

# Park light

The park light remodel was created to bring some aesthetics to Wentworth point park moving away from the plain look, helping the circular economy and giving plastic a second life. The product's existence is a necessity for all travellers utilising the wharf ensuring a well lit bath and a safe passage. It is designed with consideration to extreme weather, ease of maintenance , repairability and full circularity .

The redesigned park light will use a bridging structure decreasing on the use of steel compared to the original lights. Doing so will leave gaps between the steel bars causing it to be dangerous for kids and leaving electrical components exposed, therefore we designed LLDPE panels cut out from defective water tanks and heat treated it to match the shape of the openings. For the light LED is used to insure long life span minimising the need of maintenance and increasing durability and longevity. At the end of the light life span all materials can be melted again and reformed into different products, steel can be reused infinitely while plastic will need to be reformed into a softer product as reforming will decrease its strength .

Refurbishment and repair will be appointed to parramatta council. Doing regular check in for any damaged panels. All panels are secured to the metal structure through clips similarly to cars where a council worker can easily take it off and replace the panel with a new one. In terms of replacement parts spare panels will be created and left inside the housing for easy maintenance when needed. All components of the park light are designed with durability in mind to increase longevity . The aim is to not prevent any need of repair or maintenance for 17 to 20 years when LED needs replacement , unless vandalism took place. In situations where electrical components need replacement, a certified electrician is needed with a high reach certificate or compact spaces certificate. As normal Council workers can achieve any panel replacement it is not worth the risk and insurance cost to do electrical work.

To ensure the new design is accomplishing circularity first Rotadyne needs to confirm all products passed to us for recycling are UV-stabilized. Then as the defected water tanks are ready to be cut to shape tradies need to ensure all plastic off cuts are collected and sent to recycling facilities. Similarly with any broken panels during maintenance check all should be recycled properly through remolding. When stabilising the metallic structure tradesmen need to only use eco friendly cement ensuring limited omission during manufacturing. For this product there is not much engagement with the public but to further encourage people to be more sustainable, part of the design is to stamp all LLDPE with the banner “ save the world and recycle me”. delivering a message to all park and transport users to think about circularity.

The new design for a street lamp follows a more organic shape, blending in with the ecosystem leaving a positive impact on humans and nature. The design integrates the natural element aiming to persuade a stronger harmony connection between human and

nature. In general a street light will benefit all people passing through to the wharf similarly to the original. Looking at some negativity, The design is much more labour intensive and will need a higher cost to maintain.

The park light redesign supports multiple United Nations Sustainable Development Goals . some of my favourite targets are Target 11.7, Target 9.4, Target 12.3 and 12.5. Target 11.7 promotes access to safe, inclusive, and enjoyable public areas. Therefore the integration of a leaf inspired biophilic. enhances the aesthetic and emotional quality of Wentworth Point Park, encouraging public use of outdoor spaces. Target 9.4 encourages the upgrade of infrastructure through sustainable materials and circular manufacturing processes therefore it is directly supporting the use of recycled LLDPE and resource efficient steel framework. Finally, the aim of the entire project target 12.3 & 12.5 aiming to minimise the use of resources as shown with the decrease in steel use and 12.5 where we cut down defective water tanks to better manage waste by recycling and reuse.

## References

Australian Bureau of Statistics 2021, *2021 Census All persons QuickStats: Wentworth Point (SAL14244)* [online], ABS, viewed 19 August 2025, <https://www.abs.gov.au/census/find-census-data/quickstats/2021/SAL14244>.

Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts 2023, *Sustainable cities and urban design*, Australian Government, viewed 23 October 2025, <https://www.infrastructure.gov.au>.

Business Waste 2023, *Low density polyethylene (LDPE) recycling*, Business Waste, [online], viewed 21 August 2025, <https://www.businesswaste.co.uk/your-waste/plastic-recycling/ldpe-recycling/>.

City of Parramatta Council 2024, *Sustainability Strategy 2024–2030*, City of Parramatta Council, viewed 23 October 2025, <https://www.cityofparramatta.nsw.gov.au>.

