

ITEM 3. DRAFT GREEN ROOFS AND WALLS POLICY – PUBLIC EXHIBITION**FILE NO: S100976****SUMMARY**

Green roofs and walls are systems where plants are integrated into the building design. Green roofs include layers of vegetation and growing medium installed on top of the building's water proofing layer and green walls can either be free-standing or part of the wall structure.

Green roofs and walls have been recognised by the City of Sydney as making an important contribution to the urban environment and supporting the objectives of *Sustainable Sydney 2030*. Green roofs and walls help to mitigate the impacts of the urban heat island effect, slow and clean stormwater, improve air quality, increase habitat for biodiversity and create additional space for urban food production and recreation.

The City has taken a leadership role in promoting and advancing green roof and wall technology. The Green Roofs and Walls Strategy was adopted by Council in June last year and identified the need for Council to develop and adopt a green roofs and walls policy.

Green roof and wall support programs have been employed across Europe and North America as a remedy to significant environmental and public health issues, including air and water pollution, loss of open space, and as a climate change adaptation strategy. The most effective international incentive programs are those that have included a high degree of stakeholder engagement, provide funding over several years and employ a range of interventions. International programs which relied on a single approach or where industry expertise was limited, have had limited impact on the uptake of green roofs and walls.

Whilst Australia has not used green roof and green wall technology to the same extent as European and North American countries, local understanding and use of these technologies is increasing. The City of Sydney currently has at least 96,000m² of green roofs and walls already installed. An additional 50 green roof or green wall development applications have been approved and are awaiting construction. The City is also receiving at least one new green roof or wall development application weekly. Local green roof and wall service providers are also reporting a strong increase in installation rates and are employing additional staff to meet demand.

Despite significant improvements in the rate of installations, there are several issues that continue to affect the uptake of green roofs and walls. These include:

- while the potential benefits of green roofs and walls are well known, the specific benefits in the local Sydney environment are still poorly defined and understood. More information and research is needed in this area;
- the industry in Australia is still young and there are only a few companies in Sydney that design, install and maintain green roof and wall systems;
- the technology is still very expensive to install;

- information about the different types of systems and their particular benefits and comparative costs is not readily available, making it difficult for consumers to make informed decisions; and
- there is a lack of key technical information which is contributing to building owners' uncertainty about using the technology. Reliable waterproofing and reliable plant selection are two issues that continue to concern building owners.

The draft Green Roofs and Walls Policy at Attachment A has been developed in conjunction with the City's Green Roofs and Walls Technical Advisory Panel. It acknowledges the substantial overseas experiences with green roof and wall programs and provides a direction that considers the current industry momentum in Sydney, as well as barriers to the local uptake of green roofs and walls. The draft Policy is accompanied by a Policy Implementation Plan at Attachment B. The Policy Implementation Plan sets out the specific activities and timeframes to meet the Green Roofs and Walls Policy objectives.

It is recommended that the draft Policy and Policy Implementation Plan attached to this report be approved for public exhibition. The draft Policy, if adopted, will be the first of its kind in Australia.

RECOMMENDATION

It is resolved that Council approve the draft Green Roofs and Walls Policy and the draft Green Roofs and Walls Policy Implementation Plan, as shown at Attachments A and B respectively to the subject report, for public exhibition for a minimum period of 28 days.

