.
Descriptions of the desired policy outcome for the LGA	The LSPS should identify outcomes for air quality that support meeting national air quality standards, recognising the role of councils in managing the cumulative air quality impacts of development and delivering clean, safe and healthy living environments.
Data to consider	• Current air quality – For air quality monitoring data, trends and analysis, see NSW air quality monitoring reports and air quality monitoring network information. • Pressures on local and regional air quality – To identify key local and regional emission sources, refer to Air emissions in my community web-tool , National pollutant inventory results (industry) and the Sydney particle characterisation study. • Risks of conflicts that need to be minimised through careful zoning and planning as land-use new development occurs, especially where there are employment and urban service lands that present a high or moderate potential for land-use (see map at link, p.37).
Land-use plans and development controls	At a minimum, the LSPS should include an action to consider air quality in all local planning instruments. The LSPS can also set directions for enhanced planning controls to help minimise emissions from major sources and avoid air pollution impacts on residential and other sensitive land-uses. Key areas for the LSPS to consider may include: • Planning for potential new emission sources, such as new transport projects, industries, waste facilities, distributed energy facilities and potential odour sources. Refer to: Approved Methods for the Modelling and Assessment of Air Pollutants, Odour Assessment Guidelines and EPA guidance on Reducing cogeneration and trigeneration emissions. • Planning, siting and design of sensitive land-uses (where vulnerable populations are at risk of exposure to pollution), including residences, health facilities and facilities for children and the aged, for example, site playgrounds away from high volume traffic routes. o Infrastructure development near rail corridors and busy roads – See Development near rail corridors and busy roads – interim guideline, and, as a case study, Brisbane City Council Plan 2014 – Transport air quality corridor planning scheme policy o For schools, Best Practices for Reducing Near-Road Pollution Exposure at Schools. • Managing wood heater emissions (DPE, EPA). Wood smoke is the major human contribution to harmful fine particle pollution in the Sydney region and councils can use planning provisions to reduce its impacts. See EPA guidance and examples of local government approaches for example, Campbelltown Council wood heater provisions and North Kellyville Growth Centre Precinct DCP.

	• Managing diesel emissions in construction. Refer to: EPA guidance and case studies on best practice diesel emissions management in construction projects.
Co-benefit actions	Support actions that will provide co-benefits to the community. Actions to create more connected cities, drive energy efficiency, move towards net-zero emissions development and increase urban vegetation can also contribute to cleaner air. These include, for example: • actions to support public, active, electric and smart transport • planning and design controls to improve efficiency and minimise building heating, cooling and other power needs • requirements for setbacks of residences from high-volume roads, which lower emissions exposure for residents while also allowing for increasing tree canopy and managing urban heat.
Educate for action	Support planning actions with council community and industry education programs that help residents and businesses to reduce air emissions, for example, refer to the wood smoke education resource kit and the Air Pollution in the Sydney Basin Animation.
Collective action	Work with ROCs, council joint organisations and other collectives for regional planning of air quality initiatives.
Advocate for action	Advocate for state and national plans, policies and programs that support actions by councils and joint organisations to protect air quality and public health, for example, that support standards and controls for air quality and emission sources and high efficiency, low emission buildings, precincts and transport systems.
Act within own operations	Lead by example in Council's own (corporate) operations, for example, local councils are encouraged to implement the NSW Government Resource Efficiency Policy, which includes energy efficiency and air quality actions.

More information

Go to: www.epa.nsw.gov.au/your-environment/air, www.environment.nsw.gov.au/topics/air or contact the NSW EPA at email: Air.Policy@epa.nsw.gov.au .

Key considerations

Air quality in NSW is considered relatively good by world standards. However, a number of considerations mean air quality remains a significant issue for future planning in Sydney and NSW (see also Clean Air for NSW webpage):

- Parts of Sydney do not meet national health-based air quality standards. For example, North West and South West Sydney experience more high pollution episodes. As these areas are targeted for future growth, planning for that growth needs to consider existing air quality, and take account of both potential health impacts on new residents from exposure to air pollution and the emission contribution of new communities to local and regional air pollution.
- Climate change is predicted to result in increased high pollution days in NSW, including high ozone days resulting from increased temperatures and high particle days from more extreme weather events such as bushfires and dust storms.
- Especially for fine particle pollution, there is no safe threshold for exposure, and public health impacts and costs still occur at levels below the standards. Young children, the elderly and those with existing health conditions are most affected. Even where air quality standards are met, substantial health, economic and social benefits are available from plans and strategies that improve air quality, particularly by delivering long-term reductions in population exposure to fine particle pollution.
- Air quality management is a distinct issue that needs to be recognised in planning. Air quality benefits often flow from improving energy efficiency, reducing greenhouse gas emissions and increasing urban vegetation. However, some actions directed to climate change resilience can potentially contribute to air pollution, for example, oxides of nitrogen emissions from distributed energy generation. Air quality therefore requires specific consideration.
- Community exposure to some emission sources continues to grow. Emissions from a number of sources are falling in response to actions such as regulating vehicles, fuels and industry.

- However, the pollution contribution from other sources may continue to increase in line with growth in population, transport and economic activity and previous air quality improvements may be eroded, in the absence of ongoing and new actions to address a range of sources. Areas for additional consideration in future may include, for example:
  - wood heater emissions – the most significant human-made contributor to fine particle pollution and health impacts in Sydney at a local and regional level.
  - non-exhaust particle emissions from vehicles, including from brake and tyre wear – these continue to rise as vehicle kilometres travelled increase.
  - emissions from older vehicles in the existing fleet – in particular from heavy diesel and light commercial vehicles which have an increasing role in the transport task.
  - non-road diesel equipment – not currently subject to emission standards and can impact on communities close to areas of heavy use, for example, near industry or construction activity.
  - diesel locomotives – not subject to emission standards and can result in health impacts when freight corridors or hubs are located close to communities or in areas where air quality is already subject to elevated fine particle pollution.
- Land-use and transport planning have a key role to play in avoiding land-use conflicts and minimising emission impacts on human health. Conflicts occur where sources of harmful emissions, such as busy roads, freight corridors, ports, industry and agriculture, are not adequately separated from sensitive land-uses such as residences, child care, schools, hospitals and aged care facilities. Land-use planning affords opportunities to manage changes in land-use so that exposure impacts are minimised.

HEALTHY WATERWAYS FOR COMMUNITY USE AND ENVIRONMENTAL VALUE	
Policy action type	**Actions to include in LSPS (and flow on to LEP, DCP)**
District Plan context	Local strategic planning statements (LSPS) need to consider waterway health in planning for sustainability and resilience under these sections of the relevant District Plans: • Planning Priority: *"Protecting and improving the health and enjoyment of the District's waterways"* • Objective: *"The coast and waterways are protected and healthier".* District Plans recognise and prioritise water quality as integral to the natural, cultural and recreational values of waterways. District Plans identify that waterways need to be carefully managed to ensure water quality supports the communities values and uses, including aspirational goals. Strategic planning needs to manage the cumulative impacts of activities and associated infrastructure without compromising the integrity of environmentally sensitive aquatic and riparian habitats to maintain water quality and healthy waterways. *District Plan Action: Improve the health of catchments and waterways through a risk-based approach to managing the cumulative impacts of development including co-ordinated monitoring outcomes.* *District Plan Action: Protect environmentally sensitive areas of waterways and the coastal environment areas.*
What do councils need to do to meet this action?	As per the District Plans, councils are encouraged to use the Risk based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions (Risk-based Framework) to determine appropriate actions for managing waterways within their local government areas (LGA). In accordance with the Risk-based Framework, the LSPS should include objectives to maintain or enhance water quality and waterway health to achieve the high-level goals and meet community environmental values and uses for waterways set out in the NSW Water Quality and River Flow Objectives. These objectives should be based on a catchment or sub-catchment level approach with collaboration between LGAs, as waterways often move through multiple LGAs. Plans should ideally include a map of waterways, important aquatic ecosystems and riparian lands or corridors to highlight at risk management areas. The map should include the community's environmental values and uses, determined through direct consultation. Councils should also recognise the management of cumulative impacts from urban stormwater and agricultural land-use by implementing sustainable urban water management, water-sensitive urban design and best management agricultural practices to deliver water quality outcomes. *Action: The LSPS should outline some of these management options that each council will adopt or implement to manage water quality within their LGA.* *Action: Councils should include consultation on their local community's environmental values and uses of waterways.* *Action: Councils should consider impacts and/or opportunities of their management on downstream waterways.*

