

**Appendix 9 –
Parramatta Road
Corridor Stage 1
Sustainability Study**

September 2023

Appendix 10 – Parramatta Road Corridor Stage 1 Sustainability Study

Overview

Council engaged WSP Pty Ltd to undertake a technical analysis relating to proposed sustainability provisions in Council's Parramatta Road Stage 1 Planning Proposal for Leichhardt, Taverners Hill and Kings Bay Precincts. The study undertook a comprehensive review of the proposed sustainability provisions included within the Planning Proposal submitted to the Department of Planning and Environment for Gateway in May 2022 (referred to as Pre-Gateway Planning Proposal).

The Planning Proposal was reviewed against the BASIX SEPP 2004, Sustainable Buildings SEPP 2022, PRCUTS Planning & Development Guidelines (the Guidelines) and national best practice building policies to ensure the sustainability controls are relevant and aligned with best practice examples. The Study also provided justification to address several conditions of the Gateway determination.

Where the Study found that the proposed planning controls do not exceed the Sustainable Buildings SEPP or align with the Guidelines, alternative planning controls for the Planning Proposal and supporting DCPs were recommended to ensure the provisions are appropriate for triggering the proposed incentive FSR and height controls and achieving the objective of delivering high-performing buildings.

Council has adopted all recommendations outlined in the Sustainability Study in the revised Planning Proposal (referred to as Post-Gateway Planning Proposal). The below tables provides a summary of the Post-Gateway Planning Proposal energy and water performance targets compared with the Pre-Gateway Planning Proposal and PRCUTS, including rationale for the changes. Further detail can be seen in the Sustainability Study enclosed within this appendix.

Note. The Sustainable Building SEPP 2022 was published on 29 August 2022 and will come into effect from 1 October 2023. Upon commencement, the existing State Environmental Planning Policy (BASIX) 2004 will be repealed and integrated into the Sustainable Buildings SEPP 2022.

Table 1 - Residential development - comparison of building performance standards

	PRCUTS	Pre-Gateway Planning Proposal May 2022	Post-Gateway Planning Proposal September 2023	Reason for Change
Water				
All dwellings	BASIX Water 50 (and up to BASIX Water 60 where recycled water is available)	As per PRCUTS	No change	-
Energy				
Residential building 2 to 3 storeys	BASIX Energy 55 (BASIX 2004)	BASIX Energy 55 (BASIX 2004)	8-point increase over the Sustainable Buildings SEPP* ≈ BASIX Energy 75	BASIX 2004 targets have been updated to align with the new BASIX 2022 energy tool and increased stringency to exceed the minimum requirements in the Sustainable Buildings SEPP 2022.
Residential building 4 to 5 storeys	BASIX Energy 50 (BASIX 2004)	BASIX Energy 50 (BASIX 2004)	5-point increase over the Sustainable Buildings SEPP ≈ BASIX Energy 66	As above.
Residential building 6+ storeys	BASIX Energy 40 (BASIX 2004)	BASIX Energy 40 (BASIX 2004)	Residential buildings 6 to 20 storeys *5-point increase over the Sustainable Buildings SEPP ≈ BASIX Energy 65	As above. Threshold revised to 6 to 20 storeys aligned with the Sustainable Buildings SEPP.
Residential as a component of mixed-use development		As above relevant to the number of storeys	No change	-

Table 2 – Non-residential development – comparison of building performance standards

Development Type	PRCUTS	Planning Proposal Pre-Gateway May 2022	Planning Proposal Post-Gateway September 2023	Reason for Change
Water				
All listed below	NABERS 4-star (5-star where recycled water is available)	As per PRCUTS	No change	-
Energy				
Office	Whole Building: <ul style="list-style-type: none"> NABERS 5-star 	Base Building: <ul style="list-style-type: none"> Maximum 45 kWh/yr/m² of Gross Floor Area (GFA) or, 5.5 star NABERS Energy Commitment Agreement (CA) + 25% or, Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or Equivalent 	No change	-
Shopping centre development	Base Building: <ul style="list-style-type: none"> NABERS 5-star 	Base Building: <ul style="list-style-type: none"> Maximum 55 kWh/yr/m² of GFA or, 4 star NABERS Energy CA, or Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or Equivalent 	Base Building: <ul style="list-style-type: none"> Maximum 44 kWh/yr/m² of GFA or, 5 star NABERS Energy CA, or Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or equivalent 	Proposed energy targets have been increased to align with PRCUTS.

Hotel	Not included	Whole Building: <ul style="list-style-type: none"> • Maximum 245 kWh/yr/m² of GFA or, • 4 star NABERS Energy CA, or • Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, o • Equivalent 	Whole Building: <ul style="list-style-type: none"> • Maximum 199 kWh/yr/m² of GFA or, • 4.5 star NABERS Energy CA, or • Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or • equivalent 	Proposed energy targets have been increased to be more stringent than the minimum requirements under the Sustainable Buildings.
Serviced Apartments	Not included	Not included	Whole Building: <ul style="list-style-type: none"> • Maximum 199 kWh/yr/m² of GFA or, • 4.5 star NABERS Energy CA, or • Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or • equivalent 	Energy targets for serviced apartments have been introduced as serviced apartments are considered under the Sustainable Buildings SEPP 2022. Proposed energy targets are equivalent to hotels as energy consumption of this development type is similar in operation, consistent with the approach within the National Construction Code 2022.
Mixed Use	Not included	<ul style="list-style-type: none"> • As above relevant to proposed uses and the Table 1 for residential development. 	No change	-

Table 3 – Non residential development - Comparison of development thresholds

Development Thresholds for Performance Standards	PRCUTS	Planning Proposal Pre-Gateway May 2022	Planning Proposal Post-Gateway September 2023	Reason for Change
Water				
All development	As per the development thresholds for energy performance.	As per PRCUTS	No change	-
Energy				
Office	<ul style="list-style-type: none"> Commercial development $\geq 10,000\text{m}^2$ GFA 	<ul style="list-style-type: none"> A new commercial building $\geq 1,000\text{m}^2$ NLA or more, A refurbishment to an existing commercial building that contains a NLA or $1,000\text{m}^2$ or more An existing office building of $1,000\text{m}^2$ NLA or more with an addition of 50% or more NLA 	<ul style="list-style-type: none"> A new office building $\geq 1,000\text{m}^2$ nett lettable area (NLA) or more, or A refurbishment to an existing office building that contains a NLA or $1,000\text{m}^2$ or more, or An existing office building of $1,000\text{m}^2$ NLA or more with an addition of 500m^2 or more NLA 	<p>The term commercial development has been updated to the development term “office” to satisfy Gateway Conditions. This is consistent with City of Sydney’s Planning for Net Zero Energy Buildings approach on which the proposed targets are based.</p> <p>The thresholds triggering increased energy targets for additions to office have been amended from a percentage (50%) to lettable area (500m^2) to ensure that larger developments are not disproportionately advantaged.</p>
Shopping centre development	Not included	<ul style="list-style-type: none"> A new shopping centre containing a gross lettable area – retail (GLAR) of $5,000\text{m}^2$ or more 	<ul style="list-style-type: none"> A new shopping centre containing a gross lettable area – retail (GLAR) of $5,000\text{m}^2$ or more 	The thresholds triggering increased energy targets for additions to shopping centres developments have been amended from a percentage