ATTACHMENTS

Attachment A: Draft Green Roofs and Walls Policy

Attachment B: Draft Green Roofs and Walls Policy Implementation Plan

BACKGROUND

1. Green roofs and walls have been recognised by the City as making an important contribution to the urban environment and supporting the objectives of *Sustainable Sydney 2030*.
2. Green roofs and walls provide numerous social and environmental benefits and contribute to making the City of Sydney a more climate change resilient, liveable and beautiful city. Green roofs and walls help to mitigate the impacts of the urban heat island effect, slow and clean stormwater, improve air quality, increase habitat for biodiversity and create additional space for urban food production and recreation.
3. The City has taken a leadership role in promoting and advancing green roofs and walls in the city. It has done so through a number of actions including:
 - (a) developing and adopting the Green Roofs and Walls Strategy;
 - (b) streamlining the development application process for green roofs and walls by having a dedicated position assessing applications;
 - (c) taking a leadership role by installing green roofs and walls on Council-owned buildings (for example Beare Park, Surry Hills Library and Prince Alfred Park Pool);
 - (d) including green roofs and walls in key strategic documents such as the Greening Sydney Plan, and planning instruments such as Development Control Plans for Green Square Town Centre;
 - (e) creating baseline data on green roofs and walls projects in Sydney to monitor progress over time;
 - (f) developing research partnerships to advance our understanding of the costs and benefits of green roofs and walls;
 - (g) consulting with the community and industry via the City's Green Roofs and Walls Technical Advisory Panel and other mechanisms;
 - (h) filling important gaps in technical information including commissioning the Green Roofs and Walls Perception Study and Green Roofs and Walls Technical Manual; and
 - (i) increasing the profile for green roofs and walls through presentations, media coverage and education programs.
4. The Green Roofs and Walls Strategy adopted by Council in June 2012 identified the need for Council to develop and adopt a Green Roofs and Walls Policy, which is provided at Attachment A.
5. This report and draft Policy are based on a review of international green roof and wall programs and a review of local factors. It sets out a policy position that builds on work already undertaken by Council, and provides steps to further progress the integration of green roofs and walls into the urban fabric of the city.

International experience

6. Hundreds of different green roof and wall programs have been implemented globally. Countries that have introduced extensive programs have done so as a remedy to significant environmental and public health issues. The most common rationales for introducing incentive programs are:

- (a) significant loss of open space (Austria);
- (b) significant air quality issues (New York, China, Austria);
- (c) stormwater and waterway pollution (Toronto, British Columbia, Germany); and
- (d) as a climate change adaptation strategy (Copenhagen, Switzerland).

7. International green roof and wall programs can be broadly categorised as:

Direct financial incentives	<ul style="list-style-type: none"> • Lump sum payments per project – Chicago, Green Roof Grant Program. • Dollars per square metre of installation – Washington DC, Green Roof Subsidy. • A percentage of installation costs reimbursed – Linz Austria, Green Roof Grant Program. • Part of a larger grant program – Portland Oregon, Community Watershed Stewardship Grants. • Low interest loans – The Bronx New York, Environmental Revolving Loan. • Business Tax Credits – Pennsylvania Philadelphia, Green Roof Tax Credit.
Indirect financial incentives	<ul style="list-style-type: none"> • Floor space density bonus – Portland Oregon, City Zoning Codes. • Development fee exemptions – Vancouver Port Coquitlam, Zoning By Law. • Building services fee reduction – Buenos Aires Argentina, Green Roofs Law. • Stormwater fee reductions – Germany, Waste Water Charges Act. • Building permit fee reductions – Washington DC, Green Building Permits.
Intangible incentives	<p>By far the most common incentive type and include:</p> <ul style="list-style-type: none"> • Fast track development assessments – San Francisco California. • Recognition and awards programs – Basel Switzerland, Best looking Green Roof contest. • Demonstration sites – Malmö Sweden, Botanic Gardens. • Research programs – Melbourne, Green Infrastructure Research Group. • Education and technical support programs – Washington DC, DC Greenworks. • Policies and strategy – Sydney, Green Roofs and Walls Strategy.
Regulations and standards	<p>Nine cities in six countries have passed mandatory green roof legislation. The broadest reaching programs include:</p> <ul style="list-style-type: none"> • Mandatory green roofs for all developments greater than 2000m² – Toronto, Canada, Green Roof By-Law. • Mandatory green roofs for all buildings with less than a thirty degree pitch – Copenhagen Denmark, Green Roof Policy and carbon neutral targets. • All new roofs required to be a green roof – Basel Switzerland, Building and Construction Law.

8. Cities in the United States, Japan, Singapore and the United Kingdom also have indirect mandatory legislation, where green roofs are one technology available to meet, for example, mandated sustainable building legislation.