What support is available to councils?	A range of datasets on waterways is available from SEED. A summary is provided in Attachment 1. OEH has prepared a single integrated dataset of high ecological value waterways and water dependent ecosystems for the all Councils in the Greater Sydney Region. This dataset will be published on SEED by August 2019, but is available upon request: (jocelyn.delacruz@environment.nsw.gov.au).
How do councils meet these actions? - actions delivered through land-use plans and development controls	To embed community values and uses of waterways, councils can set directions for enhanced planning controls in Local Environmental Plans (LEP) and Development Control Plans (DCP). These can help to minimise water contamination, litter and urban stormwater flows and reduce impacts on environmentally sensitive waterways and human health. *Action: At a minimum, the LSPS should include an action to review local planning instruments through the inclusion of LEP clauses and DCP controls on water quality and waterway health outcomes that achieve community expectations of waterways, such as swimming and fishing.* Other actions a LSPS may consider include: • Recognise and seek to meet the objectives of the NSW Water Quality and River Flow Objectives which identify the high-level goals for all catchments across the state. • Use the Risk-Based Framework to determine appropriate actions and stormwater management targets for managing waterways within their LGA. • Include maps to highlight the location of waterways, important aquatic ecosystems and riparian lands/corridors. • Consider Zones and Local Clauses to be adopted in a LEP, for example, riparian lands, watercourses and stormwater management. • Consider management options to be adopted in a DCP to enforce clauses in a LEP, for example, water sensitive urban design (WSUD) to reduce the impact of urbanisation and stormwater on water quality. • Recognise the need for natural bushland, riparian vegetation buffers and the promotion of pervious surfaces to maintain and improve water quality in waterways through the filtration of contaminated run-off.
Integration with other regional/district objectives	Support actions that will provide co-benefits to the community that meet other regional/district plan objectives and state projects, including: • Links to other NSW Government programs including the Coastal Management Programs and Marine Estate Management Strategy. • Increase urban vegetation, green spaces and pervious surfaces as community spaces of visual amenity and stormwater management. • Maintain/increase natural bush and riparian lands to sustain natural ecosystems and habitats while also improving water quality for recreational use. • Reduce litter and water contamination to improve visual amenity and recreational use of waterways. • Increase tree-canopy coverage to manage urban heat, reduce water evaporation and ensure environmental flows of water in waterways. • Support the use of public spaces and waterways for community health.
Educate for action	Support planning actions with council, community and industry education programs that help residents and businesses to reduce urban pollution, encourage litter collection (Harbour Care, Clean Up Australia), incorporate WSUD principles, maintain and restore green spaces, maintain or revegetate natural bush and riparian lands, and understand the importance of natural and

	healthy waterways. Utilise state government tools to monitor and educate on the health of waterways and water quality in your LGA, for example, Water Quality Report Cards.
Collective action	Work with ROCs, joint council organisations and other collectives for the regional planning of water quality initiatives focusing on catchment or sub-catchment level approaches. *Action: Ensure that in developing a LSPS each LGA has collaborated with other councils in their catchment area to develop local management actions to meet community values around waterways and water quality.*
Example outcomes for an LSPS	Achieve objectives set out in Regional and District plans to restore and maintain water quality through council actions to meet community expectations around public health, recreational use and ecosystem values, such as: • Affirm the national and state-wide water quality objectives. • Strong controls on point and diffuse source water pollution through best practice management actions for urban stormwater management and agricultural practices. • Advocate for model clauses in LEPs to implement effective stormwater and waterway management. Use OEH's LEP health check tool to search for LEP clauses that may be suitable for your LGA. • Advocate for the mapping of environmentally sensitive waterways that are important to the local community and use additional local provisions and *'natural waterways'* and *'environment zones'* to protect these areas. • Advocate for the stabilisation and revegetation of river banks to reduce erosion, sedimentation, filter incoming water and re-establish natural waterways.
Act within own operations	Lead by example in Council's own (corporate) operations, this includes: • Utilising the Risk-based Framework to determine areas for water quality improvement in own LGA. • Active steps to meet the NSW Water Quality and River Flow Objectives. • Inclusion of model clauses in LEPs on planning provisions around stormwater management (WSUD) and riparian land(s) and watercourses. • Inclusion of appropriate management options in DCP's to meet clauses in LEPs for example, WSUD. • Apply the Risk-based Framework to develop outcomes-based stormwater management targets, for inclusion in DCPs. • Review council operations to identify actions (for example, compliance, land management) that can improve water quality.

More information
OEH water quality web pages
Australian and New Zealand guidelines for fresh and marine water quality

Attachment 1: Summary of datasets on waterways in NSW

Attachment 1: Datasets describing high value waterways and water dependent ecosystems in Greater Sydney

1. Waterways

Indicator Waterways	Attribute	Description	Relevance to Legislation	Data Source & Metadata	Buffer zone (m)
Freshwater fish community status	FCOM	Freshwater fish community status spatially represents the condition of fish communities at river reach scale across NSW. Fish community data was collected from three years of biological surveys across NSW. Within the framework of the Australian Hydrological Geospatial Fabric V2 surface hydrology network, this was combined with attributes from the National Environmental Stream Attributes Database and River Styles® geomorphology. Generalised Additive Modelling (GAM) was used to predict a fish community status for each river reach. Fish community condition classed as being in "fair", "good" or "very good" condition is included in this layer.	Fisheries Management Act 1994 (NSW)	**Department of Primary Industries (DPI), Fisheries** • https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal (May 2019) • Riches, M., Gilligan, D., Danaher, K. and Pursey, J. (2016) Fish Communities and Threatened Species Distributions of NSW. Published by the Department of Primary Industries. https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/669589/fish-communities-and-threatened-species-distributions-of-nsw.pdf	Identified corresponding Strahler Stream Order and applied buffer as per Water Management 2000 Act
Waterways located within protected areas	PROWEST	Estuaries and Hydro Areas (water body areas or watercourses) that are located within National Parks and Wildlife Estate, Crown Reserve Estate, Declared Wilderness, Environmental Planning Instrument (EPI) - Drinking Water Catchments, or National Heritage List area and are therefore protected waterways. The original Estuaries datasets contain the water boundary of each estuary in NSW up to its tidal limits and includes areas vegetated with the macrophytes, seagrass, mangrove, and saltmarsh. A survey of the tidal limits was carried out between 1996 and 2005 by Manly Hydraulics Laboratory on behalf of the Department of Natural Resources. This dataset	National Parks and Wildlife Act 1974 (NSW) Crown Land Management Act 2016 (NSW) Water management Act 2000 (NSW) State Environmental Planning Policy (Sydney Drinking Water	**OEH** Estuaries • https://datasets.seed.nsw.gov.au/dataset/estuaries12439 (SEED) Hydro Area • https://sdi.nsw.gov.au/catalog/search/resource/details.page?uuid=%7BEC757E51-AE90-4438-9B07-ACA904236B5%7D (Metadata) National Parks and Wildlife Estate • https://datasets.seed.nsw.gov.au/dataset/nsw-national-parks-and-	20

		was developed under a new Monitoring, Evaluation and Reporting (MER) Program initiated by the NSW Government in 2007 to assess and better manage the health of natural resources across the State. The original Hydro area dataset defines the hydrography feature types as water body area and water course. It is a polygon feature class of the NSW Digital Topographic Database (DTDB), within the Hydrography theme. Hydro area feature class is also classified as perennial, non-perennial or mainly dry. A general criteria used for classification is that water is present for at least nine years out of ten years.	Catchment) 2011 (NSW)	wildlife-service-npws-estate3f9e7 (SEED) Crown Reserve Estate: • For more information: https://www.industry.nsw.gov.au/lands/what-we-do (Department of Industry) Declared Wilderness: • https://datasets.seed.nsw.gov.au/dataset/nsw-declared-wildernessea39b (SEED) EPI - Drinking Water Catchments: • https://datasets.seed.nsw.gov.au/dataset/epi-drinking-water-catchment (SEED) National Heritage List • https://datasets.seed.nsw.gov.au/dataset/national-heritage-list (SEED)	
Strahler streams located within protected areas	PROWSTRAH	All Strahler stream orders ≥1 that are located within National Parks and Wildlife Estate, Crown Reserve Estate, Declared Wilderness, Environmental Planning Instrument (EPI) - Drinking Water Catchments, or National Heritage List area and are therefore protected waterways.	National Parks and Wildlife Act 1974 (NSW) Crown Land Management Act 2016 (NSW)	**OEH** Strahler Stream Order • For more information about Strahler Order: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0020/172091/Determining-Strahler-stream-order-fact-sheet.pdf (Fact Sheet)	Identified corresponding Strahler Stream Order and applied buffer as per Water
Stream geomorphic condition	RSCOND	Geomorphic condition of streams as per the River Styles assessment, including streams classified as "good" or "moderate". The River Styles Framework is a tool used to characterise geomorphology, which provides baseline information and understanding of river forms, processes, evolution, condition and trajectory. The spatial layer has 3 main primary	Water Management Act 2000 (NSW)	**The Australian Government Bioregional Assessment Programme (Department of the Environment and Energy, the Bureau of Meteorology, CSIRO and Geoscience Australia)** River Styles • https://data.gov.au/data/dataset/06fb694b-d2f1-4338-ab65-a707c02f11d7	Identified corresponding Strahler Stream Order and applied buffer as per Water Management 2000 Act