		<ul style="list-style-type: none"> An existing shopping centre of 5,000m² GLAR or more with an addition of 50% or more GLAR 	<ul style="list-style-type: none"> An existing shopping centre of 5,000m² GLAR or more with an addition of 2,500m² or more GLAR 	(50%) to lettable area 2500m ² to ensure that larger developments are not disproportionately advantaged.
Hotel	Not included	<ul style="list-style-type: none"> A new hotel of 100 rooms or more A refurbishment to an existing hotel that contains 100 rooms or more 	No change	-
Serviced Apartments	Not included	Not included	<ul style="list-style-type: none"> A new building with 100 serviced apartments or more A refurbishment to an existing serviced apartment building that contains 100 serviced apartments or more 	<p>Energy targets for serviced apartments have been introduced as serviced apartments are considered under the Sustainable Buildings SEPP 2022.</p> <p>The Sustainable Buildings SEPP defines serviced apartments as a building with at least 100 serviced apartments.</p>
Mixed Use	Not included	<ul style="list-style-type: none"> The above thresholds for each proposed development apply 	No change	-

Parramatta Road Corridor Stage 1 Sustainability Study



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WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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August 2023



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Abbreviations

BASIX	Building Sustainability Index
CA	Commitment Agreement
CoS	City of Sydney
DCP	Development Control Plan
DPE	Department of Planning and Environment
FSR	Floor Space Ratio
GFA	Gross Floor Area
HOB	Height of Buildings
IWC	Inner West Council
LEP	Local Environmental Plan
NABERS	National Australian Built Environment Rating System
NatHERS	Nationwide House Energy Rating Scheme
NLA	Net Lettable Area
NLAR	Net Lettable Area Retail
PRCUTS	Parramatta Road Corridor Urban Transformation Strategy
SEPP	State Environmental Planning Policy

Executive summary

Study Overview

Inner West Council (IWC) have prepared a Planning Proposal with a suite of amendments to its planning controls to deliver Stage 1 of Council's implementation of the NSW Government's Parramatta Road Corridor Urban Transformation Strategy (PRCUTS). The Planning Proposal includes Floor Space Ratio (FSR) and Height of Building (HOB) incentives for developments which meet enhanced sustainability performance targets for residential, commercial, retail, and hotel development. This is particularly important as councils cannot include higher targets than the State Environmental Planning Policies in their Local Environmental Plans (LEPs).

The Department of Planning & Environment (DPE) has issued a Gateway Determination for the Planning Proposal which includes a condition to assess the proposed sustainability provisions against new legislative requirements under the *State Environmental Planning Policy (Sustainable Buildings) 2022* (Sustainable Buildings SEPP).

This Sustainability Study (this Study) aims to address the Gateway Determination conditions related to Inner West Council's Planning Proposal for Parramatta Road Corridor Stage 1, with a focus on the following Gateway Determination conditions:

- Condition 1 (h) – to include an assessment of the proposed sustainability provisions against *State Environmental Planning Policy (Sustainable Buildings) 2022* (Sustainable Buildings SEPP). This must outline how the proposed incentive targets relate to the targets set out in the Sustainable Buildings SEPP.
- Condition 1 (i) - in relation to the proposed performance standards for non-residential development, update the proposal to use the development type term 'office' rather than 'commercial development' or provide justification as to why the term commercial development is preferred.
- Condition 3 (d) – ensure that the thresholds for Building Sustainability Index (BASIX) standards which trigger the incentive provisions are appropriate having regard to the Sustainable Buildings SEPP.

To respond to the Gateway Determination, the IWC Planning Proposal was reviewed against the Sustainable Buildings SEPP, PRCUT Planning & Development Guidelines (the Guidelines) and national best practice building policies to ensure the sustainability controls were relevant and aligned with best practice examples. Where the study found IWC's planning controls do not exceed the Sustainable Buildings SEPP or align with the Guidelines, new planning controls were proposed for the Council's consideration.

Methodology and Findings

To conduct this Study, the following reviews were undertaken:

- IWC's proposed sustainability provisions were reviewed against the Sustainable Buildings SEPP requirements to ensure they exceed minimum performance requirements.
- The updated BASIX tool and targets, which will be implemented under the Sustainable Buildings SEPP, were examined to determine whether these changes will have an impact on the relevance of IWC's proposed targets.
- The IWC Planning Proposal was reviewed against the Guidelines to ensure alignment with the recommended energy and water targets.
- The proposed LEP and DCP amendments were reviewed against other local government planning policies to confirm they are aligned with best practice examples nationally.

The following sections summarise the findings of this study.

Sustainable Buildings SEPP

The Sustainable Buildings SEPP comes into effect on 1 October 2023 and supersedes the *State Environmental Planning Policy (BASIX) 2004* (BASIX SEPP). The major changes in the Sustainable Buildings SEPP relevant to this study include:

- Updates to the BASIX tool and energy targets
 - The BASIX tool no longer includes sections focused on the energy efficiency of appliances such as fridges and washing machines. This shift places a higher emphasis on the facade performance and NatHERS Star ratings to achieve the BASIX Energy targets.
 - The modifications made to the BASIX energy tool have consequently led to changes in the BASIX energy scoring methodology. Any BASIX scores based on the 2004 tool will no longer be relevant for the BASIX 2022 tool.
 - The minimum energy targets for residential buildings have increased in stringency.
 - There have been no changes to the BASIX water tool or targets.
- Introduction of energy and water targets for large commercial development in the Sustainable Buildings SEPP
 - NABERS energy and water targets in the Sustainable Buildings SEPP will be applied to all significant serviced apartments, commercial and hotel developments as a minimum requirement.

As the IWC Planning Proposal incentivises higher performing buildings through additional floor space ratio (FSR) and height of building (HOB) allowances, the proposed energy and water targets will need to exceed the minimum requirements in the Sustainable Buildings SEPP. The following review was undertaken to ensure the proposed targets are still appropriate for FSR and HOB incentives.

Table ES.1 Overall findings from comparison of IWC Planning Proposal and Sustainable Buildings SEPP

	Energy Targets	Water Targets	Comment
Residential	▼	▲	<p>With increases to the BASIX energy targets under the Sustainable Buildings SEPP, the IWC residential energy targets no longer exceed minimum requirements and will need to be updated to be appropriate for the FSR and HOB incentives.</p> <p>With no changes to the BASIX water targets in the Sustainable Buildings SEPP, the IWC water targets are still appropriate for the FSR and HOB incentives are still appropriate.</p>
Office	▲	▲	IWC office energy and water targets are greater than the Sustainable Buildings SEPP requirements and are still relevant for the FSR and HOB incentives.
Retail	NA	NA	The Sustainable Buildings SEPP does not set requirements for retail assets. Therefore, the IWC targets are still appropriate for the incentives clause.
Hotel	=	▲	<p>IWC energy targets for hotels are aligned with the targets in the Sustainable Buildings SEPP. For this reason, the IWC proposal's hotel energy targets will need to be stronger to maintain the validity of the FSR and HOB incentives.</p> <p>The IWC water targets for hotel assets are greater than the Sustainable Buildings SEPP and appropriate for the additional incentives.</p>
Legend			
▲ : IWC target is greater than the Sustainable Buildings SEPP target			
▼ : IWC target is lesser than the Sustainable Buildings SEPP target			
= : IWC target is equal to the Sustainable Buildings SEPP target, meaning it is not stringent enough to justify the FSR and HOB incentives			

Parramatta Road Corridor Urban Transformation (PRCUT) Planning and Design Guidelines

The PRCUT P&D Guidelines (*the Guidelines*) are used to guide the implementation of PRCUTS and ensure any council rezoning meets the requirements and intent of the strategy. The Guidelines specify energy and water targets for residential, commercial and retail assets for adoption by local government LEPs and DCPs within the Parramatta Road Corridor release areas.

The following table compares the proposed IWC Planning Proposal to the Guidelines to advise whether the intent and direction of PRCUTS is reflected in the Planning Proposal.

