Planning for net zero energy buildings briefing

Thursday 11 March 2021

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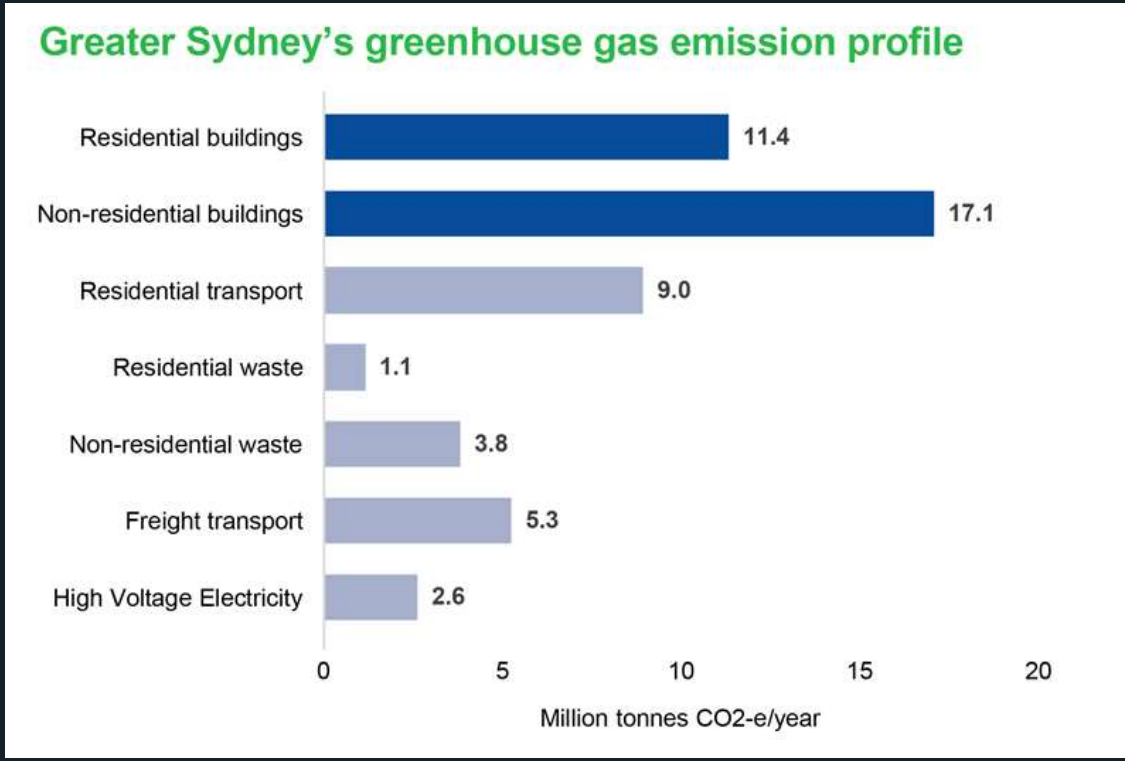
challenge for Greater Sydney



energy (electricity and gas) used in buildings is a significant contributor to greenhouse emissions in Greater Sydney

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shared government goals

- NSW objective for net zero emissions
- NSW objective to increase resilience to a changing climate

plans

- NSW Net Zero Plan and Electricity Strategy
- Greater Sydney Region Plan, low carbon city objective
- district plans, reducing carbon emissions priority
- local strategic planning statements

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step changes to net zero energy buildings

- office, hotel, shopping centre and multi-unit residential
- typical of Greater Sydney development
- evidence base - cost benefit and stakeholder feedback
- performance improvements through planning requirements
- recognise offsite renewables in planning

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overview

target

net zero energy buildings

how

step changes in performance standards

steps

step 1
- energy efficiency
- onsite renewables

step 2
- energy efficiency
- onsite renewables
- offsite renewable procurement

meeting the steps:
- max. energy intensity, or
- NABERS rating, or
- Green Star rating

proposed timeframe

step 1 – 2023
step 2 – 2026

exhibit 2021

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contribute to business recovery

- saves investors, business and occupants $1.341b ($2.287b less $0.946b in costs)
- saves public $1.811b:
  - $842m avoided power generation - NSW energy consumers
  - $618m avoided network infrastructure - NSW energy consumers
  - $35m avoided health costs - people of Sydney and Hunter Valley & NSW taxpayers
  - $316m avoided carbon emission costs – everyone

note: total costs and savings are calculated based on the draft performance standards being implemented from 2023 to 2050.