		layers being River Style, Geomorphic Condition, and Recovery Potential.			
Stream recovery potential	RSPOT	Recovery potential of streams, as per the River Styles assessment, including streams classified as "conservation", "high recovery", or "rapid recovery". See above regarding the River Styles Framework.	Water Management Act 2000 (NSW)	**The Australian Government Bioregional Assessment Programme (Department of the Environment and Energy, the Bureau of Meteorology, CSIRO and Geoscience Australia)** River Styles • https://data.gov.au/data/dataset/06fb694b-d2f1-4338-ab65-a707c02f11d7	Identified corresponding Strahler Stream Order and applied buffer as per Water Management 2000 Act
Strahler stream order	STRAH4	Strahler stream orders of ≥ 4 Strahler Stream Order was created in 2012 using the RivEx (river network) tool and a topographic drainage layer within ArcMap.	Water Management Act 2000 (NSW)	**OEH** Strahler Stream Order • For more information about Strahler Order: https://www.industry.nsw.gov.au/data/assets/pdf_file/0020/172091/Determining-Strahler-stream-order-fact-sheet.pdf (Fact Sheet)	Identified corresponding Strahler Stream Order and applied buffer as per Water Management 2000 Act
River Condition Index	HEVAE	Instream value of rivers, as per the River Condition Index (RCI), including streams classified as "medium", "high" or "very high". The RCI is a long-term reporting tool for changes in riverine condition and associated input attributes, and is intended for use in state of the catchment and state of the environment reporting. The overall RCI is a composite score based on a number of subindices, such as the hydrological stress index to denote river reaches that have altered flow regimes as a result of water extractions, irrigation channels, dams, impoundments, or changes to natural geomorphology and/or ecological functions. The original spatial data layer on the hydrological stress for all river reaches in NSW was sourced directly from the NSW Department of Primary Industries Water.	Water management Act 2000 (NSW)	**Department of Industry** River Condition Index (RCI) • For more information about RCI: https://www.industry.nsw.gov.au/water/science/surface-water/monitoring/river-health/river-condition-index	Identified corresponding Strahler Stream Order and applied buffer as per Water Management 2000 Act

Ramsar listed wetland name	RAMSAR	Ramsar listed wetlands. The Ramsar Convention is an inter-governmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance. OEH is responsible for managing the majority of Ramsar wetlands in NSW.	The Ramsar Convention	**OEH** Ramsar wetlands of NSW • https://datasets.seed.nsw.gov.au/dataset/ramsar-wetlands-of-nsw0c113 (SEED)	N/A
Macrophyte habitat	MACROPH	Macroyphyte habitat including Halophila, Ruppia, Mangrove, Posidonia, Saltmarsh or Zostera. The original Estuaries datasets contain the water boundary of each estuary in NSW up to its tidal limits and includes areas vegetated with the macrophytes. The macrophyte information comprising areas of seagrass (predominantly inundated), mangrove (regularly inundated) and saltmarsh (occasionally inundated) from the NSW Department of Primary Industries (DPI) Macrophyte (2005) spatial layer (Estuarine_Macrophytes) was incorporated into the temporary hydrological catchments and waterbody layer. This Macrophyte layer did not provide coverage for the Sydney Central Coast area of NSW. A gap existed between the Hunter River and Bellambi Lake catchments, leaving a total of 35 catchments whose estuarine boundary were not altered by the inclusion of macrophyte information. In addition to the Central Coast gap there were a further 36 catchments along the coast that did not have Macrophyte information.	**All:** Fisheries Management Act 1994 (NSW) **Saltmarsh:** Biodiversity Conservation Act, 2016 (NSW) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) **Mangrove & Saltmarsh:** Coastal Management Act, 2016 (NSW) **Selected populations of Posidonia:** Fisheries Management Act 1994 (NSW) – endangered population (Port Hacking, Botany	**OEH** Estuaries (including macrophyte detail) • https://datasets.seed.nsw.gov.au/dataset/estuaries-including-macrophyte-detail5ebff (SEED) **DPI** https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal	20

			Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) - Hawkesbury Manning Bioregion		
Important Wetlands	IMPWET	Important wetlands cited in the Directory of Important Wetlands in Australia (DIWA) Third Edition (EA 2001) plus various additions for wetlands listed after 2001. This coverage is a compilation of various data sources and has been collected using a variety of methods. This dataset should therefore be used as an indicative guide only to wetland boundaries and locations. The data has been collated by the Federal Government Department of the Environment and Water Resources from various datasets including those supplied by the relevant State agencies. The criteria for the definition of a wetland used in this dataset is that adopted by the Ramsar Convention, namely: "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.		**Australian Government, Department of the Environment and Energy** Directory of Important Wetlands in Australia (DIWA) • https://datasets.seed.nsw.gov.au/dataset/directory-of-important-wetlands-in-adstralia (SEED)	N/A
Aquaculture Leases & Sustainable aquaculture	AQUACUL	NSW Aquaculture leases and Oyster Industry Sustainable Aquaculture Strategy Areas.	Fisheries Management Act 1994 (NSW), Oyster	**DPI Fisheries**	N/A

strategy areas		The original Aquaculture Leases in NSW Estuaries dataset contains spatial data of NSW Fisheries Recognised Aquaculture Sites (RAS) where an aquaculture lease is or has been in place over the site. The original survey of RAS was completed under a collaborative project between the Surveyor-General's Department and NSW Fisheries from 1996 to 2000. A spatial data layer of aquaculture leases was sourced directly from the NSW Department of Primary Industries (DPI) for this review. Water catchments were assigned a score of 5 if aquaculture leases were present, and the score was used to calculate the overall consequence score in the risk analyses for water catchments along the NSW coast. NSW Oyster Industry Sustainable Aquaculture Strategy (OISAS) identifies those areas within NSW estuaries where oyster aquaculture is a suitable and priority outcome. A spatial data layer of sustainable oyster aquaculture sites was sourced directly from the NSW DPI for this review. Water catchments were assigned a score of 5 if sustainable oyster aquaculture sites were present, and the score was used to calculate the overall consequence score in the risk analyses for water catchments along the NSW coast.	Industry Sustainable Aquaculture Strategy (OISAS)	• https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal (May 2019) Aquaculture Leases • For more information http://www.dpi.nsw.gov.au/content/fisheries/aquaculture/publications/industry-directory Sustainable oyster aquaculture sites • For more information: https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/oysters/industry-strategy	
Aquatic Reserves and Marine parks	MPA	Marine Park and Aquatic Reserve boundaries in NSW as described in the NSW Marine Estate Management (Management Rules) Regulation 1999 and NSW Government Gazette (Aquatic Reserves). Polygons and associated data are identical to those submitted to the DoE for the CAPAD 2018.	Marine Estate Management Act 2014 (NSW)	**DPI** NSW Marine Protected Areas • https://datasets.seed.nsw.gov.au/dataset/nsw-marine-protected-areas (SEED) • For more information https://www.dpi.nsw.gov.au/fishing/habitat/protecting-habitats/mpa	N/A

2. Water Dependent Ecosystems

Indicator	Attribute	Description	Relevance to Legislation	Data Source & Metadata	Buffer zone (m)
Water Dependent Ecosystems					
Groundwater Dependent Ecosystems (Surface)	GDEsurf	Groundwater Dependent Ecosystems that rely on groundwater that has been discharged to the surface, such as baseflow or spring flow. The dataset expresses the potential for groundwater interaction/use for river/spring/ wetland ecosystems across Australia. It shows the ecosystems that rely on groundwater that has been discharged to the surface, such as baseflow or spring flow. The dataset was created by analysing all river /spring/ wetland polygons contained in existing maps, and the outcome of the analysis identified which of those polygons were potentially interacting with groundwater. All river/spring/wetland polygons are considered to be accessing a source of water in addition to rainfall, and hence, they are all IDEs. The river /spring/ wetland ecosystems were analysed to determine whether the additional water source was likely to be groundwater, water in the unsaturated zone or surface water. Where this additional information enabled a conclusion to be made on the potential of each river/spring/wetland ecosystem to be interacting with groundwater, the ecosystem was included in the GDE layer ('Reliant on surface expression of groundwater') and categorised as having either a high, moderate or low potential for groundwater interaction.	Water management Act 2000 (NSW)	**Bureau of Metrology** GDE Surface Expression of Groundwater • For more information about Groundwater Dependent Ecosystems Atlas: http://www.bom.gov.au/water/groundwater/gde/	20