Table ES.2 Overall findings from comparison of IWC Planning Proposal and PRCUT P&D Guidelines

	Energy Targets	Water Targets	Comment
Residential	=	=	IWC proposed targets are aligned with the recommendations in the Guidelines.
Office	▲	=	IWC proposed energy targets are higher than the Guidelines requirements and will achieve greater energy efficiency outcomes than outlined in the Guidelines. This meets the sustainability intent of PRCUTS whilst ensuring the energy targets are aligned with current best practice requirements. IWC proposed water targets are aligned with the recommendations in the Guidelines.
Retail	▼	=	IWC proposed energy targets are lower than the targets recommended in the Guidelines. IWC's proposal should be reconsidered to align with the energy targets in PRCUTS. IWC proposed water targets are aligned with the Guidelines requirements.
Hotel	NA	NA	The Guidelines do not set out requirements for hotel.
Legend			
▲ : IWC target is greater than the PRCUT P&D Guidelines			
▼ : IWC target is lesser than the PRCUT P&D Guidelines			
= : IWC target is equal to the PRCUT P&D Guidelines and aligns with the vision and intent of PRCUTS			

Best Practice Planning Policies

To ensure that IWC's proposed energy and water targets are rigorous and aligned with best practices, a review was conducted on other local government planning policies and studies that specified energy and water targets greater than minimum requirements. The findings showed there are very few councils specifying or incentivising higher energy and water targets, particularly in their LEPs.

The planning policies reviewed in detail include:

- City of Sydney (CoS) Planning for Net-Zero Energy Buildings (CoS, 2021)
- Draft Inner West Council Low Carbon Precincts (Marrickville and Dulwich Hill) Study (WSP, 2022)
- Canada Bay LEP 2013
- Waverley DCP 2022

The findings of this comparison are shown in Table ES.3 below.

Table ES.3 Overall findings from comparison of IWC Planning Proposal and best practice planning policies

	City of Sydney LEP		IWC Draft Low Carbon Precinct Study		Canada Bay LEP		Waverley DCP	
	Energy	Water	Energy	Water	Energy	Water	Energy	Water
Residential	=/▲	NA	▲	NA	=/▼	▼	NA	NA
Office	=	NA	NA	NA	NA	NA	=	=/▲
Retail	=	NA	NA	NA	NA	NA	▼	=/▲
Hotel	=	NA	NA	NA	NA	NA	▼	=/▲

Legend

▲ : IWC targets are greater than the planning policy

▼ : IWC targets are lesser than the planning policy

= : IWC targets are equal to the planning policy

Overall, IWC’s proposed energy targets are aligned with the CoS 2023 targets as per the Planning for Net Zero Energy Buildings Study, which are considered best practice due to their stringency and the extensive study conducted to set the targets. IWC’s energy targets are also greater than the proposed targets in the Draft Marrickville and Dulwich Hill Low Carbon Precinct Study.

When compared against Canada Bay’s LEP, IWC’s energy targets are aligned with the targets for all residential build types, except 2-3 storey apartment buildings for which IWC’s targets are lower. Furthermore, IWC’s water targets are lower than Canada Bay’s, albeit Canada Bay’s water targets are exceptionally high for all asset types and considered beyond best practice.

Lastly, IWC’s water targets are equivalent to Waverley Council’s targets for sites with no recycled water in place, and exceed the Waverley Council targets for sites which do have recycled water networks. IWC’s energy targets are lower than Waverley Council’s targets, although Waverley Council’s targets are only stated in the DCP and hold less legislative weight than if included within a LEP.

From this review, it is shown that the IWC targets are well aligned with best practice energy and water targets. If Council wish to increase the stringency of their targets further, they can look to Canada Bay or Waverley Council as examples.

Findings

In summary, the in-depth review of sustainability provisions proposed within IWC’s Planning Proposal found:

- The proposed BASIX energy targets should be updated to align with the new BASIX energy tool. Furthermore, the stringency of the BASIX energy targets should be increased to exceed the minimum requirements in the Sustainable Buildings SEPP.
- The proposed office energy and water targets are greater than Sustainable Buildings SEPP minimum requirements, and are therefore still appropriate for the FSR and HOB incentives. However, the energy targets for hotel assets are equivalent to Sustainable Buildings SEPP targets, and should be increased above minimum requirements if they are to trigger additional FSR and HOB incentives.
- The proposed energy and water targets for all asset types are largely aligned with the Guidelines. The retail energy target, however, should be increased to meet the sustainability vision and objectives of the PRCUTS.

- The proposed targets are mostly aligned with comparable best practice planning policies and deemed appropriate.

Recommendations

Following the outcomes of the detailed review, additional analysis was undertaken to inform the IWC Planning Proposal, ensuring the proposed targets aligned with the PRCUT P&D Guidelines, exceeded the Sustainable Buildings SEPP and were appropriate for the new BASIX 2022 tool.

The following updates to the IWC planning proposal are recommended:

- To ensure the IWC BASIX energy targets align with the BASIX 2022 tool and exceed the Sustainable Buildings SEPP requirements, revised energy targets are recommended:
 - Low-rise 2-3 storeys – BASIX Energy 75 (8-point increase over Sustainable Buildings SEPP)
 - Mid-rise 4-5 storeys – BASIX Energy 66 (5-point increase over Sustainable Buildings SEPP)
 - High-rise 6-20 storeys – BASIX Energy 65 (5-point increase over Sustainable Buildings SEPP)

These targets were established through an in-depth BASIX assessment detailed in Section 6.

- To align the retail energy targets with the Guidelines to ensure the vision and intent of PRCUTS are reflected in the Planning Proposal. A 5 Star NABERS target is recommended.
- Hotel energy targets should be increased to exceed the Sustainable Buildings SEPP requirements and maintain the applicability of the FSR and HOB incentives. A new target of NABERS 4.5 Star is recommended.

Introduction of energy and water targets for serviced apartment developments should be included, equivalent to recommended performance targets for hotel developments.

1 Project background

1.1 Overview

Inner West Council (IWC) has prepared a Planning Proposal with a suite of amendments to its planning controls to deliver Stage 1 of Council's implementation of the NSW Government's Parramatta Road Corridor Urban Transformation Strategy (PRCUTS). This includes Local Environmental Plan (LEP) and Development Control Plan (DCP) controls which would facilitate density uplift in areas within three PRCUTS precincts located in the Inner West LGA:

- Leichhardt
- Taverners Hill
- Kings Bay

The Planning Proposal includes provisions that would allow additional Floor Space Ratio (FSR) and Height of Building (HOB) incentives for developments that meet enhanced sustainability performance targets (among other criteria). Energy and water performance targets are proposed for new development types including residential accommodation, offices, shopping centres and hotels. The Planning Proposal also includes provisions relating to high performance buildings, improved environmental outcomes and urban heat mitigation.

The Department of Planning & Environment (DPE) has issued a Gateway Determination for the Planning Proposal which includes a condition to assess the proposed sustainability provisions against the new legislative requirements under the *State Environmental Planning Policy (Sustainable Buildings) 2022* (Sustainable Buildings SEPP). Furthermore, the Gateway Determination queries if the IWC Planning Proposal is still relevant in light of recent changes to the Building Sustainability Index (BASIX) SEPP 2004 and tool. BASIX's online tool is used to model estimated building energy and water usage in NSW to demonstrate compliance with the Sustainable Buildings SEPP. Recent updates have introduced a new methodology and scoring system, distinct from the previous BASIX 2004 version.

The Sustainable Buildings SEPP comes into effect on 1 October 2023 and supersedes the *State Environmental Planning Policy (BASIX) 2004* (BASIX SEPP). The major changes in the Sustainable Buildings SEPP relevant to this study include:

- Updates to the BASIX tool and energy targets
 - The BASIX tool no longer includes sections focused on the energy efficiency of appliances such as fridges and washing machines. This shift places a higher emphasis on the performance and Nationwide House Energy Rating Scheme (NatHERS) Star ratings to achieve the BASIX Energy targets.
 - The modifications made to the BASIX energy tool have consequently led to changes in the BASIX energy scoring methodology. Any BASIX scores based on the 2004 tool will no longer be relevant for the BASIX 2022 tool.
 - The minimum energy targets for detached and semi-detached dwellings and high-rise apartment buildings have increased in stringency.
 - There have been no changes to the BASIX water tool or targets.
- Introduction of energy and water targets for large commercial development in the Sustainable Buildings SEPP
 - NABERS energy and water targets in the Sustainable Buildings SEPP will be applied to all significant serviced apartments, commercial and hotel developments as a minimum requirement.