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(continued)
contribute to business recovery

- generates ~$13m for renewable energy generators that supports investment and jobs in renewable energy zones (calculated for CoS only)
- creates demand for new skills in energy efficiency
- improves building resilience to a changing climate

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working with industry and government

- industry and government forums (May and November 2018)
- industry and government advisory group (July 2019 to February 2020)
- stakeholder workshops (November 2019 to February 2020)
- individual developer meetings (September to October 2020)
- DPIE, Government Architects Office and Greater Sydney Commission (November 2020)
- Greater Sydney councils (December 2020 to February 2021)
- peak bodies/partners (December 2020 to February 2021)

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what informed the final steps?

feedback		final performance standards

implementation timing	• covid effect on residential and retail	• timing pushed back
		  ○ exhibit – 2021
		  ○ step 1 – 2023
		  ○ step 2 – 2026

office	• step 2 (e.g. 6 star NABERS Energy) is challenging to meet	• reduced step 2 ○ 5.5 + 25% star NABERS Energy plus renewable energy procurement equivalent to “net zero energy” or a maximum of 45.0 kWh/yr/m^2 of GFA

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(continued) what informed the final steps?

feedback		final performance standards
shopping centre	• step 1 and 2 – challenging due to variables in development approach plus refurbishments	• reduced steps ○ Step 1 – 4 star NABERS Energy ○ Step 2 – 5 star NABERS Energy plus renewable energy procurement equivalent to "net zero energy" or a maximum of 45.0 kWh/yr/m^2 of GFA ○ doesn't apply to refurbishments
residential	• challenging above 30 storeys but easier for lower buildings	• different BASIX scores for three new height bands up to 30 storeys

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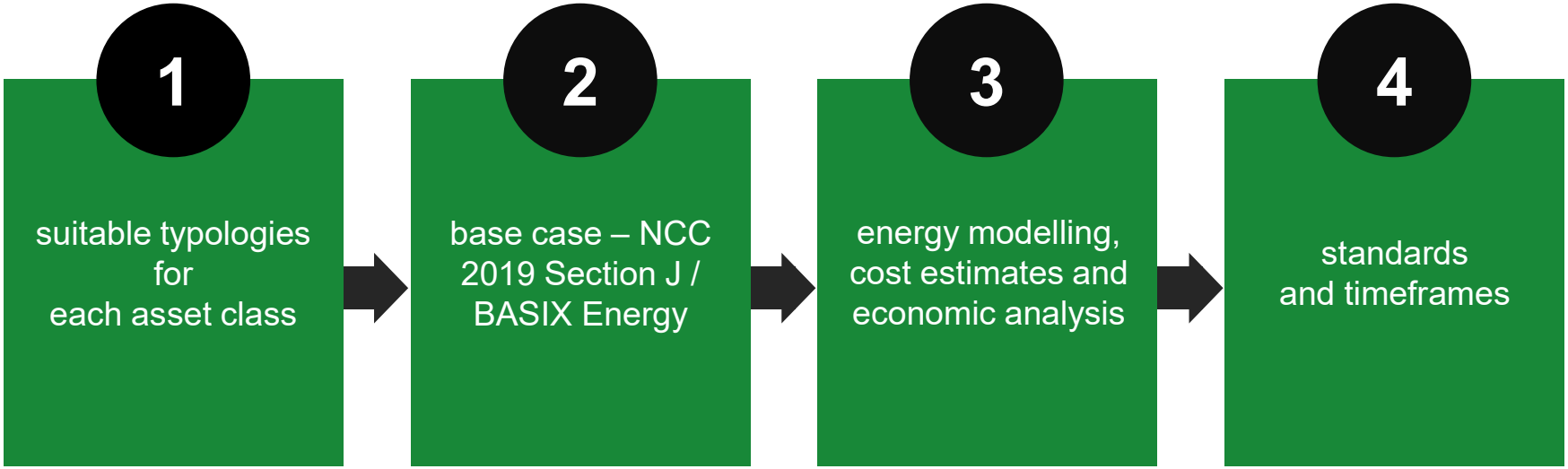
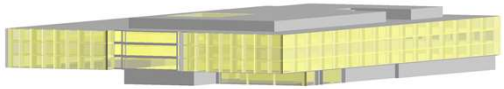
project methodology