Groundwater Dependent Ecosystems (Subsurface)	GDEsub	Groundwater Dependent Ecosystems reliant on sub surface expression of groundwater. The dataset expresses the potential for groundwater interaction/ use of vegetation ecosystems across Australia. It shows the ecosystems that use groundwater from beneath the water table or in the capillary zone. The dataset was created by analysing all vegetation polygons contained in existing maps, and the outcome of the analysis identified which of those polygons were potentially interacting with groundwater. The analysis initially identified vegetation polygons that were using another water source in addition to rainfall using remote sensing (MODIS and Landsat) data. These ecosystems are known as IDEs. The IDEs were then analysed further to determine whether the additional water source was likely to be groundwater, soil water or surface water. Where this additional information enabled a conclusion to be made on the potential of each vegetation IDE to be using groundwater, the ecosystem was included in the GDE layer ('Reliant on subsurface groundwater') and categorised as having either a high, moderate or low potential for groundwater interaction.	Water management Act 2000 (NSW)	**Bureau of Metrology** GDE Subsurface Presence of Groundwater • For more information about Groundwater Dependent Ecosystems Atlas: http://www.bom.gov.au/water/groundwater/gde/	20
Water dependent threatened or migratory bird sightings	TBIRDS	Water dependent threatened NSW or Commonwealth listed birds, and water dependent migratory birds included in bilateral migratory bird agreements with Japan (JAMBA), China (CAMBA) or the Republic of Korea (ROKAMBA) or the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention). The recorded sightings were obtained from NSW BioNet and refined to those within a 50m	Biodiversity Conservation Act, 2016 Environment Protection and Biodiversity Conservation Act 1999 Convention on the Conservation of Migratory Species of Wild Animals	**OEH** NSW Bionet Species Sighting Data Collection • https://datasets.seed.nsw.gov.au/dataset/nsw-bionet-species-sightings-data-collection8a9c4 (SEED) • For more information about BioNet: http://www.bionet.nsw.gov.au/	50

		distance of the species and within the last 25 years (any dates >May 1994). The NSW BioNet Species Sighting data collection includes flora and fauna records maintained in the Species Sightings module of the NSW BioNet-Atlas application, at OEH. This BioNet data collection consists of over 13 million observation records sourced from incidental sightings and systematic flora and fauna surveys. Observations include plants, mammals, birds, reptiles, amphibians, some fungi and invertebrates (such as insects and snails listed under the Threatened Species Conservation Act) and some fish.	(Bonn Convention) China-Australia Migratory Bird Agreement (CAMBA) Japan-Australia Migratory Bird Agreement (JAMBA) Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)		
Water dependent threatened fauna sightings	TFAUNA	Water dependant fauna species (Commonwealth & State - threatened, critically endangered and vulnerable) fauna (excluding birds) sightings The recorded sightings were obtained from BioNet and refined to those within a 50m distance of the species and within the last 25 years (any dates >May 1994). See above about the NSW BioNet Species Sighting data collection.	Biodiversity Conservation Act 2016 (NSW) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	**OEH** NSW Bionet Species Sighting Data Collection • https://datasets.seed.nsw.gov.au/dataset/nsw-bionet-species-sightings-data-collection8a9c4 (SEED) • For more information about BioNet: http://www.bionet.nsw.gov.au/	50
Water dependent threatened flora sightings	TFLORA	Water dependant (Commonwealth & State - threatened, critically endangered and vulnerable) flora sightings The recorded sightings were obtained from BioNet and refined to those within a 50m distance of the species and within the last 25 years (any dates >May 1994). See above about the NSW BioNet Species Sighting data collection.	Biodiversity Conservation Act 2016 (NSW) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	**OEH** NSW Bionet Species Sighting Data Collection • https://datasets.seed.nsw.gov.au/dataset/nsw-bionet-species-sightings-data-collection8a9c4 (SEED) • For more information about BioNet: http://www.bionet.nsw.gov.au/	50

Threatened Fish species distribution - Australian Grayling	TFSAG	The predicted current distribution of Australian Grayling (*Prototoctes maraena*) in NSW. All available records of the species were collated and assessed for accuracy. For current distribution, only records after 1 January 1994 were used. Within the framework of the Australian Hydrological Geospatial Fabric V2 surface hydrology network, the records were associated with attributes from the National Environmental Stream Attributes Database. Modelling the current geographic distribution of each listed threatened freshwater aquatic species or population was undertaken using MaxEnt 3.3.3, a widely used species distribution modelling program that utilises presence-records to generate probabilities of occurrence based on a suite of environmental variables quantified across the area of interest.	Fisheries Management Act 1994	**DPI Fisheries** https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal (May 2019) For more information: • NSW Department of Primary Industries (2015). NSW Fish Community Status 2015 – Final Report.	50
Threatened Fish species distribution – Darling River Hardy	TFSDRHH	The predicted current distribution of Darling River Hardy (*Craterocephalus amniculus*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**DPI Fisheries** See above.	50
Threatened Fish species distribution - Eastern Freshwater Cod	TFSEFC	The predicted current distribution of Eastern Freshwater Cod (*Maccullochella ikei*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**DPI Fisheries** See above.	50
Threatened Fish species distribution - Fitzroy Falls Spiny Crayfish	TFSFFSC	The predicted current distribution of Fitzroy Falls Spiny Crayfish (*Euastacus dharawalus*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**DPI Fisheries** See above.	50
Threatened Fish species distribution -	TFSOPP	The predicted current distribution of Oxleyan Pygmy Perch (*Nannoperca oxleyana*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**DPI Fisheries** See above.	20

Oxleyan Pygmy Perch					
Threatened Fish species distribution - Purple Spotted Gudgeon	TFSPSG	The predicted current distribution of Purple Spotted Gudgeon (*Mogurnda adspersa*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**DPI Fisheries** See above.	50
Threatened Fish species distribution - Macquarie Perch	TFSMP	The predicted current distribution of Macquarie Perch (*Macquaria australasica*) in NSW. See above for information on the original data.	Fisheries Management Act 1994	**DPI Fisheries** See above.	50
Riparian lands watercourses and Vulnerable lands	LEPRIP	Local Environmental Plan (LEP) Riparian Land and Watercourses and Local Environmental Plan (LEP) Riparian Vulnerable Lands. The LEP Riparian Land and Watercourses dataset identifies land where development implications exist to reduce impacts in riparian lands and watercourses, as designated by a NSW environmental planning instrument. Riparian lands are a transition zone between the land and the watercourse that is important for maintaining or improving the shape, stability and ecological functions of a watercourse.	Standard Instrument (Local Environmental Plans) Order 2006, LEP	**DPE** Local Environment Plan zones - Riparian Lands Watercourses • https://datasets.seed.nsw.gov.au/dataset/epi-riparian-lands-watercourses (SEED) **OEH** Local Environment Plan zones - Vulnerable Lands Protected Riparian https://datasets.seed.nsw.gov.au/dataset/vulnerable-land-protected-riparian73a9e (SEED)	10

		The LEP Vulnerable Lands Protected Riparian dataset maps protected land, or in recent times State Protected Land (SPL) where maintenance of tree cover on certain land is covered by legislation. The purpose of protected land is to regulate the destruction of trees on land susceptible to erosion or land that is otherwise environmentally sensitive. This was administered under part IV, Division 2 of the Soil Conservation Act, 1938. Also, under the Native Vegetation Regulation 2005, vulnerable land, land that is steep or highly erodible, protected riparian land or special category land needed to be identified.			
Coastal wetland area	CWET	This dataset includes coastal wetlands areas managed under the Coastal Management Act. The original dataset was prepared to provide a mechanism for the consideration of applications for development that is likely to damage or destroy Coastal Wetland areas with a view to the preservation of those areas in their natural state.	State Environmental Planning Policy (Coastal Management Act 2016) (NSW)	**DPE** SEPP Coastal management - Coastal Wetlands • https://datasets.seed.nsw.gov.au/dataset/coastal-management-sepp-coastal-wetlands (SEED)	100
Littoral rainforest area	SEPLIT	This dataset includes littoral rainforest area managed under the Coastal Management Act. The original dataset was derived from SEPP26 (Littoral Rainforest) mapping. It has been updated to include Littoral Rainforests within the Sydney metropolitan region. The data provides a mechanism for the consideration of applications for development that is likely to damage or destroy littoral rainforest areas with a view to the preservation of those areas in their natural state.	State Environmental Planning Policy (Coastal Management Act 2016) (NSW)	**OEH** State Environmental Planning Policy - Littoral Rainforests • https://datasets.seed.nsw.gov.au/dataset/sepp-coastal-management-littoral-rainforest (SEED)	100

Critical habitat	CRITHAB	Critical Habitat as defined under the Threatened Species Conservation Act 1995 (replaced by the Biodiversity Conservation Act 2016). These are areas of land that are crucial to the survival of particular threatened species, populations and ecological communities. This layer contains Critical Habitat that has been declared and is now in operation. The first Critical habitat area was gazetted in 2001. This dataset is complete, insofar as only including all Critical Habitat areas that have been declared.	Biodiversity Conservation Act 2016 (NSW)	**OEH** Critical Habitat • https://datasets.seed.nsw.gov.au/dataset/1af6b157-7266-4bf2-b066-1b7f1405859 (SEED)	N/A
Water dependent vegetation communities	WDVEG	Location and distribution of water dependent vegetation communities in the greater Sydney area. Created by merging the following 11 vegetation datasets together. 1. HSC_Vegetation_ELA_2018 (Hornsby) 2. The Native Vegetation of the Sydney Metropolitan Area – version 3.1, 2016 (VIS 4489) 3. Remnant Vegetation of the western Cumberland subregion, 2013 (VIS 4207) 4. Greater Hunter Native Vegetation Mapping v4.0, 2012 (VIS 3855) 5. Draft vegetation map, South Eastern Wollemi National Park, 2010 (VIS 4184) 6. Southeast NSW Native Vegetation Classification and Mapping, 2010 (VIS 2230) 7. Vegetation, Northern Hawkesbury LGA (Draft), 2008 (VIS 4167) 8. The Native Vegetation of Yengo and Parr reserves and surrounds, 2008 (VIS 3845) 9. Hawkesbury City Council Vegetation Mapping, 2007 (VIS 3958) 10. The Native Vegetation of the Woronora OHares and Sydney Metropolitan Catchments, 2003 (VIS 2387)	Biodiversity Conservation Act 2016 (NSW) **Remnant vegetation outside urban area:** Local Land Services Act 2013	**LGA** HSC_Vegetation_ELA_2018 (Hornsby) **OEH SEED/ Publicly available datasets** The Native Vegetation of the Sydney Metropolitan Area – version 3.1, 2016 (VIS 4489) • https://datasets.seed.nsw.gov.au/dataset/the-native-vegetation-of-the-sydney-metropolitan-area-oeh-2016-vis-id-4489 Remnant Vegetation of the western Cumberland subregion, 2013 (VIS 4207) • https://datasets.seed.nsw.gov.au/dataset/remnant-vegetation-of-the-western-cumberland-subregion-2013-update-vis_id-4207fd1f4	20