1.2 Purpose

This Sustainability Study (this Study) aims to address the Gateway Determination conditions related to IWC's Planning Proposal for Parramatta Road Corridor Stage 1, with a focus on the following conditions:

- Condition 1 (h) – to include an assessment of the proposed sustainability provisions against *State Environmental Planning Policy (Sustainable Buildings) 2022* (Sustainable Buildings SEPP). This must outline how the proposed incentive targets relate to the targets set out in the Sustainable Buildings SEPP.
- Condition 1 (i) – in relation to the proposed performance standards for non-residential development, update the proposal to use the development type term 'office' rather than 'commercial development' or provide justification as to why the term commercial development is preferred.
- Condition 3 (d) – ensure that the thresholds for Building Sustainability Index (BASIX) standards which trigger the incentive provisions are appropriate having regard to the Sustainable Buildings SEPP.

The study will also assess the Planning Proposal's sustainability provisions against the energy and water requirements recommended in the Parramatta Road Corridor Urban Transformation (PRCUT) Planning and Design Guidelines (*the Guidelines*).

The following section provides an overview of the Study's methodology and approach to addressing the Gateway Determination conditions.

1.3 Methodology

This Study provides a comprehensive assessment of the proposed sustainability provisions in the Planning Proposal for Parramatta Road Corridor Stage 1, along with recommendations for improvements and justifications for any deviations from relevant guidelines and policies. The findings of the detailed assessment will be used to inform updates to the IWC Planning Proposal, guaranteeing alignment with the Guidelines and best practice planning policies, and ensuring the proposed controls exceed the minimum requirements outlined in the Sustainable Buildings SEPP. In satisfying the conditions of the Gateway Determination, Council will be able to proceed to the public exhibition and finalisation stages of the LEP making process.

To address the conditions of DPE's Gateway Determination, the following reviews were undertaken as a part of the Study:

- A detailed assessment was conducted to compare the BASIX 2004 and BASIX 2022 tools to understand how changes in the scoring methodology will impact IWC's residential energy targets.
- IWC's proposed sustainability provisions were reviewed against the new Sustainable Buildings SEPP requirements to ensure they exceed minimum performance requirements.
- The IWC Planning Proposal was reviewed against the PRCUT Planning & Design Guidelines to ensure alignment with the recommended energy and water targets.
- The proposed LEP and DCP amendments were reviewed against various local government planning policies and studies to confirm they are aligned with local best practice examples.

Where the study found that IWC's planning controls do not exceed Sustainable Buildings SEPP or align with the Guidelines, new planning controls were proposed for the Council's consideration.

1.3.1 Detailed BASIX Assessment Methodology

A detailed BASIX assessment was conducted to gain insights into the disparities between the BASIX 2004 and BASIX 2022 tool. For this assessment, building typologies were developed which are representative of the developments expected in the Leichhardt, Taverners Hill and Kings Bay area, as informed by the Urban Design Review (Architectus,

2021). The building typologies aligned with the BASIX building types of low rise (≤ 3 storeys), medium rise (4-5 storeys) and high rise (6-20 storeys) developments, and had performance measures included to meet the minimum BASIX 2004 energy targets.

These building typologies were initially modelled using the BASIX 2004 tool, and then subsequently translated to the BASIX 2022 tool. The buildings were kept consistent when modelled across both tools, such that any changes in the points between the BASIX 2004 and BASIX 2022 scores are due the tool methodology changes only.

An overview of the steps taken to complete this assessment are provided below:

- **Building Typology Development:** Typical residential building typologies were selected for low rise (≤ 3 storeys), medium rise (4-5 storeys) and high rise (6-20 storeys) using the Leichhardt, Taverners Hill and Kings Bay Urban Design Review (Architectus, 2021). Two buildings were created for each typology to ensure the assessment covered several building forms and captured variations in building designs. A detailed overview of the building typologies is provided in Appendix A.
- **Modelling Building Typologies in the 2004 BASIX Tool:** The residential building typologies were modelled in the 2004 BASIX tool, and their energy efficiency performance was increased until the buildings complied with the current BASIX requirements for residential buildings. The building attributes used to achieve the BASIX energy scores are outlined in Appendix A, Section A1.
- **Modelling Building Typologies in the 2022 BASIX Tool:** Using the same inputs, the building typologies were modelled in the BASIX 2022 tool and new BASIX energy scores were generated.

By comparing the BASIX 2004 and BASIX 2022 energy scores of identical buildings and assumptions, it was possible to understand how the scoring methodology has changed between the two tools. This analysis also provided insights into the factors contributing to the point increase in the Sustainable Buildings SEPP, distinguishing between methodology changes and increases in stringency.

This study was conducted through a Beta version of the BASIX 2022 tool, which was published by the DPE for a trial period. It has been confirmed with the DPE that there are no major changes expected to the Beta version of the tool, and the final tool to be released upon the commencement of the Sustainable Buildings SEPP.

2 Policy Context

2.1 Sustainable Buildings SEPP

The Sustainable Buildings SEPP 2022 is a state planning policy which sets a regulatory framework for sustainability standards for both residential and non-residential developments in NSW. The Sustainable Building SEPP was published on 29 August 2022 and is effective from 1 October 2023, and upon commencement, the existing *State Environmental Planning Policy (BASIX) 2004* (BASIX SEPP) will be repealed and integrated into the Sustainable Buildings SEPP.

To achieve increased sustainability objectives, the Sustainable Buildings SEPP has introduced changes to the residential energy targets, BASIX tool methodology and Nationwide House Energy Rating Scheme (NatHERS) minimum requirements. Additionally, the Sustainable Buildings SEPP has incorporated new energy and water provisions for non-residential developments including large scale office, serviced apartments and hotel developments. These updates are summarised in Section 2.1.2 below.

2.1.1 Changes to residential building targets

2.1.1.1 BASIX Overview

The Building Sustainability Index (BASIX) is an online planning tool integrated in the New South Wales planning system, which aims to deliver greenhouse gas and water reductions in residential buildings. The tool provides a BASIX energy and water score for modelled buildings which reflects the level of energy and water use reduction that can be achieved from the proposed design. For instance, if a building needs to achieve a BASIX Water 50 score, it signifies a requirement to reduce mains-supplied potable water usage by 50% compared to the average building in the same category.

BASIX is implemented under the *Environmental Planning and Assessment Act 1979* and the BASIX SEPP. The tool used in the current planning framework was developed in 2004, and is known as the BASIX 2004 tool. However, upon the commencement of the Sustainable Buildings SEPP, a new BASIX tool will be released which has undergone fundamental updates. This tool is referred to as the BASIX 2022 tool throughout the report.

2.1.1.2 NatHERS Overview

NatHERS assesses proposed residential developments for their ability to deliver thermal comfort in an energy efficient manner. NatHERS primarily assesses the passive thermal performance of a design, which is strongly influenced by thermal performance of the façade. NatHERS calculates heating and cooling loads associated with achieving acceptable thermal comfort for the dwelling, and uses these to calculate a thermal comfort score against a ten-star rating scale.

Maximum predicted heating and cooling loads allowable for NatHERS are specified by the National Construction Code (NCC) and BASIX separately for NSW. A dwelling in NSW must not exceed the maximum heating and cooling load thresholds set by BASIX.

The NatHERS heating and cooling loads are input into the Thermal Comfort part of the BASIX tool to demonstrate the and passive thermal design performance of the building.