office typologies

B grade office



- floors above ground: 4
- GFA: 8,878m²
- floor plate: 2,757m²
- Window to Wall Ratio (WWR): 81%
- carparks: ~17 on grade
  (remainder on street parking)

A grade office

- floors above ground: 20
- GFA: 35,635m²
- floor plate: 1,790m²
- WWR: 76%
- carparks: ~65 underground

premium grade office

- floors above ground: 37
- GFA: 67,684m²
- floor plate: 1,870m²
- WWR: 76%
- carparks: ~200 underground

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office performance standards

office	performance standards
current requirement	– NCC 2019 / 5.5 star NABERS Energy with Commitment Agreement (CA)
first step	– maximum 45.0 kWh/yr/m^2 of Gross Floor Area (GFA), or – 5.5 Star NABERS Energy CA + 25%, or – certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or – equivalent
second step	– first step AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 45.0 kWh/yr/m^2 of GFA

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office cost benefit

office	cost benefit
first step (energy efficiency + onsite renewables)	– 10-37% Internal Rate of Return (IRR) 25 years – 0.11%-0.58% CapEx increase
second step (energy efficiency + onsite renewables + offsite renewable procurement)	– 16-28% IRR 25 years – 0.16%-0.52% CapEx increase

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existing office buildings

- 14 office buildings of 1,000m² or more NLA in NSW have achieved a 6 star NABERS Energy rating

52 Goulburn St, Sydney

- 6 star NABERS Energy rating
- ten storeys
- 22,931m² NLA

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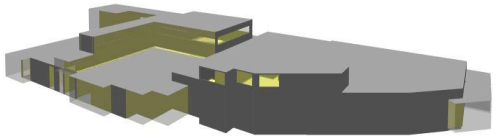
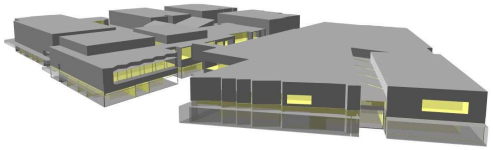
shopping centre typologies

small shopping centre



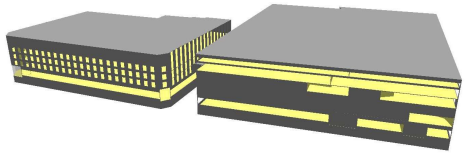
- floors above ground: 1
- GFA: 7,359m²
- NLA: 3,021m²
- floor plate: 7,359m²
- Window to Wall Ratio (WWR): 20%

medium shopping centre



- floors above ground: 2
- GFA: 26,560m²
- NLA: 23,414m²
- floor plate: 17,321m²
- WWR: 20%

large shopping centre



- floors above ground: 5
- GFA: 114,443m²
- NLA: 84,813m²
- floor plate: 19,413m²
- WWR: 28%

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shopping centre performance standards

shopping centre	performance standards
current requirement	– NCC 2019 (equivalent 3.5 Star NABERS Energy)
first step	– maximum 55.0 kWh/yr/m^2 of Gross Floor Area (GFA), or – 4 star NABERS Energy Commitment Agreement (CA), or – certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or – equivalent
second step	– maximum 45.0 kWh/yr/m^2 of GFA, or – 5 star NABERS Energy CA, or – certified Green Star Buildings rating with “exceptional performance” in Credit 22: Energy Use AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 45.0 kWh/yr/m^2 of GFA

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shopping centre cost benefit

shopping centre	cost benefit
first step (energy efficiency + onsite renewables)	– 2-23% Internal Rate of Return (IRR) 25 years – 0.16%-0.42% CapEx increase
second step (energy efficiency + onsite renewables + offsite renewable procurement)	– 9-11% IRR 25 years – 0.95%-1.28% CapEx increase