		11. Vegetation survey of Muogamarra Nature Reserve, 1991 (VIS 2322) Water dependent vegetation communities were identified from desktop research (e.g. project report) and reviewed by vegetation ecologists. WDVEG Codes were assigned for all water dependent vegetation communities (Appendix).		Greater Hunter Native Vegetation Mapping v4.0, 2012 (VIS 3855) • https://datasets.seed.nsw.gov.au/dataset/greater-hunter-native-vegetation-mapping-v4-0-vis-id-3855d41f5 Draft vegetation map, South Eastern Wollemi National Park, 2010 (VIS 4184) • https://datasets.seed.nsw.gov.au/dataset/draft-vegetation-map-south-eastern-wollemi-national-park-2010-vis_id-41841340c Southeast NSW Native Vegetation Classification and Mapping, 2010 (VIS 2230) • https://datasets.seed.nsw.gov.au/dataset/southeast-nsw-native-vegetation-classification-and-mapping-scivi-vis_id-223006f8a Vegetation, Northern Hawkesbury LGA (Draft), 2008 (VIS 4167) • https://datasets.seed.nsw.gov.au/dataset/vegetation-northern-hawkesbury-lga-draft-2008-vis_id-41672ab39 The Native Vegetation of Yengo and Parr reserves and surrounds, 2008 (VIS 3845) • https://datasets.seed.nsw.gov.au/dataset/the-native-vegetation-of-yengo-and-parr-reserves-and-	

				surrounds-2008-vis_id-38450d109 Hawkesbury City Council Vegetation Mapping, 2007 (VIS 3958) • https://datasets.seed.nsw.gov.au/dataset/hawkesbury-city-council-vegetation-mapping-2007-vis_id-3958c2c4b The Native Vegetation of the Woronora OHares and Sydney Metropolitan Catchments, 2003 (VIS 2387) • https://datasets.seed.nsw.gov.au/dataset/the-native-vegetation-of-the-woronora-ohares-and-sydney-metropolitan-catchments-npws-2003-visb76dd Vegetation survey of Muogamarra Nature Reserve, 1991 (VIS 2322) • https://datasets.seed.nsw.gov.au/dataset/vegetation-survey-of-muogamarra-nature-reserve-vis_id-2322404a8	
Water dependent vegetation communities - threatened ecological communities (TEC)	TECOMM	Water dependent threatened ecological communities (TEC) identified from WDVEG layer using corresponding layers metadata report or data layer information. Vegetation communities that were included within TEC's were listed as TEC (Appendix)	Biodiversity Conservation Act 2016 (NSW) Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	see WDVEG	20

Appendix: List of water dependent vegetation and corresponding threatened ecological community (TEC)

Definition of water dependent vegetation communities includes

- communities with surface water dependencies,
- riparian communities (sub surface groundwater dependency)
- floodplain communities (sub surface groundwater dependency).

Assigned WDVEG Code	Vegetation classification	Corresponding Threatened Ecological Community (TEC) name	Assigned TECOMM code	Data Source
1000	Rough-barked Apple River-flat Forest - Plant Community	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	HSC_Vegetation_ELA_2018 (Hornsby) Report: Eco Logical Australia (2017). *Hornsby Vegetation Map Update 2016*. Prepared for Hornsby Shire Council.
1001	Rough-barked Apple River-flat Forest - Remnant Trees	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
1002	Sandstone Swamp - Plant Community	Coastal Upland Swamps in the Sydney Basin Bioregion	CUPS	
1003	Swamp Mahogany Forest - Plant Community	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
1004	Swamp Oak Floodplain Forest - Plant Community	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
1005	Swamp Oak Floodplain Forest - Remnant Trees	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
1006	Coachwood Rainforest - Plant Community	N/A		
1007	Coastal Saltmarsh - Plant Community	Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	CSM	
1008	Floodplain Paperbark Scrub - Plant Community	N/A		
1009	Floodplain Reedland - Plant Community	N/A		
1010	Forest Red Gum River-flat Forest - Plant Community	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	

1011	Grey Myrtle Rainforest - Plant Community	N/A		
1012	Mangrove Swamp - Plant Community	N/A		
2001	Sydney Peppermint / Coachwood - Water Gum open forest in protected sandstone gullies around Sydney and the Central Coast	N/A		The Native Vegetation of the Sydney Metropolitan Area – version 3.1, 2016 (VIS 4489) Report: OEH (2013). *The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles. Version 2.0.* NSW Office of Environment and Heritage, Sydney.
2002	Parramatta Red Gum woodland on moist alluvium of the Cumberland Plain, Sydney Basin Bioregion	Castlereagh Swamp Woodland Community	CSWC	
2003	Swamp Mahogany / Cabbage Tree Palm - Cheese Tree - Swamp Oak tall open forest on poorly drained coastal alluvium in the Sydney basin	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
2004	Swamp Oak floodplain swamp forest, Sydney Basin Bioregion and South East Corner Bioregion	N/A		
2005	Swamp Mahogany swamp sclerophyll forest on coastal lowlands of the Sydney Basin Bioregion and South East Corner Bioregion	N/A		
2006	Flax-leaved Paperbark open to closed mesic forest on alluvial riverflats in the Sydney region	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
2007	Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
2008	Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
2009	Swamp Oak swamp forest fringing estuaries, Sydney Basin Bioregion and South East Corner Bioregion	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
2010	Mountain Blue Gum - Thin-leaved Stringybark open forest on river flat alluvium in the Sydney Basin Bioregion	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
2011	Swamp Paperbark - Swamp Oak tall shrubland on estuarine flats, Sydney Basin Bioregion and South East Corner Bioregion	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	

2012	Water Gum - Coachwood riparian scrub along sandstone streams, Sydney Basin Bioregion	N/A		
2013	Sandstone cliff-face soak of the Sydney Basin Bioregion	N/A		
2014	Banksia - Needlebush - Tea-tree damp heath swamps on coastal sandstone plateaus of the Sydney basin	Coastal Upland Swamps in the Sydney Basin Bioregion	CUPS	
2015	Needlebush - Banksia wet heath swamps on coastal sandstone plateaus of the Sydney basin	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
2016	Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	SFWCF	
2017	Common Reed on the margins of estuaries and brackish lagoons along the New South Wales coastline	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
2018	Crimson Bottlebrush - Banksia - Melaleuca / Baumea woody sedgeland in dune swales of the Sydney basin	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	SFWCF	
2019	Red-fruit Saw-sedge - Baumea - Coral Fern shrubby sedgeland on the margins of freshwater coastal lagoons along the New South Wales coastline	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	SFWCF	
2020	Coachwood - Lilly Pilly - Water Gum gallery rainforest in sandstone gullies of the Sydney basin	N/A		
2021	Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion	N/A		
2022	Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion	Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	CSM	
2024	Blue Gum-Bangalay - Turpentine / Cheese Tree - Lilly Pilly tall moist forest on coastal flats of the northern Sydney basin	N/A		
3000	Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	SFWCF	