2.1.1.3 Changes to BASIX tool

Under the Sustainable Buildings SEPP, the BASIX energy tool has been updated to incorporate the following changes:

- The thermal performance standards in the NCC 2022 have increased from an average of 5.5-6 stars to 7 stars NatHERS rating. Equivalent changes are reflected in the BASIX tool to align maximum allowable energy loads for heating and cooling with the NCC 2022.

- The NatHERS methodology has updated to include a Whole of Home Rating. This assessment now takes into account the energy consumed by appliances and other devices such as lighting and hot water systems, which was previously not considered.
- The BASIX tool has removed sections for fridges and washing machines to ensure building designs focus on improving façade and fixed energy systems rather than providing energy efficient appliances. This also results in reduced waste if occupants move into new apartments with their own fridges and washing machines.
- The tool methodology has also been updated for lifts and central heat pump systems to enable more accurate and representative calculations of energy consumption.
- The New South Wales grid electricity emission factor which is used in the tool to calculate greenhouse gas emissions has been updated. The emission factor is expressed in kilograms of carbon dioxide equivalent (kg CO₂-e) per every kilowatt-hour (kWh) of electricity used.
 - The previous emission factor – 1.062 kg CO₂e/kWh
 - The updated emission factor – 0.67 kg CO₂e/kWh (which is a 10-year average from 2022 to 2031)

2.1.1.4 Effect of BASIX tool changes

As there have been changes to the BASIX tool and methodology, BASIX energy targets based on the 2004 tool will not be equivalent to energy scores derived from the BASIX 2022 tool.

To understand the impact of the tool changes on the final BASIX scores, a series of buildings were modelled using both tools and the final BASIX results were compared. The buildings were kept consistent when modelled across both tools, such that any changes in the points between the BASIX 2004 and BASIX 2022 scores are due the tool methodology changes only.

The following building typologies were developed for this assessment using the Leichhardt, Taverners Hill and Kings Bay Urban Design Review (Architectus, 2021). Two buildings have been modelled under each BASIX category to account for variations in building types and potential performance.

Table 2.1 Building typologies developed for BASIX modelling

	Low-rise (<=3 storeys multi units)	Mid-rise (4-5 storeys multi units)	High-rise (6 - 20 storeys multi units)
Building 1	Narrow infill apartment from investigation area 1 - South Taverners Hill <ul style="list-style-type: none"> • Site area: 894 m² • Height: 11.7 m • Storeys: 3 • Parking: Basement • Dwellings: 11 	Maisonette apartment typology from Investigation Area 1 - South Taverners Hill <ul style="list-style-type: none"> • Site area: 2499 m² • Height: 14.8 • Storeys: 4 • Parking: Basement • Dwellings: 36 	6-storey typology from Investigation Area 3 - North Taverners Hill <ul style="list-style-type: none"> • Site area: 1035 m² • Height: 21 • Storeys: 6 • Parking: Basement • Dwellings: 19
Building 2	Narrow infill apartment from Kings Bay Precinct Investigation Area 2 <ul style="list-style-type: none"> • Site area: 1104 m² • Height: 11.7 • Storeys: 3 • Parking: basement • Dwellings: 14 	South maisonette apartment typology from Investigation Area 2 - South Taverners Hill <ul style="list-style-type: none"> • Site area: 1717 m² • Height: 17.9 • Storeys: 5 • Parking: Basement • Dwellings: 23 	Kings Bay Precinct Investigation Area 1 – Enterprise Corridor <ul style="list-style-type: none"> • Site area: 4711 m² • Height: 22 • Storeys: 6 (commercial use on ground floor) • Parking: Driveway/basement • Dwellings: 96

The building typologies included performance measures to meet the minimum BASIX energy targets under the BASIX SEPP 2004. These are:

- Low rise (<=3 storeys multi units) – BASIX Energy 45
- Mid rise (4-5 storeys multi units) – BASIX Energy 35
- High rise (6 – 20 storeys multi units) – BASIX Energy 25

Buildings greater than 20 storeys were not included in this study as they are unlikely to be developed in the Leichhardt, Taverners Hill and Kings Bay area.

The performance measures for each building include a 7 Star NATHERs rating, LED lighting with motion sensors and time clocks, and energy efficient appliances and fixtures. A full overview of the building attributes have been provided in Appendix A1.1.

The assessment found the following results when comparing identical buildings across the two tools.

Table 2.2 BASIX 2004 and BASIX 2022 mapping to understand changes in tool methodology and scoring

BASIX Category	BASIX 2004 Results		BASIX 2022 Results		Change from tool methodology
	Building 1	Building 2	Building 1	Building 2	
2-3 Storey	BASIX Energy 45		BASIX Energy 57	BASIX Energy 55	Approx. 10pt increase
4-5 Storey	BASIX Energy 35		BASIX Energy 48	BASIX Energy 52	Approx. 15pt increase
6-20 Storey	BASIX Energy 25		BASIX Energy 46	BASIX Energy 48	Approx. 20pt increase

The changes to the BASIX tool have resulted in variations in the energy performance outcomes for the same building. The changes in BASIX energy scores resulting from tool methodology is approximately 10 points for 2-3 storey buildings, 15 points for 4-5 storey buildings and 20 points for 6-20 storey buildings. This is a significant difference in the BASIX energy scores between the two tools.

As there have been no updates to the BASIX Water tool or methodology, no further assessment was required.

2.1.1.5 Changes to BASIX Targets

In addition to the changes in BASIX tool methodologies, the Sustainable Buildings SEPP has recently introduced updates to the BASIX buildings thresholds, and the minimum BASIX energy targets for each threshold.

For instance, the previous category covering Detached and Semi-Detached Dwellings is now separated into two categories - Detached and Semi-Detached Dwelling with floor area less than or equal to 110 m², and those with floor area greater than 110 m². Similarly, for the building threshold High-Rise Buildings 6 Storeys or Greater, this is now separated into two new categories under the new tool, High Rise 6 - 20 Storeys and those 21 Storeys and higher.

Furthermore, the BASIX Energy targets have become more stringent for detached and semi-detached dwellings, and for high-rise buildings of six storeys and above. The targets are not increasing for small apartment buildings up to 5 storeys. Table 2.3 provides a high-level summary of the changes to the BASIX targets between the BASIX SEPP and Sustainable Buildings SEPP. These targets are based off residential developments in Climate Zone 56 (within which the Inner West LGA is located).

Table 2.3 Current and proposed BASIX Energy targets for residential developments in Climate Zone 56

BASIX 2004		Sustainable Buildings SEPP	
Threshold	Target	Threshold	Target
Low-rise 2-3 storeys	BASIX Energy 45 (BASIX 2004) ≈ BASIX Energy 55 (BASIX 2022)*	Low-rise 2-3 storeys	BASIX Energy 67 (BASIX 2022) ≈ Approx. 12-point increase**

BASIX 2004		Sustainable Buildings SEPP	
Mid-rise 4-5 storeys	BASIX Energy 35 (BASIX 2004) ≈ <i>BASIX Energy 50 (BASIX 2022)*</i>	Mid-rise 4-5 storeys	BASIX Energy 61 (BASIX 2022) ≈ <i>Approx. 10-point increase**</i>
High-rise greater than 6 storeys	BASIX Energy 25 (BASIX 2004) ≈ <i>BASIX Energy 45 (BASIX 2022)*</i>	High-rise 6-20 storeys	BASIX Energy 60 (BASIX 2022) ≈ <i>Approx. 15-point increase in stringency</i>
		High-rise greater than 20 storeys	BASIX Energy 63 (BASIX 2022) ≈ <i>Approx. 18-point increase in stringency</i>
*As informed by the BASIX 2004 to BASIX 2022 mapping exercise conducted in Section 2.1.1.4 and Table 2.2.			
**Proposed energy target is derived with emission factor updates and other BASIX calculation changes.			