Effective International Programs

9. Programs which have been the most effective have provided a range of interventions over a number of years. Where interventions have relied on a single approach, or have been poorly funded, there have been limited beneficial outcomes.
10. Mandatory green roof or wall programs have only been effective when accompanied by a range of other support programs. For example, Port Coquitlam in Canada brought in a mandatory green roof by-law in 2006. Due to the structure of the legislation, only three large green roofs have been installed as a result. In comparison, Germany provides support at national, regional and local government levels via dozens of different incentive and policy support mechanisms. Around 80 German cities offer cash incentives, mandatory design guidelines, education programs and other support. Despite only two German cities having mandatory green roof installation programs, more than 15 per cent of all flat roofs in Germany are green roofs, which equates to approximately one billion square metres.
11. Effective programs are also designed to meet a well-articulated public health or environmental need. Where the need is not well defined, programs have been poorly designed and have had limited success. For example, Montreal provided funding per square foot of green roofs as an insulation and energy efficiency measure. Due to the lack of understanding of the green roof design required to reach certain insulation benefits and other factors, the program was stopped after two years, with fewer than five green roofs being installed through the program.
12. In comparison, Toronto faces annual beach closures due to stormwater pollution. This public health issue and climate change concerns were the drivers for a pilot green roof program, which was accompanied by education and stakeholder engagement campaigns over several years. By the time green roofs were made mandatory in 2009, there was significant understanding and capacity within industry to accommodate the legislative changes. Since the introduction of mandated green roofs, more than 250 green roofs have been approved as a result of the legislation.
13. Most successful green roof and wall incentive programs have also been accompanied by significant community education and stakeholder engagement, as well as the provision of technical guidelines and support. For example, Toronto City Council provided educational programs on green roofs for a number of years. Over time, this was supported with community grants, technical guidelines and construction standards. Toronto City Council then worked intensively with the industry and community to develop mandatory green roof legislation. This created greater ownership of the changes and Toronto City Council officers have reported an easy transition to the mandated green roof system.

14. Programs that have been most effective have included a source of funding for a minimum period of three to five years. This has allowed time for the industry to mature, for education programs to work and for the community to understand and embrace the technology. One of the most successful green roof incentive programs is in Basel, Switzerland. Basel is a city state and can legislate to introduce or raise its own taxes. Basel conducted a referendum to gauge support for an energy conservation tax called the 'Energy Saving Fund'. The tax was supported by the community and is levied as a proportion of all energy bills. The money from the Energy Saving Fund has subsidised the green roof industry in Basel for many years.

Green Roofs and Walls in Sydney

15. Whilst Australia has not used green roof and green wall technology to the same extent as Europe and North America, local understanding and use of the technology is increasing. The City of Sydney currently has more than 96,000m² of green roofs and walls already installed. An additional 50 green roof or green wall development applications have been approved and are awaiting construction. The City is also receiving at least one new green roof or wall development application weekly. Local green roof and wall service providers are also reporting a strong increase in business and are employing additional staff to meet demand.
16. In Sydney, there are local issues which are acting as barriers to the uptake of green roofs and walls. These issues were confirmed by the Green Roofs and Green Walls Perception Study commissioned by Council late last year, and are reflected in the proposed draft Green Roofs and Walls Policy and Implementation Plan.
17. The benefits of green roofs and walls experienced globally are poorly understood within the Sydney context. For example, what soil depth provides the best insulation and stormwater runoff benefit, or which roof top designs best support local biodiversity? More local information is needed on how green roofs and walls function and exactly how they contribute to social, environmental and economic outcomes. While local information about benefits is still limited, building owners will continue to find it difficult to justify the additional cost of a green roof or wall.
18. The green roofs and walls industry in Australia is still young. There are only a few companies in Sydney that regularly design, install and maintain green roofs and walls. The lack of local industry depth has been identified as a barrier to installations, both in terms of the lack of broad industry expertise and in causing high installation costs.
19. Green roofs and walls are considerably more expensive to install in Australia than overseas. Specialist external contractors are often required for the design, installation and maintenance of green roofs and walls. Costs in Australia can be up to two to ten times more expensive than comparable products in some European cities. Internationally, as installation rates have increased, the cost per square metre of installations has dropped. The high cost of green roofs and walls may be more acceptable to building owners if issues of water proofing, species selection and environmental benefits are better understood.