3001	Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	Remnant Vegetation of the western Cumberland subregion, 2013 (VIS 4207) Report: New South Wales National Parks and Wildlife Service (2002). *Interpretation Guidelines for the Native Vegetation Maps of the Cumberland Plain, Western Sydney, Final Edition* NSW NPWS, Hurstville.
3002	Mountain Blue Gum - Thin-leaved Stringybark open forest on river flat alluvium in the Burragorang Valley, Sydney Basin Bioregion	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
3003	Parramatta Red Gum woodland on moist alluvium of the Cumberland Plain, Sydney Basin Bioregion	Castlereagh Swamp Woodland Community	CSWC	
3004	Water Gum - Coachwood riparian scrub along sandstone streams, Sydney Basin Bioregion	N/A		
4000	Grey Mangrove low closed forest	N/A		Greater Hunter Native Vegetation Mapping v4.0, 2012 (VIS 3855) Report: Sivertsen, D., Roff, A., Somerville, M., Thonell, J., and Denholm, B. (2011). *Hunter Native Vegetation Mapping. Geodatabase Guide (Version 4.0)*, Internal Report for the Office of Environment and Heritage, Department of Premier and Cabinet, Sydney, Australia. Sivertsen, D., Roff, A., Somerville, M., Thonell, J., and Denholm, B. (2011). *Hunter Native Vegetation Mapping. Geodatabase Guide (Version 4.0)*, Office of Environment and Heritage, Department of Premier and Cabinet, Sydney, Australia
4001	Heath-leaved Banksia/ Coral Fern wet heath on sandstone ranges of the lower Central Coast	N/A		
4002	Jackwood/ Lilly Pilly/ Sassafras riparian warm temperate rainforest of the Central Coast	N/A		
4003	Prickly-leaved Paperbark/ Flax-leaved Paperbark swamp forest on poorly drained soils of the Central Coast	N/A		
4004	Saltmarsh/ Estuarine Complex	Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	CSM	
4005	Smooth-barked Apple/ Red Mahogany/ Swamp Mahogany/ Melaleuca sieberi heathy swamp woodland of coastal lowlands	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
4006	Swamp Mahogany/ Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
4007	Swamp Oak/ Sea Rush/ Baumea juncea swamp forest on coastal lowlands of the Central Coast and Lower North Coast	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
5000	Blue Mountains Sandstone Damp Heath	Blue Mountains Swamps in the Sydney Basin Bioregion	BMSSB	Draft vegetation map, South Eastern Wollemi National Park, 2010 (VIS 4184) Report: DECCW (2010). The Native Vegetation of South-eastern
5001	Coastal Floodplain Wetland	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	FWCF	

5002	Coastal River Oak Forest	N/A		Wollemi National Park and surrounds. Department of Environment Climate Change and Water. Hurstville.
5003	Highlands Freshwater Swamp-Sedgeland	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	FWCF	
5004	Hunter Range Flats Freshwater Wetland	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	FWCF	
5005	Hunter Range Flats Paperbark Thicket	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
5006	Hunter Range Flats Red Gum-Apple Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
5007	Sydney Hinterland Riverflat Eucalypt Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
5008	Sydney Hinterland Riverflat Paperbark Swamp Forest	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
5009	Sydney Hinterland Sand Drooping Red Gum Swamp Woodland	N/A		
5010	Sydney Hinterland Sand Swamp Heath	N/A		
5011	Sydney Hinterland Sandstone Riparian Complex	N/A		
5012	Sydney Hinterland Sandstone Wet Heath Swamp	Blue Mountains Swamps in the Sydney Basin Bioregion	BMSSB	
6000	Blue Mountains - Shoalhaven Hanging Swamps	Blue Mountains Swamps in the Sydney Basin Bioregion	BMSSB	Southeast NSW Native Vegetation Classification and Mapping, 2010 (VIS 2230) Report: Tozer et al (2006). Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands. Version 1.0. Appendix 3
6001	Burragorang River Flat Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
6002	Castlereagh Swamp Woodland	Castlereagh Swamp Woodland Community	CSWC	
6003	Coastal Freshwater Lagoon	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	SFWCF	

6004	Coastal Sand Swamp Forest	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
6005	Coastal Upland Swamp	N/A		
6006	Cumberland River Flat Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
6007	Estuarine Creekflat Scrub	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
6008	Estuarine Fringe Forest	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
6009	Estuarine Mangrove Forest	N/A		
6010	Estuarine Saltmarsh	Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	CSM	
6011	Floodplain Swamp Forest	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
6012	River Mangrove	N/A		
6013	Riverbank Forest	N/A		
6014	Sandstone Riparian Scrub	N/A		
6018	Shoalhaven Riparian Scrub	N/A		
6019	Sydney Swamp Forest	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
6020	Tableland Bog	Montane Peatlands and Swamps	MPES	
6021	Tableland Swamp Flats Forest	N/A		
6022	Tableland Swamp Meadow	Montane Peatlands and Swamps	MPES	
6023	Tableland Swamp Woodland	N/A		
7000	Coastal Estuarine Swamp Oak Forest	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	Vegetation, Northern Hawkesbury LGA (Draft), 2008 (VIS 4167)

7001	Coastal Floodplain Wetland	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	FWCF	Report: DECC (2008) The Native Vegetation of Northern Hawkesbury Local Government Area Department of Environment and Climate Change NSW, Hurstville.
7002	Coastal Riverflat Cabbage Gum Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
7003	Coastal Riverflat Paperbark Thicket	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
7004	Coastal Riverflat River Oak Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
7005	Coastal Riverflat Swamp Mahogany Forest	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
7006	Cumberland Alluvial Red Gum-Apple Woodland	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
7007	Sydney Hinterland Alluvial River Peppermint-Apple Forest	N/A		
8000	Coastal Estuarine Paperbark Thicket	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	The Native Vegetation of Yengo and Parr reserves and surrounds, 2008 (VIS 3845) Report: DECC (2008) *The Native Vegetation of Yengo and Parr Reserves and Surrounds.* Department of Environment and Climate Change NSW, Hurstville.
8001	Coastal Estuarine Swamp Oak Forest	Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SOFSF	
8002	Coastal Floodplain Wetland	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	FWCF	
8003	Coastal River Oak Forest	N/A		
8004	Coastal Riverflat Blue Gum-Peppermint Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
8005	Coastal Riverflat Cabbage Gum Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	

8006	Coastal Riverflat Paperbark Thicket	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	SSF	
8007	Coastal Riverflat Swamp Mahogany Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
8008	Hunter Range Basalt Paperbark Thicket	N/A		
8009	Hunter Range Flats Freshwater Wetland	N/A		
8010	Hunter Range Flats Paperbark Thicket	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
8011	Hunter Range Flats Red Gum Apple Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	RFEF	
8012	Mellong Sands Drooping Red Gum Sedge Woodland	N/A		
8013	Sydney Hinterland Sandstone Riparian Complex	N/A		
8014	Sydney Hinterland Sandstone Upland Swamp	N/A		
9000	Alluvial Woodland	N/A		Hawkesbury City Council Vegetation Mapping, 2007 (VIS 3958) Report: Eco Logical Australia (2007). *Field Validation of Remnant Vegetation Within The Hawkesbury LGA*. Prepared for Hawkesbury City Council.
9001	Floodplain Woodland	N/A		
9002	Freshwater Reed Swamps-Tall Shrubland	N/A		
9003	Freshwater Wetlands	N/A		
9004	Hanging Swamp	N/A		
9005	Mellong Swamps	N/A		
9006	Mellong Woodland - Poorly drained	N/A		
9007	Riparian Forest	N/A		
9008	Riparian Scrub	N/A		
9009	Castlereagh Swamp Woodland	Castlereagh Swamp Woodland Community	CSWC	
9010	Colo Gorge Forest	N/A		
9011	Wetland	N/A		
9012	Colo Gorge Forest-Open Forest	N/A		
9013	Estuarine Complex-Closed Scrub	N/A		

9014	Estuarine Complex-Low Open Forest	N/A		
10000	Highlands Alluvial Red Gum Woodland	Southern Highlands Shale Woodlands	SHSW	The Native Vegetation of the Woronora OHares and Sydney Metropolitan Catchments, 2003 (VIS 2387)
10001	Highlands Ribbon Gum Gully Forest	Southern Highlands Shale Woodlands	SHSW	
10002	Highlands Sandstone Swamp Woodland	N/A		
10003	Highlands Swamp Gum-Melaleuca Woodland	Southern Highlands Shale Woodlands	SHSW	
10004	Sandstone Riparian Scrub	N/A		
10005	Upland Swamps: Banksia Thicket	N/A		
10006	Upland Swamps: Fringing Eucalypt Woodland	N/A		
10007	Upland Swamps: Mallee-Heath	N/A		
10008	Upland Swamps: Sedgeland-Heath Complex	N/A		
10009	Upland Swamps: Tea-Tree Thicket	N/A		
11000	Mangrove Closed-scrub	N/A		Vegetation survey of Muogamarra Nature Reserve, 1991 (VIS 2322)
11001	Swamp Oak Forest on Deep Alluvial Flats	N/A		
11002	Swamp Oak Forest on Marine Sediments	N/A		