There have been no changes to the BASIX Water targets between the BASIX SEPP and Sustainable Buildings SEPP.

2.1.2 Changes to non-residential building targets

The updates to the Sustainable Buildings SEPP which are relevant to the IWC Planning Proposal are summarised in Table 2.4 below.

Table 2.4 Changes between the BASIX SEPP 2004 and Sustainable Buildings SEPP 2022

IWC Planning Proposal – Non-Residential Development Types	BASIX SEPP 2004	Sustainable Buildings SEPP 2022
Office	No energy and water targets	New energy and water targets have been established for large commercial developments as defined in 2.1.2.1 below.
Shopping Centre/Retail	No energy and water targets	No energy and water targets
Hotel	No energy and water targets	New energy and water targets have been established for hotel developments

2.1.2.1 Large Commercial Development Targets

The Sustainable Buildings SEPP includes new energy and water standards for large commercial development.

Large commercial development is defined as:

- Offices with a net lettable area (NLA) greater than 1,000m²,
- Hotels and motels with more than 100 rooms, and
- Serviced apartments with more than 100 apartments.

A summary of standards for large commercial development in the Sustainable Buildings SEPP is provided in Table 2.5 below.

Table 2.5 Standards for large commercial development in the Sustainable Buildings SEPP

Sustainable Buildings SEPP Large Commercial Development Types	Energy Target	Water Target
Office	5.5 Star NABERS energy rating	3 Star NABERS water rating

Hotel	4 Star NABERS energy rating	3 Star NABERS water rating
Serviced Apartments	4 Star NABERS energy rating	3 Star NABERS water rating

2.2 Parramatta Road Corridor Urban Transformation Strategy (PRCUTS)

The PRCUTS was released in November 2016 and is the NSW Government’s 30-year plan to drive and inform land use planning and development decisions as well as long-term infrastructure delivery programs in the Parramatta Road Corridor.

It identifies eight key precincts along the Corridor to deliver the Strategy and undergo urban transformation. These key areas are Granville, Auburn, Homebush, Burwood-Concord, Kings Bay, Taverners Hill, Leichhardt, and Camperdown.

2.2.1 Parramatta Road Corridor Urban Transformation Planning and Design Guidelines

The PRCUTS is supported by the ‘Implementation Tool Kit’ – four documents to guide implementation of the strategy. The PRCUT Planning and Design (P&D) Guidelines is one of the Toolkit documents. The P&D Guidelines aim to ensure future development achieves design excellence, high quality public and private domain and best practice sustainable outcomes. It includes sustainability and resilience measures which will deliver high performing buildings, and provide greater energy and water targets for residential, commercial, and shopping centre developments to be included in LEPs and DCPs within the Parramatta Road Corridor key precincts. The following energy and water targets are outlined in the PRCUTS P&D Guidelines.

Table 2.6 PRCUT P&D Guidelines Sustainability recommendations

Asset Type	Energy Target	Water Target
Residential - Low-rise 2-3 storeys	BASIX Energy 55 (<i>BASIX 2004</i>)	BASIX Water 50 (and up to 60 where recycled water is available)
Residential - Mid-rise 4-5 storeys	BASIX Energy 50 (<i>BASIX 2004</i>)	
Residential - High-rise greater than 6 storeys	BASIX Energy 40 (<i>BASIX 2004</i>)	
Commercial developments	5 Star NABERS Energy Ring	4 Star NABERS Water Rating (5 star where recycled water is available)
Shopping centre	5 Star NABERS Energy Ring	4 Star NABERS Water Rating (5 Star NABERS Water where recycled water is available)

3 IWC Planning Proposal Review

The following sections provide a review of the sustainability targets within IWC Planning Proposal against the Sustainable Buildings SEPP, PRCUTS P&D Guidelines and best practice planning policies.

3.1 Sustainable Buildings SEPP

3.1.1 Residential Asset Types

Minimum Energy Targets

The residential energy targets proposed in the IWC Planning Proposal have been compared to the Sustainable Buildings SEPP in Table 3.1 below. As highlighted above, IWC’s proposed residential energy targets considered the existing BASIX SEPP 2004 and corresponding BASIX 2004 tool. However, upon commencement, the new Sustainable Buildings SEPP 2022 targets will rely on the BASIX 2022 tool. To understand how the IWC targets map against the BASIX 2022 tool, the findings in Table 2.2 were applied to the IWC targets and results provided below.

Table 3.1: Comparison of IWC Planning Proposal and Sustainable Buildings SEPP residential energy targets

IWC Planning Proposal		Sustainable Buildings SEPP	
Asset	Requirement	Asset	Requirement
Low-rise 2-3 storeys	BASIX Energy 55 (<i>BASIX 2004</i>) ≈ BASIX Energy 65 (<i>BASIX 2022</i>)	Low-rise 2-3 storeys	BASIX Energy 67 (<i>BASIX 2022</i>)
Mid-rise 4-5 storeys	BASIX Energy 50 (<i>BASIX 2004</i>) ≈ BASIX Energy 65 (<i>BASIX 2022</i>)	Mid-rise 4-5 storeys	BASIX Energy 61 (<i>BASIX 2022</i>)
High-rise greater than 6 storeys	BASIX Energy 40 (<i>BASIX 2004</i>) ≈ BASIX Energy 67 (<i>BASIX 2022</i>)	High-rise 6-20 storeys	BASIX Energy 60 (<i>BASIX 2022</i>)
		High-rise greater than 20 storeys	BASIX Energy 63 (<i>BASIX 2022</i>)

This comparison showed that whilst the IWC targets for 4-5 and 6+ storey buildings are more stringent than the Sustainable Buildings SEPP, the energy targets to 2-3 storey buildings will need to be increased.

Minimum Water Targets

The residential water targets proposed in the IWC Planning Proposal have been compared to the Sustainable Buildings SEPP requirements in Table 3.2 below. As there have been no changes to the BASIX Water tool methodology, the IWC targets can be compared directly to the requirements in the Sustainable Building SEPP.

Table 3.2: Comparison of IWC Planning Proposal and Sustainable Buildings SEPP residential water targets

IWC Planning Proposal		Sustainable Buildings SEPP	
Asset	Requirement	Asset	Requirement
All asset types	Minimum BASIX Water 50 (and up to 60 where recycled water is available)	All asset types	BASIX Water 40

Conclusion and next steps

Overall, the IWC proposed water targets for residential buildings are more stringent than the Sustainable Buildings SEPP requirements and considered appropriate for additional FSR and HOB incentives.

However, it is recommended that the proposed BASIX Energy targets are updated to align with the new BASIX 2022 tool and scoring methodology. Furthermore, the thresholds for residential buildings greater than 6-storeys should be divided into two categories to align with the Sustainable Buildings SEPP.

3.1.2 Office Asset Types

Minimum Energy Targets

The office energy targets proposed in the IWC Planning Proposal are compared to the Sustainable Buildings SEPP in Table 3.3 below.

Table 3.3 Comparison of IWC Planning Proposal and Sustainable Buildings SEPP office energy targets

IWC Planning Proposal		Sustainable Buildings SEPP	
Asset	Requirement	Asset	Requirement
A new office building $\geq 1,000$ m ² net-lettable area (NLA) or more	<ul style="list-style-type: none"> Maximum 45 kWh/yr/m² of gross floor area (GFA) or, 5.5 Star NABERS Energy Commitment Agreement (CA) + 25% or, Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or Equivalent. 	Offices with a net lettable area greater than 1,000 square metres	5.5 Star NABERS Energy
A refurbishment to an existing office building that contains NLA of 1,000m ² or more		Refurbishments greater than \$10 million capital investment	
An existing office building of 1,000m ² NLA or more with an addition of *500m ² or more NLA			

*The IWC Planning Proposal provision states “an existing office building of 1,000m² NLA or more with an addition of 50% or more NLA”. It is recommended that this be changed to 500m² to ensure existing large buildings proposing a substantial increase in area are not disproportionately advantaged. For clarity, subsequent comparisons of the IWC Planning Proposal requirements use 500m² rather than 50%. This change will be confirmed in the study recommendations.