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existing shopping centre development

- 19 shopping centres with 5,000m² or more GLAR in NSW have achieved a 5 star NABERS Energy rating

46 Wilsons Rd, Lake Macquarie

- 5 Star NABERS Energy rating
- 23,548m² GLAR

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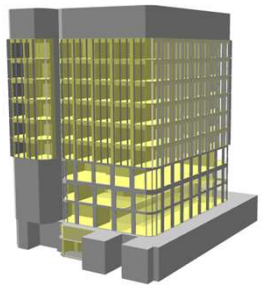
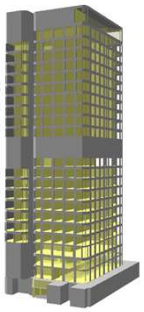
hotel typologies

4 star hotel (small)



- floors above ground: 10
- GFA: 4,420m²
- rooms: 92
- floor plate: 548m²
- Window to Wall Ratio (WWR): 58%

4 star hotel (large)



- floors above ground: 24
- GFA: 11,262m²
- rooms: 252
- floor plate: 564m²
- WWR: 57%

5 star hotel

- floors above ground: 50
- GFA: 38,975m²
- rooms: 514
- floor plate: 886m²
- WWR: 66%

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hotel performance standards

hotel	performance standards
current requirement	– NCC 2019 (equivalent 3.5 Star NABERS Energy)
first step	– maximum 245.0 kWh/yr/m^2 of Gross Floor Area (GFA), or – 4 star NABERS Energy Commitment Agreement (CA), or – certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or – equivalent
second step	– maximum 240.0 kWh/yr/m^2 of GFA, or – 4 star NABERS Energy CA +10%, or – certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 240.0 kWh/yr/m^2 of GFA

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hotel cost benefit

shopping centre	cost benefit
first step (energy efficiency + onsite renewables)	– 17-20% Internal Rate of Return (IRR) 25 years – 0.15%-0.35% CapEx increase
second step (energy efficiency + onsite renewables + offsite renewable procurement)	– 9-10% IRR 25 years – 0.24%-0.86% CapEx increase

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existing hotel development

- 11 hotels with 100 rooms or more in NSW have achieved a 4.5 star NABERS Energy rating

28 Albion St, Sydney

- 4.5 star NABERS Energy rating
- 309 rooms

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multi-unit residential typologies

9 storey residence

- floors above ground: 9
- GFA: 7,847m²
- apartments: 90
- floor plate: 872m²
- Window to Wall Ratio: 33%
- carparks: 60 underground

15 storey residence

- floors above ground: 15
- GFA: 9,858m²
- apartments: 105
- floor plate: 657m²
- WWR: 34%
- carparks: 100 underground

25 storey residence

- floors above ground: 25
- GFA: 16,995m²
- apartments: 194
- floor plate: 691m²
- WWR: 35%
- carparks: 170 underground

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multi-unit residential performance standards

multi-unit residential	score		
current requirement	– BASIX Energy 25		
height band (storeys)	**6-10**	**11-20**	**21-30**
first step	– BASIX Energy 40	– BASIX Energy 35	– BASIX Energy 30
second step	– BASIX Energy 45 AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 85.0 kWh/yr/m^2 of Gross Floor Area (GFA)	– BASIX Energy 40 AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 90.0 kWh/yr/m^2 of GFA	– BASIX Energy 35 AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 95.0 kWh/yr/m^2 of GFA

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multi-unit residential cost benefit

multi-unit residential	cost benefit		
height band (storeys)	**6-10**	**11-20**	**21-30**
first step (energy efficiency + onsite renewables)	– 28% Internal Rate of Return (IRR) 25 years – 0.64% CapEx increase	– 23% IRR 25 years – 0.41% CapEx increase	– 22% IRR 25 years – 0.44% CapEx increase
second step (energy efficiency + onsite renewables + offsite renewable procurement)	– 20% IRR 25 years – 1.56% CapEx increase	– 18% IRR 25 years – 0.79% CapEx increase	– 20% IRR 25 years – 0.67% CapEx increase

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existing multi-unit residential development

- 21 multi-unit residential developments that are 6 storeys or higher in NSW have achieved a BASIX Energy score of 35 or higher

138-152 Victoria Rd, Rozelle

- BASIX Energy 50
- 164 units

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recognising offsite measures in planning

method 1

purchasing and retiring Large Scale Generation Certificates (LGCs)

method 2

purchasing renewable energy certificates through GreenPower scheme

method 3

entering into a Power Purchase Agreement (PPA)

how?