NOISE AND LAND-USE CONFLICTS	
Policy action type	**Actions to include in LSPS (and flow on to LEP, DCP)**
District Plan context	The local strategic planning statement (LSPS) needs to consider noise in planning for sustainability and resilience under these sections of the relevant District Plans: • Planning Priority: *"Adapting to the impacts or urban and natural hazards and climate change"* • Objective: *"Exposure to natural and urban hazards is reduced".* District Plans recognise noise as an urban hazard and identifies risks of noise impacts increasing arising from transport corridors and growth. This will require careful management as the District grows to manage noise-based land-use conflict, including managing noise impacts around infrastructure corridors and freight and logistics networks.
Descriptions of the desired policy outcome for the LGA	The LSPS should identify: • external noise goals for infrastructure and industry where these encroach on existing noise-sensitive development • internal noise goals for noise-sensitive development where these encroach on existing and planned transport infrastructure and industry. Where practicable, consideration should be given to identifying, creating, and preserving areas of quiet amenity, particularly in urban areas to improve liveability.
Data to consider	Risk of noise-based land-use conflict should be managed through careful zoning and planning as new development occurs, particularly where infrastructure corridors, employment and urban service lands, and noise-sensitive development integrates with transport corridors and hubs. Noise policies and guidelines to manage noise-based land-use conflict include but are not limited to the following. • The Noise Policy for Industry (EPA, 2017) • Rail Infrastructure Noise Guideline (EPA, 2013) • NSW Road Noise Policy (DECCW, 2011) • Development Near Rail Corridors and Busy Roads - Interim Guideline (Department of Planning, 2008). Acoustic data for localised noise sources may be available in Noise Impact Assessments for major projects. Statutory noise limits may be specified in statutory instruments applicable to specific premises or activities regulated by the Department of Planning, Industry and Environment; and/or the EPA; and/or Council.
Land-use plans and development controls	At a minimum, the LSPS should include actions to consider environmental noise in all local planning instruments. The LSPS can also set directions for enhanced planning controls to help minimise emissions noise impacts on residential and other sensitive land-uses. Key areas for the LSPS to consider may include: • Planning for potential new noise sources, such as transport infrastructure, industry, and the night-time economy. • Careful planning, siting and design of sensitive land-uses including residences, health facilities, schools etc. adjacent to transport infrastructure and industry. Refer to the: • Infrastructure – State Environment Planning Policy (SEPP) 2007 • Development Near Rail Corridors and Busy Roads - Interim Guideline (Department of Planning, 2008) • The Noise Policy for Industry (EPA, 2017) • Rail Infrastructure Noise Guideline (EPA, 2013) • NSW Road Noise Policy (DECCW, 2011).

Co-benefit actions	Support actions that will provide co-benefits to the community such as energy efficiency which can contribute to improved noise outcomes. These include, for example: • actions to support public, active, electric and smart transport and co-locating development around transport hubs to limit the spread of transport noise impacts • planning and design controls to improve efficiency and power needs to reduce potential noise sources and improve acoustic design.
Educate for action	Support planning actions with council, community, and industry education programs that help residents and businesses to manage noise, for example, refer to the Noise Guide for Local Government (EPA, 2013).
Collective action	Work with ROCs, council joint organisations, and other collectives for regional noise planning initiatives.
Advocate for action	Advocate for state and national plans, policies and programs that support actions by councils and joint organisations to manage environmental noise impacts, for example, that support standards and controls for noise sources.
Act within own operations	Lead by example in Council's own (corporate) operations

More information
Go to: www.epa.nsw.gov.au/your-environment/noise.

Key considerations
Future planning considerations in NSW should seek to implement an integrated and coordinated strategic approach to planning to reduce the noise impacts of population growth and transport infrastructure in metropolitan and regional areas of NSW.

Coordinated strategies ensure that land-use compatibility is considered upfront in all planning processes to manage noise impacts. Implementing noise control at a strategic planning level provides the most effective means of minimising noise impacts on communities. This is best achieved by applying the following hierarchical approach to noise control.

1. Spatial separation of incompatible land-use through appropriate zoning and placement of activities to minimise noise-related land-use conflicts.
2. Minimising noise emissions at source through best practice selection, design, siting, construction and operation as appropriate.
3. Reducing noise impacts at receivers through best practice design, siting and construction.

Sustainable land-use planning, and careful design and location of development offers the greatest opportunity to manage noise. Land-use and transport planning have a key role to play in avoiding land-use conflicts and minimising noise impacts. Conflicts occur where sources of noise, such as busy roads, freight corridors, ports, industry and agriculture, are not adequately separated from sensitive land-uses such as residences, child care, schools, hospitals and aged care facilities. Land-use planning affords opportunities to manage changes in land-use so that exposure impacts are minimised.

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WOOLWORTHS GROUP

20 November 2019

Peter Conroy
General Manager
Hawkesbury City Council
366 George Street
Windsor NSW 2756

Dear Mr Conroy,

Woolworths submission on Draft Hawkesbury Local Strategic Planning Statement

This submission has been prepared by Woolworths Group with the assistance of Ethos Urban, in response to the exhibition of the draft Hawkesbury Local Strategic Planning Statement (the draft LSPS).

We welcome the opportunity to provide input to the LSPS process. We have **20** investments in Hawkesbury LGA, providing jobs for more than **480** team members, contributing **$10 million** in wages to the local economy in the 2018 financial year.

Strong local strategic planning is critical to providing certainty for business and communities in relation to development outcomes. Woolworths looks forward to collaborating with Council to plan for the area's future, to better meet the needs of the local community and serve our current and future customers.

As part of the LSPS process, we would like to meet with Council's strategic planning team to discuss our submission in further detail and any subsequent updates to Hawkesbury Local Environmental Plan 2012 (HLEP 2012) as part of the upcoming LEP review process.

Summary of feedback to Hawkesbury LSPS

Our submission sets out a number of key areas for Council to consider in finalising its LSPS, which can be summarised as follows:

- Generally, Woolworths notes that the LSPS lacks any sort of structure plan that expresses the actions of the LSPS in a spatial format. Although it is recognised that certain supporting documents are yet to be completed, the final LSPS should identify future growth, infrastructure and centres in spatial form in order to more clearly express where development can occur.

- While the LSPS clearly focuses on the provision and encouragement of high-tech jobs, there is little mention or encouragement for retail growth in the LGA. Retail development provides valuable local employment opportunities, particularly for young people, and should continue to be supported by the LSPS and any future changes to planning controls in the LGA.

- Future residential growth should be set based on development feasibility with a view to achieving completions, rather than simply creating capacity.

Woolworths and planning for the future of retail

With a history spanning 95 years, Woolworths Group has grown to become one of Australia's largest retailers, featuring some of the country's most recognised and trusted brands. We employ more than 205,000 people in Australia and New Zealand, and serve an average of 29 million customers every week across our network of 3,000 stores. We are a committed business partner to many thousands of farmers, producers and manufacturers, and we endeavour to create a world class experience for customers across all of our stores and platforms.

As Australia's largest employer, Woolworths not only provides for the everyday grocery needs of local communities but is also a key driver of employment in across Australia, with around 120 team members in each full line

supermarket. Our supermarkets anchor retail centres and act as attractors that support the viability of specialty retail and local businesses.

Across NSW, Woolworths has a network of more than 300 supermarkets, including 20 investments in Hawkesbury LGA. These include full-line supermarkets, either standalone, within a retail neighbourhood centre, or located within a mixed-use development, as well as smaller Woolworths Metro stores, supported by a network of distribution centres located in industrial zones in growth centres.

We maintain a significant development pipeline across the state and are increasingly focused on new-generation mixed-use retail developments to drive placemaking outcomes - providing convenient shopping for customers while enhancing the liveability of local communities. Exemplar mixed use developments we have delivered in partnership with Councils include Double Bay and Lane Cove, which respectively feature a supermarket and car parking below ground, and public domain features at the ground plane, including specialty retail, as well as commercial and community uses, such as libraries.

General policy priorities

Woolworths supports the goal of the LSPS to set a 20-year vision for land use and to identify how growth and change will be managed into the future across Hawkesbury. We are supportive of the key objectives of the plan for infrastructure and collaboration, and creating a productive, liveable and sustainable LGA.

Importantly, the draft LSPS provides consistency across the applicable District Plan and Greater Sydney Region Plan, ensuring the NSW planning system can more readily shift into a strategic-led planning framework. We would like to highlight the following key policy priorities for consideration during the finalisation of the LSPS.

Woolworths notes the following key policy priorities that should be considered during the finalisation of the LSPS.

Innovation and flexibility in land use

Growth in online retailing is driving innovation to respond to changing customer needs. Digital and physical spaces are increasingly merging, with customers choosing a combination of shopping at their local store and online. This is leading to strong growth in pick-up and drive-thru features at our stores, in addition to the more than 4 million online deliveries we complete for our customers each year. We are exploring potential hybrid retail and distribution models to cater to a new retail economy, and seek supportive land use environments to encourage this flexibility to innovate.

Recognising the need for greater flexibility and adaptability in the planning system to facilitate new retail ideas and formats, Council should undertake a review of existing land use tables to increase flexibility and allow for a greater range of uses in both mixed-use and industrial zones. This would give Council the discretion to assess and approve flexible and co-located land uses that are aligned to the retail planning objectives of a particular location. This approach provides the ability to apply discretion to facilitate innovation without a lengthy LEP amendment process.

Looking into the future, it is likely that more hybrid uses will emerge in response to customer needs. This could see warehousing evolving to combine ability for some retailing, allowing customers to purchase their goods in a variety of ways. The concept of an innovation in retail provision, would allow these hybrid models to be further explored with local Councils to assess the nature of the use and suitability for the site context.