Minimum Water Targets

The office water targets proposed in the IWC Planning Proposal are compared to the Sustainable Buildings SEPP requirements in Table 3.4 below.

Table 3.4 Comparison of IWC Planning Proposal and Sustainable Buildings SEPP office water targets

IWC Planning Proposal		Sustainable Buildings SEPP	
Asset	Requirement	Asset	Requirement
A new office building $\geq 1,000$ m ² net-lettable area (NLA) or more	4 Star NABERS Water Rating (5 star where recycled water is available)	Offices with a net lettable area of 1,000 square metres or greater	4 Star NABERS Water Rating
A refurbishment to an existing office building that contains NLA of 1,000m ² or more		Refurbishments with a capital investment of \$10 million or greater	
An existing office building of 1,000m ² NLA or more with an addition of 500m ² or more NLA			

Conclusion and next steps

The IWC energy and water targets are greater than the Sustainable Buildings SEPP requirements and are therefore, still appropriate for the additional FSR and HOB incentives. The thresholds for refurbishments are slightly misaligned, however the thresholds in the Sustainable Buildings SEPP are quite high, meaning the Council’s provisions will apply to a larger range of developments than the Sustainable Buildings SEPP.

3.1.3 Retail Asset Types

The Sustainable Buildings SEPP does not set energy or water requirements for retail developments.

3.1.4 Hotel Asset Types

Minimum Energy Targets

The hotel energy targets proposed in the IWC Planning Proposal are compared to the Sustainable Buildings SEPP requirements in Table 3.5 below.

Table 3.5 Comparison of IWC Planning Proposal and Sustainable Buildings SEPP hotel energy targets

IWC Planning Proposal		Sustainable Buildings SEPP	
Asset	Requirement	Asset	Requirement
A new hotel of 100 rooms or more	<ul style="list-style-type: none"> Maximum 245 kWh/yr/m² of gross floor area (GFA) or, 4 Star NABERS Energy CA, or 	Hotel or motel accommodation, or serviced apartments with 100 rooms or more	4 Star NABERS Energy
A refurbishment to an existing hotel that contains 100 rooms or more	<ul style="list-style-type: none"> Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or Equivalent. 	Refurbishments greater than \$10 million capital investment	

Minimum Water Targets

The hotel water targets proposed in the IWC Planning Proposal are compared to the Sustainable Buildings SEPP in Table 3.6 below.

Table 3.6 Comparison of IWC Planning Proposal and Sustainable Buildings SEPP hotel water targets

IWC Planning Proposal		Sustainable Buildings SEPP	
Asset	Requirement	Asset	Requirement
A new hotel of 100 rooms or more	4 Star NABERS Water Rating (5 star where recycled water is available)	Hotel or motel accommodation, or serviced apartments with 100 rooms or more	3 Star NABERS Water Rating
A refurbishment to an existing hotel that contains 100 rooms or more		Refurbishments greater than \$10 million capital investment	

Conclusion and next steps

As the IWC hotel energy targets are aligned with the minimum requirements in Sustainable Buildings SEPP, these targets are no longer appropriate for additional FSR and HOB incentives. It is recommended that the hotel energy targets are increased to exceed the minimum requirements in the Sustainable Buildings SEPP.

The IWC proposed water targets for hotels are greater than the Sustainable Buildings SEPP requirements, and do not need to be updated. Although the thresholds for refurbishments are slightly misaligned, the Planning Proposal covers a greater range of buildings, therefore no further updates are required.

The Sustainable Buildings SEPP targets also apply to serviced apartments, however, the current IWC Planning Proposal does not account for this asset type. To ensure alignment with the Sustainable Buildings SEPP, the Council could consider incorporating serviced apartments within the hotel category.

3.1.5 Overall Results

An overall assessment of the Planning Proposal against and the Sustainable Buildings SEPP is shown in Table 3.7 below.

Table 3.7 Overall findings from comparison of IWC Planning Proposal and Sustainable Buildings SEPP

	Energy Targets	Water Targets	Comment
Residential	▲	▲	IWC energy and water targets for residential buildings are greater than the Sustainable Buildings SEPP targets, and therefore, FSR and HOB incentives are still appropriate. However, the targets are based off the BASIX 2004 tool, will need to be updated to align with the new BASIX scoring methodology.
Office	▲	▲	IWC office energy and water targets are greater than the Sustainable Buildings SEPP requirements and are still relevant for the FSR and HOB incentives.
Retail	NA	NA	The Sustainable Buildings SEPP does not outline requirements for retail assets. Therefore, the IWC targets are still relevant and appropriate for the incentives clause.
Hotel	=	▲	IWC energy targets for hotels are aligned with the targets in the Sustainable Buildings SEPP. For this reason, the hotel energy targets will not be appropriate for the additional FSR and HOB allowances, and should be updated to increase their stringency. The IWC water targets for hotel assets are greater than the Sustainable Buildings SEPP and appropriate for the additional FSR and HOB allowances.
Legend			
▲ : IWC target is greater than the Sustainable Buildings SEPP target			
▼ : IWC target is lesser than the Sustainable Buildings SEPP target			
= : IWC target is equal to the Sustainable Buildings SEPP target, meaning it is not stringent enough to justify the FSR and HOB incentives			

3.2 PRCUT P&D Guidelines

3.2.1 Residential Asset Type

Minimum Energy Targets

The residential energy targets proposed in the IWC Planning Proposal are compared to the PRCUT P&D Guidelines in Table 3.8 below.

Table 3.8: Comparison of IWC Planning Proposal and PRCUT P&D Guidelines residential energy targets

IWC Planning Proposal		PRCUT P&D Guidelines	
Asset	Requirement	Asset	Requirement
Low-rise 2-3 storeys	BASIX Energy 55 (BASIX 2004)	Low-rise 2-3 storeys	BASIX Energy 55 (BASIX 2004)
Mid-rise 4-5 storeys	BASIX Energy 50 (BASIX 2004)	Mid-rise 4-5 storeys	BASIX Energy 50 (BASIX 2004)
High-rise greater than 6 storeys	BASIX Energy 40 (BASIX 2004)	High-rise 6 storeys or greater	BASIX Energy 40 (BASIX 2004)

Minimum Water Targets

The residential water targets proposed in the IWC Planning Proposal are compared to the PRCUT P&D Guidelines in Table 3.9 below.

Table 3.9: Comparison of IWC Planning Proposal and PRCUT P&D Guidelines residential water targets

IWC Planning Proposal		PRCUT P&D Guidelines	
Asset	Requirement	Asset	Requirement
All asset types	Minimum BASIX Water 50 (and up to 60 where recycled water is available)	All asset types	BASIX Water 50 (and up to 60 where recycled water is available)

Conclusion and next steps

The IWC proposed energy and water targets are aligned with the requirements in the Guidelines, and are therefore appropriate for the Planning Proposal.

3.2.2 Office Asset Types

Minimum Energy Targets

The office energy targets proposed in the IWC Planning Proposal are compared to the Guidelines in Table 3.10 below.