Department of Climate Change, Energy, the Environment and Water (Australia) 2023, *Circular Economy resources*, Australian Government, viewed 23 October 2025, <https://www.dcceew.gov.au/environment/protection/waste/circular-economy>.

Entec Polymers 2025, *Polyethylene, linear low-density (LLDPE)*, [online], viewed 20 August 2025, <https://www.entecpolymers.com/products/resin-types/polyethylene-linear-low-density-lldpe>.

Gregstrom Corporation 2023, *Wall Thickness and Rotational Molding*, [online], viewed 20 August 2025, <https://gregstrom.com/wall-thickness-rotational-molding/>.

International Energy Agency (IEA) 2023, *Energy efficiency 2023*, IEA, viewed 23 October 2025, <https://www.iea.org/reports/energy-efficiency-2023>.

.id 2025, *Ancestry, City of Parramatta Community Profile* [online], viewed 6 August 2025, <https://profile.id.com.au/parramatta/ancestry?WebID=340>.

Landcom 2025, *Wentworth Point*, [online], viewed 12 August 2025, <https://www.landcom.com.au/projects/wentworth-point>.

McClements 2022, *What is Linear Low-Density Polyethylene (LLDPE)?* [online], Xometry, viewed 17 August 2025, <https://www.xometry.com/resources/materials/linear-low-density-polyethylene-lldpe/>.

NSW Department of Planning and Environment 2023, *Planning report: Appendix F*, NSW Department of Planning and Environment, [online], viewed 18 August 2025, [https://s3.ap-southeast-2.amazonaws.com/dpe-files-production/s3fs-public/dpp/146563/Planning%20Report\\_Appendix%20F.pdf](https://s3.ap-southeast-2.amazonaws.com/dpe-files-production/s3fs-public/dpp/146563/Planning%20Report_Appendix%20F.pdf).

Organisation for Economic Co-operation and Development (OECD) 2023, *Resource efficiency and circular economy*, OECD, viewed 23 October 2025, <https://www.oecd.org/en/topics/resource-efficiency-and-circular-economy.html>.

Rotadyne 2023, *Rotational moulding catalogue: draft 4*, Rotadyne Pty Ltd, viewed 31 July 2025, <https://www.rotadyne.com.au/wp-content/uploads/Rotational-Moulding-Catalogue-Draft-4.pdf>.

Rotadyne 2024, *Sustainable rotomoulding solutions*, Rotadyne, viewed 23 October 2025, <https://www.rotadyne.com.au/sustainable-rotomoulding/>.

United Nations 2023, *Goal 9: Industry, innovation and infrastructure*, United Nations Sustainable Development Goals, viewed 23 October 2025, <https://sdgs.un.org/goals/goal9>.

United Nations 2023, *Goal 12: Responsible consumption and production*, United Nations Sustainable Development Goals, viewed 23 October 2025, <https://sdgs.un.org/goals/goal12>.

United Nations 2025, *Sustainable Development Goals*, [online], viewed 20 August 2025, <https://sdgs.un.org/goals>.

United Nations Environment Programme (UNEP) 2022, *LED lighting and energy efficiency*, UNEP, viewed 23 October 2025, <https://www.unep.org/led-lighting>.

World Health Organization (WHO) 2023, *Urban green spaces and health*, WHO, viewed 23 October 2025, <https://www.who.int/publications/i/item/9789241510529>.

WRAP 2023, *WRAP and the circular economy*, Waste and Resources Action Programme, viewed 23 October 2025, <https://www.wrap.ngo/taking-action/climate-change/circular-economy>.

Zhou, X, Kumar, M, Chen, H, Sarsaiya, S, Xu, L, Liu, J, Sindhu, R, Binod, P, Pandey, A & Yang, Y 2023, 'The rise of microplastics and nanoplastics in the environment: Challenges and perspectives', *Science of the Total Environment*, vol. 875, 162698, [online], viewed 18 August 2025, <https://doi.org/10.1016/j.scitotenv.2023.162698>.