Promoting local neighbourhood retail renewal; avoiding ad hoc caps on supermarket sizes

As the population grows, infill development and renewal of existing retail strips will be required to keep pace with customer and community expectations, in addition to greenfield retail opportunities. However, fragmentation of retail landholdings and ownership in traditional retail strips present challenges in achieving holistic renewal outcomes. Councils should work closely with industry through the LSPS process to identify and facilitate site specific opportunities for retail and mixed-use renewal.

We note the introduction of a neighbourhood supermarket definition in B1 zones by the Department of Planning in 2018, allowing Councils to restrict supermarket size to 1,000sqm (GFA). Applying a restrictive, blanket cap on supermarket sizes is not supported, as it may limit the ability to fully service community retail needs, see retail spend leaving local areas and in turn lead to increased traffic generation at a regional level.

Road infrastructure

The coordinated provision and funding of road infrastructure to service new retail development is critical to managing the freight, servicing and delivery requirements of modern supermarkets and distribution centres. The location of retail in relation to key transport corridors should be carefully considered in the planning of any new retail centres. Coordination between councils and the State, in particular Transport for NSW, is needed to ensure that road networks can adequately service new and existing centres.

Council should also recognise how changes in retail demand, as well as innovation in transport methods, have fundamentally changed the traffic and transport impacts of retail development. For example, electric trucks may be capable of servicing stores outside of traditional loading hours, with minimal acoustic impacts. Similarly, online retailing lends itself to deliveries scheduled outside of peak hours to better distribute traffic movements throughout the day. These, and other changes in retail impacts should be factored into development assessment and future consideration of development controls.

Prioritising the provision of retail floor space in centres, while allowing flexibility for distributed retail

Supermarkets act as an anchor for specialty retail and local businesses, generating investment and business activity, and provide jobs close to where people live. There is a need to allow for growth in existing centres - and to provide for new centres - to meet forecast demand across a range of retail business types.

Retail centres represent key community destinations and a logical location for additional development (including retail floorspace). The LSPS should promote and provide for sufficient retail floor space in centres by allowing for mixed-use zoning, avoiding restrictions on the size of retail premises, and considering the requirements of retailers, such as servicing, location, visibility and accessibility.

Sydney is projected to accommodate around 6.5m people by 2036, current population is 5.2m indicating more than 1 million additional people need to be accommodated. While greenfield locations will cater for some of this growth, a large proportion is planned within established areas. A range of additional facilities will therefore need to be provided to serve the existing and growing population, including retail. This is even more important given the focus on supporting 30-minute cities and live/work/play hubs.

Although retail floor space in centres should be prioritised, there are many instances in which supermarkets can appropriately be distributed throughout the LGA, without impacting on the viability of existing and proposed centres. Population growth is driving scarcity of land in centres, excess or unanticipated demand, the emergence of new hubs (i.e. driven by other factors, such as public transport nodes), and a need to disperse traffic movements. These factors all point to a need to allow for flexibility in the location of retail. The LSPS should allow for distributed retail floor space, through the provision of appropriate zoning or the facilitation of planning proposals, where necessary.

Flexibility in retail formats

Retail formats are continually evolving to respond to the needs of a growing population and to satisfy market demand. The rise in ecommerce and convenience retailing is changing the way people shop with an increase in 'click and collect' pick-up services as well as increased 'on-demand' and 'just-in-time' delivery. The ability for the community to shop in different ways at different times and locations helps to provide choice and flexibility.

These factors have given rise to 'new generation' retail formats that incorporate technological advancements and new, innovative ways of doing business. The LSPS should support and nurture new retail formats by allowing for flexibility in land uses and the size of retail premises across the LGA.

Mixed-use and hybrid development types

Continued population growth and limited land availability is putting increased pressure on land uses in key precincts. The evolution of technology is resulting in a blending of uses and sectors in a single location. Mixed use development will be increasingly common around major activity centres (generated by transport nodes, education or health hubs and community centres) and as a result a flexible approach to development and zoning should be considered.

Retail, industrial, health, education and residential uses can exist in a single location. From a retail perspective, there is an increased focus on blending online and physical retailing through additional hours of operations and delivery/collection services. This requires a more integrated supply chain and distribution network including some larger, more automated distribution centres as well as a potential network of smaller warehouses in metropolitan locations providing hybrid services.

Certainty around contributions

Woolworths recognises the need for development to contribute to important local and regional infrastructure. Infrastructure funding must be transparent, certain and equitable. Accordingly, the cumulative impact which layered contributions may have (local and State contributions, value capture mechanisms and VPAs), as well as uncertainty regarding the timing of those contributions, should be addressed. Certainty on required contributions is required to provide certainty to the industry.

Out-of-cycle updates to LSPS

Although each LSPS is to be reviewed every seven years, we note that this is a lengthy period, and that markets can evolve significantly during that time frame. Provision should be made for out-of-cycle updates to the LSPS, or planning proposals that propose alternatives to the LSPS where it can be demonstrated that its objectives and actions have been superseded or are no longer relevant.

General comments on the Draft Hawkesbury LSPS

Woolworths makes the following general comments in relation to the draft LSPS:

- Aside from the Employment Lands Study, Woolworths notes that the evidence base for the LSPS is still being compiled. Any future supporting studies, such as the Local Housing Strategy, should be completed and integrated into the LSPS prior to its finalisation.

- Generally, Woolworths notes that the LSPS lacks any sort of structure plan that expresses the actions of the LSPS in a spatial format. Although it is recognised that certain supporting documents are yet to be completed, the final LSPS should identify future growth, infrastructure and centres in spatial form in order to more clearly express where development can occur.

- As identified in the table on page 57 of the LSPS, retail trade accounts for a significant percentage of the output of Hawkesbury LGA. While the LSPS clearly focuses on the provision and encouragement of high-tech jobs, there is little mention or encouragement for retail growth in the LGA. Retail development provides valuable local employment opportunities, particularly for young people, and should continue to be supported by the LSPS and any future changes to planning controls in the LGA.

LSPS discussion

Planning Priority 1-3: Infrastructure and Collaboration

- Woolworths commends Council on identifying the need to further investigate the need for additional transport infrastructure. Woolworths notes that efficiency of freight movements is critical to the operation of retail and distribution networks, and to minimising impacts on residents in the LGA. Council should look to prioritise and facilitate freight movements in any future transport strategy for the LGA.

Planning Priority 4: Provide a diversity of housing types to meet the needs of changing demography

- The Hawkesbury Local Housing Strategy should be completed and exhibited prior to the finalisation of the LSPS. The findings of the Housing Strategy are critical to shaping future growth in the LGA, and the LSPS itself should identify where growth occurs.

- The identified housing targets, if based on the Department of Planning, Industry and Environment's population projects, should be verified against actual residential growth identified by the ABS' Estimated Resident Population figures. In many cases, the DPIE projections have underestimated growth to date and need to be rebased to reflect the higher growth rates that may have occurred.

- Any housing targets and associated development capacity should be set with regard to development feasibility to ensure that take-up and completions occur as needed. Increasing development capacity without regard to feasibility may not result in sufficient completions, or completions may not occur in the specific 5-year periods where growth is required.

- Residential uses should be clustered, where possible, to allow for a critical mass of population to enable viable retail development to occur.

Planning Priority 7: Manage, enhance and celebrate the distinctive heritage character of our towns, villages and open spaces

- Woolworths acknowledges the importance of maintaining local character in Hawkesbury LGA. However, Council should acknowledge that growth and character are not mutually exclusive – indeed, growth can be accommodated in ways that maintain and respect valuable elements of local character. Character statements and the Development Control Plan should be written in such a way that growth is not precluded if it can maintain consistency with the desired future character of an area.

Planning Priority 9: Support our industries to grow and meet current and future trends

- Woolworths agrees that retail development should be sympathetic to local character and should respond to demand. However, Council should not seek to impose any hard caps on the size of retail, nor should it seek to limit retail permissibility through the use of the neighbourhood supermarket definition or similar. Compatibility with local areas can be achieved through clever and sensitive design rather than blanket controls that do not allow for innovative or creative approaches to retail development.
- Retail development should be acknowledged as a key contributor to local employment and the viability of local centres. In particular, supermarket development plays a key role in anchoring local centres and enabling local businesses to thrive. Council should specifically seek to support retail development (including supermarket development) through a specific LSPS action.
- This is supported by the findings of the Draft Hawkesbury Employment Lands Strategy, which notes that "Hawkesbury LGA is expected to enter into a shortage (of retail floorspace) by 2026" with the gap growing substantially by 2031, with supermarket floor space expected to have the highest demand of all types of retail floor space. There is an opportunity to simultaneously facilitate increases in retail capacity to meet demand, while also improving streetscape improvements and the quality of local centres. This should continue to be explored in the Stage Two floor space and modelling analysis.

Conclusion

Woolworths thanks Council for the opportunity to comment on the draft LSPS. We would welcome the opportunity to meet with Council to discuss the recommendations above and how Woolworths and Council can work collaboratively to facilitate retail investment and employment in Hawkesbury LGA in the future. Should you have any questions regarding this submission, please contact me on wdose@woolworths.com.au or 0401 997 393.

[redacted]
NSW State Development Manager
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