20. Information about the different types of systems and their particular benefits are not readily available, making it difficult for building owners to make informed decisions. Better quality information on the costs versus benefits needs to be developed and communicated broadly to industry and community sectors.
21. Successful international green roof and wall support programs have been driven by well-articulated public health issues and environmental benefits that are understood and embraced by the general public. As steps are taken to advance green roofs and walls in Sydney, more explicit links need to be made between the green roof and walls technology and the benefits they provide for building owners, the community and the environment.
22. Community engagement undertaken for *Sustainable Sydney 2030* showed that our community is concerned about the impacts of climate change and want to see positive action to mitigate potential impacts. Sydney faces increasing economic, environmental and social risks from climate change, including premature deaths due to extreme heat and property and financial losses from extreme weather events. Green roofs and walls provide benefits that mitigate climate change effects including contributing to managing stormwater and flooding, supporting urban biodiversity, cooling the environment and mitigating the urban heat island effect. Making sure the community and building owners understand these benefits will be important to advancing the use of green roofs and walls.
23. Currently, there is a lack of technical information and support available for property owners wanting to install a green roof or wall. Waterproofing and plant species selection continue to be two of the main technical concerns acting as barriers to the installation of green roofs or walls. In countries with a commitment to extensive programs, there are a range of mandated and recommended technical guidelines and support. In Australia, there are currently no specific green roofs or green wall technical or construction guidelines. Addressing this gap will be important to support the uptake of green roofs and walls in the future.
24. Some technical information can be provided from global experience, however caution is needed. Green roofs in Europe and North America are designed for local climate conditions. Their designs employ particular plant species and shallow soil profiles that do not function as well in Sydney's climate. Locally relevant information on appropriate design, installation and maintenance regimes is fundamental to the future development of green roofs and walls in Sydney.

Green Roofs and Walls Policy

25. The proposed draft Green Roofs and Walls Policy has been developed in conjunction with the City's Green Roofs and Walls Technical Advisory Panel. The Advisory Panel is made up of representatives from academia, state government, peak industry group, architects and designers. The panel meets monthly and is providing valuable feedback to Council on current developments in the green roof and walls industry.
26. The draft Green Roofs and Walls Policy acknowledges the substantial overseas experience with green roof and wall programs and provides a direction that considers the current industry momentum in Sydney, as well as barriers to green roof and wall uptake.

27. The proposed draft Policy recommends a continued focus on education and engagement to raise awareness of the many benefits green roofs and walls can provide. This includes continuing to consult with the community, industry and building owners to understand issues that may be preventing higher green roof and wall installation rates.
28. A three year Policy Implementation Plan has been developed to accompany the Policy. The aim of the Implementation Plan is to provide a publicly accessible document that sets out the specific activities and timeframes to meet the objectives of the Green Roofs and Walls Policy.
29. As part of the suite of proposed activities, additional information will be developed relating to incentive programs that could increase green roof and wall installations. This will include investigating the viability of cash and non-cash incentives, as well as developing criteria for assessing the suitability of installing green roofs or walls on Council-owned buildings.
30. Locally relevant information about green roofs and walls is essential to encourage an uptake in the technology. The City is already a partner in the Cooperative Research Centre's, Low Carbon Living research program which is investigating the impacts of green roofs and walls on the urban heat island effect. The City has also partnered with the University of Technology Sydney to research effective rooftop food production and the impacts of urban greening on indoor and outdoor air quality. Other research partnerships are currently being negotiated and will be essential for advancing the understanding of this technology and how it functions in the City of Sydney Local Government Area.
31. One of the key methods used to promote green roofs in North America is via recognition in sustainable building rating tools. The Green Building Council's Green Star program is currently under review, and avenues will be explored for including green roof and wall technology as a building feature that can be recognised and included in rating assessments. Other mechanisms will be explored to further promote green roofs and walls, for example through recognition in the Environmental Upgrade Agreement process, further development of planning controls and advocating for state and national standards for green roofs and walls.
32. The issue of setting targets has been a key consideration of the City's Green Roofs and Walls Technical Advisory Panel. Their view is that there is insufficient data on the local environmental, social and economic benefits of green roofs and walls to establish reliable or realistic targets at this time. However significant work has been completed establishing base line data on existing green roof and wall sites. Potential new sites are also monitored via the development application process. Monitoring and reporting of this data will be provided quarterly in Council's Green Report and annually in the State of the Environment Report. Responsibility for this monitoring and reporting is the work priority of the Senior Project Officer, Green Roofs and Walls and is integrated into the officer's annual Work and Development Plans.