- purchase LGCs or GreenPower annually for 5 years as required by a contract, or
- enter into a new PPA or add development to an existing PPA

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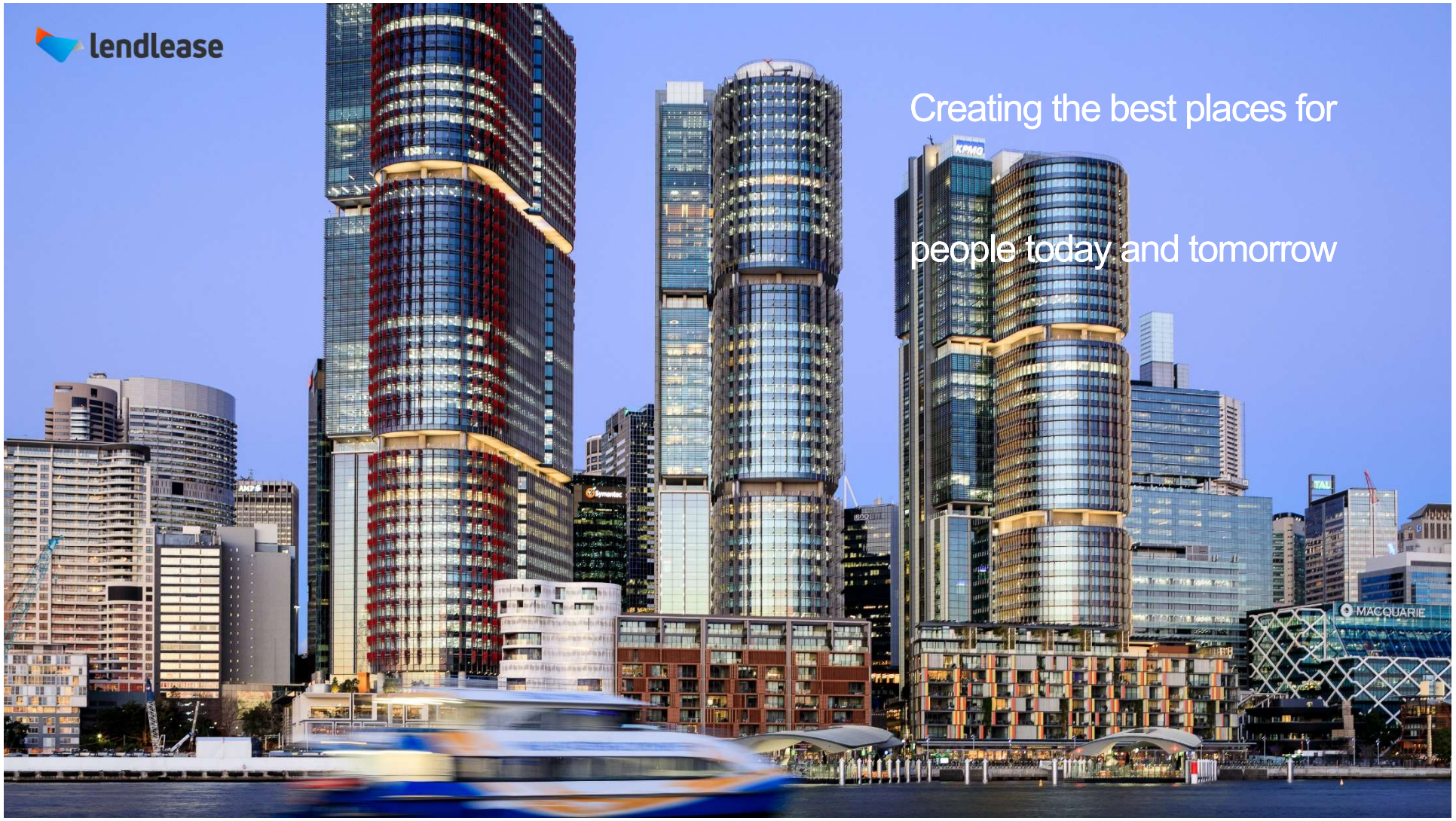
lendlease
Creating the best places for
people today and tomorrow
KPMG
MACQUARIE

Maryam Litkouhi

Development Manager
(Stockland)

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Stockland

Performance Standards to Net Zero Energy

Advisory Group Member
Commercial Office

Reimagining communities for the future that regenerate the environment, ignite prosperity and inspire people to thrive.

Our Sustainability Focus Areas

Regenerative & Circular Living

We build communities that empower our people and customers to succeed while being responsible to the planet. We're bringing that to life through our commitment to **enable circular systems** that minimise environmental impact, **advance climate action**, and embrace new pathways to a **regenerative future**.

Inclusive & Accessible Living

We create the places that are the foundations for livelihoods, so we are driven to grow prosperous and inclusive futures. By creating the environments that allow **responsible economic opportunities** to flourish, and that **improve equitable access** to those opportunities, means a future of **inclusive prosperity** for all.

Healthy & Connected Living

We shape the engaging spaces and experiences that give everyone the ability to **enhance their health and wellbeing**, while **strengthening connections** with others, so that we're building communities of **thriving people** now, and in the future.

Our Sustainability Goals

Enable Circular Systems
Demonstrate leadership in how our industry sustainably sources, uses and manages the planet's resources.

Advance Climate Action
Advance actions that address our impact on the climate and develops resilience to a changing environment.

Responsible Economic Opportunity
Responsibly develop productive communities that provide enriching opportunities for all.

Improve Equitable Access
Enable all people to have equitable access to the places and opportunities that we create.

Enhance Health & Wellbeing
Transform the wellbeing of our people and customers through enhanced places and spaces.

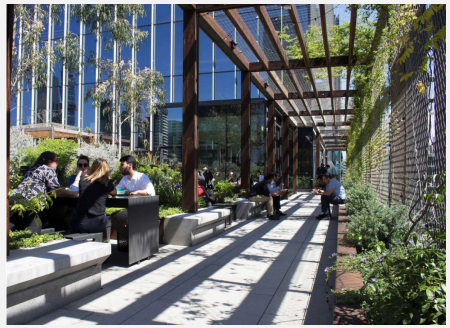
Strengthen Connection
Shape ways we bring people together that strengthen a sense of belonging and pride in one's community

Regenerative Environment
Build for a future that protects, restores & regenerates natural environments in our assets and communities.

Inclusive Prosperity
Contribute to a future where all people are empowered to improve their quality of life

Thriving People
Inspire a bright future where we all thrive together enabling people to help each other and contribute to their communities.

Enable Circular Systems



Reduce our embodied impacts by improving our lifecycle analysis.

Enable our value chain to deliver better quality built form.

Support the adoption & implementation of circular models with our stakeholders.

Advance Climate Action

Achieve Net Zero Carbon across our portfolio by 2030.

Embed asset and community scale resilience for our portfolio.

Work towards Net Zero Water future across our portfolio.

Regenerative Environment

Creation of natural assets across our portfolio.

Investing in on- and off-site habitat restoration.

Recognise traditional land management practices that restore natural environment.

Regenerative & Circular Living

Current initiatives include establishing a resource recovery centres, achieve incremental improvements in energy and carbon intensity of existing portfolio.

Stockland Net Zero Carbon target

Bring Forward our Net Zero Carbon Target to 2028

Having a highly energy efficient, electrified and well-designed Green Star rated portfolio of assets

Powered from on-site and/or off-site renewable energy sources

All remaining emissions formally offset through accredited Australian carbon offset programs

Q & A

Ben Pechey	Executive Manager Strategic Planning and Urban Design, City of Sydney
Clare Donovan	Planning Program Manager – Sustainability, City of Sydney
Josh McGlone	Project Consultant – Sustainability, WSP Australia
Tim Parker	Director – Sustainability, WSP Australia
Matthew Clark	Common Capital Director and Co-Founder, Common Capital

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Next steps for City of Sydney

- exhibition of project report and controls – Mid 2021

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