KEY IMPLICATIONS

Strategic Alignment - Sustainable Sydney 2030

33. Sustainable Sydney 2030 is a vision for the sustainable development of the City to 2030 and beyond. It includes 10 strategic directions to guide the future of the City, as well as 10 targets against which to measure progress. This draft policy is aligned with the following strategic directions and objectives:
- (a) Direction 2 - A Leading Environmental Performer – increasing urban greening through green roofs and walls helps to lower the urban heat island effect, offset greenhouse gas emissions, improve the environmental performance of buildings, reduce stormwater and pollutant loads and demonstrates the City's commitment and leadership in environmental performance.
 - (b) Direction 9 - Sustainable Development, Renewal and Design – green roofs and walls are an innovative urban design technology. Continued research and work in this area will contribute to the integration of green infrastructure technologies, such as green roofs and walls, into the urban fabric.

Risks

34. The intention of the draft Green Roofs and Walls Policy is to encourage the installation of high quality green roofs and walls in the City. Mandating green roofs and walls where there is a lack in industry standards and depth of skills could create a higher risk environment. Where green roofs are mandated internationally, quality control issues and poor skills and workmanship have created issues for government and industry service providers. Through the implementation of the proposed policy, the risk of poor quality green roofs and walls installations will be further minimised, before consideration of more stringent approaches.

Social / Cultural / Community

35. Human interaction with green spaces and plants has long been identified as a key to positive mental health and wellbeing. The City's green roofs and walls research program will more strongly articulate the specific role green roofs and walls play in supporting a positive social, cultural and community life in the city.

Environmental

36. Green roofs and walls make a positive environmental contribution through:
- (a) slowing and cleaning stormwater;
 - (b) reducing the impacts of the 'Urban Heat Island Effect';
 - (c) improving the efficiency of solar panels;
 - (d) creating additional space for urban food production and private open space;
 - (e) improving air quality;
 - (f) improving amenity and liveability of the city;

- (g) absorbing carbon dioxide from the atmosphere;
- (h) increasing habitat to support biodiversity; and
- (i) reducing energy consumption through building efficiency and insulation.

Economic

37. As detailed in this report, where support has been provided for green roofs and walls internationally, the community have benefitted through increased competition and a lowering of the price per metre squared of installations. Recent reports from the United States indicate that the green roofs and walls industry is likely to be worth \$7.7 billion dollars per annum by 2017. The proposed draft Green Roofs and Walls Policy is designed not only to support residential and commercial green roofs and walls installations, but to provide support to enhance the green roofs and walls industry in Sydney.

BUDGET IMPLICATIONS

38. There are no immediate budgetary implications stemming from the recommendations in this report. However the Green Roofs and Walls Senior Project Officer's contract is budgeted to June 2014. If a longer program of activities is adopted, this position will need to be reviewed for the 2014/15 financial year.

CRITICAL DATES / TIME FRAMES

39. There are no specific critical dates. All timeframes for activities are provided in Appendix A to the Green Roofs and Walls Policy Implementation Plan at Attachment B.

PUBLIC CONSULTATION

40. The draft Green Roofs and Walls Policy was developed in consultation with the City's Green Roofs and Walls Technical Advisory Panel, and their comments have been integrated into the report and draft policy. The Panel is made up of industry representatives, architects, landscape architects and designers, policy and State Government representatives. The Panel is supportive of the policy and will continue to be consulted on the development of future green roofs and walls programs.
41. Residents, building owners and other key industry stakeholders have been, and will continue to be, engaged and consulted as the Green Roofs and Walls Policy is implemented.
42. Further, broader engagement is recommended by allowing for a minimum 28 day public exhibition period for the Draft Green Roofs and Walls Policy.

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