Table 3.10: Comparison of IWC Planning Proposal and PRCUT P&D Guidelines office development energy targets

IWC Planning Proposal		PRCUT P&D Guidelines	
Asset	Requirement	Asset	Requirement
A new office building $\geq 1,000\text{m}^2$ net-lettable area (NLA) or more	<ul style="list-style-type: none"> Maximum 45 kWh/yr/m^2 of gross floor area (GFA) or, 	Commercial development with a net lettable area greater than 1,000 square metres	5 Star NABERS Energy
A refurbishment to an existing office building that contains NLA of 1,000 m^2 or more	<ul style="list-style-type: none"> 5.5 Star NABERS Energy Commitment Agreement (CA) + 25% or, Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or 	<i>Targets for refurbishments are not included in the Guidelines</i>	
An existing office building of 1,000 m^2 NLA or more with an addition of 500 m^2 or more NLA	<ul style="list-style-type: none"> Equivalent. 		

Minimum Water Targets

The office water targets proposed in the IWC Planning Proposal are compared to the Guidelines in Table 3.11 below.

Table 3.11: Comparison of IWC Planning Proposal and PRCUT P&D Guidelines office development water targets

IWC Planning Proposal		PRCUT P&D Guidelines	
Asset	Requirement	Asset	Requirement
A new office building $\geq 1,000\text{m}^2$ net-lettable area (NLA) or more	4 Star NABERS Water Rating (5 star where recycled water is available)	Commercial development greater than 10,000 m ² gross floor area Base building and/or individual tenancies	4 Star NABERS Water Rating (5 star where recycled water is available)
A refurbishment to an existing office building that contains NLA of 1,000m ² or more		<i>Targets for refurbishments are not included in the Guidelines</i>	
An existing office building of 1,000m ² NLA or more with an addition of 500m ² or more NLA			

Conclusion and next steps

The IWC proposed energy targets for office asset types are greater than the requirements of the Guidelines, and although this is seen to meet the intent of PRCUTS, the PRCUTS Ministerial Direction requires this inconsistency to be justified through demonstration of better outcomes. Please refer to Section 3.2.6 for further information.

The comparison shows the IWC proposed water targets are aligned with the Guidelines requirements. The Guidelines do not outline water requirements for refurbishments for office buildings.

3.2.3 Retail Asset Type

Minimum Energy Targets

The retail energy targets proposed in the IWC Planning Proposal are compared to the PRCUTS P&D Guidelines in Table 3.12 below.

Table 3.12: Comparison of IWC Planning Proposal and PRCUT P&D Guidelines retail development energy targets

IWC Planning Proposal		PRCUTS P&D Guidelines	
Asset	Requirement	Asset	Requirement
A new shopping centre containing a gross lettable area – retail (GLAR) of 5,000m ² or more (base building).	<ul style="list-style-type: none"> Maximum 55 kWh/yr/m² of GFA or, 4 Star NABERS Energy CA, or Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or equivalent 	Shopping centre development greater than 10,000 m ² gross floor area (base building)	5 Star NABERS Energy
An existing shopping centre of 5,000m ² GLAR or more with an addition of *2,500m ² or more GLAR (base building)		<i>Targets for refurbishments are not included in the Guidelines</i>	

*The IWC Planning Proposal provision states “an existing shopping centre of 5,000m² GLAR or more with an addition of 50% or more GLAR”. It is recommended that this be changed to 2500m² to ensure existing large buildings proposing a substantial increase in area are not disproportionately advantaged. For clarity, subsequent comparisons of the IWC

Planning Proposal requirements use 2,500m² rather than 50%. This change will be confirmed in the study recommendations.

Minimum Water Targets

The retail water targets proposed in the IWC Planning Proposal compared to the Guidelines are shown in Table 3.13 below.

Table 3.13: Comparison of IWC Planning Proposal and PRCUT P&D Guidelines retail development water targets

IWC Planning Proposal		PRCUT P&D Guidelines	
Asset	Requirement	Asset	Requirement
A new shopping centre containing a gross lettable area – retail (GLAR) of 5,000m ² or more (base building).	4 Star NABERS Water Rating	Shopping centre development greater than 10,000 m ² gross floor area (base building)	4 Star NABERS Water Rating
An existing shopping centre of 5,000m ² GLAR or more with an addition of 2,500m ² or more GLAR (base building).	(5 Star NABERS Water where recycled water is available)	<i>Targets for refurbishments are not included in the Guidelines</i>	(5 Star NABERS Water where recycled water is available)

Conclusion and next steps

The comparison shows the IWC proposed energy targets are lower than the PRCUT P&D Guidelines requirements and will need to be reconsidered to align with PRCUTS. Although thresholds are not aligned, those in the IWC proposed targets are lower and will cover a wider range of buildings than the Guidelines.

The IWC proposed water targets are aligned with the Guidelines, and despite thresholds being misaligned, the IWC Planning Proposal will cover a wider range of buildings.

Lastly, the Guidelines do not outline energy or water requirements for refurbishments for retail developments.

3.2.4 Hotel Asset Types

Energy and water targets for hotels, motels, and serviced apartments are not specified in the Guidelines.

3.2.5 Overall Results

The overall results of the IWC Planning Proposal comparison to the PRCUTS P&D Guidelines is shown in Table 3.14 below.

Table 3.14 Overall findings from comparison of IWC Planning Proposal and PRCUT P&D Guidelines

	Energy Targets	Water Targets	Comment
Residential	=	=	IWC proposed targets are aligned with the recommendations in the Guidelines.
Office	▲	=	IWC proposed energy targets are higher than the requirements in the Guidelines and will achieve greater outcomes than outlined in the Guidelines. This meets the sustainability intent of PRCUTS whilst ensuring the energy targets are aligned with current best practice requirements. IWC proposed water targets are aligned with the recommendations in the Guidelines.

	Energy Targets	Water Targets	Comment
Retail	▼	=	IWC proposed energy targets are lower than the targets recommended in the Guidelines. IWC should consider alignment with the Guidelines. IWC proposed water targets are aligned with the Guidelines requirements.
Hotel	NA	NA	The Guidelines do not outline requirements for hotel developments.
Legend			
▲ : IWC target is greater than the PRCUT P&D Guidelines			
▼ : IWC target is lesser than the PRCUT P&D Guidelines			
= : IWC target is equal to the PRCUT P&D Guidelines and aligns with the vision and intent of PRCUTS			

3.2.6 Ministerial Direction Inconsistency

The PRCUTS and Implementation Toolkit have been given statutory force by a Ministerial Direction in 2016 under the *Environmental Planning and Assessment Act 1979*, Division 9.1 (formerly Section 117). The Direction requires planning proposals to demonstrate consistency with the documents. The Implementation Toolkit included a suite of documents to be used by councils when making land use decisions in the Parramatta Road corridor including:

- *Parramatta Road Corridor Implementation Plan 2016 – 2023 (November, 2016)*
- *Parramatta Road Corridor Infrastructure Schedule (November, 2016)*
- *Parramatta Road Corridor Planning and Design Guidelines (November, 2016)*
- *Parramatta Road Corridor Urban Amenity Improvement Plan (November, 2016)*

The *Parramatta Road Corridor Implementation Plan 2016 – 2023* was updated through the *Implementation Plan 2021* in response to relevant strategic planning documentation being updated since its release in 2016.

The PRCUTS and Implementation Toolkit ensure the future development along Parramatta Road Corridor meet the intent of the strategy and promote ‘better practice’ design principles that aim to achieve high quality public and private amenity.

Section 3.10 of the Guidelines outlines sustainability and resilience objectives for the Corridor redevelopments. Key areas of focus include:

- High performance buildings
- Reduced and decoupled strategic parking
- Urban resilience and infrastructure delivery

To promote these key areas, the Guidelines recommend the energy and water targets for residential, commercial and retail assets are met. The comparison in Section 3.2.5 above shows that these Guidelines have been met for residential energy and water targets, office water targets and retail water targets, and therefore, the IWC Planning Proposal meets the intent of PRCUTS in these areas.

However, the office energy targets of the IWC Planning Proposal exceed those in the Guidelines. The Planning Proposal requires 5.5 Star NABERS energy ratings +25% for office assets, whilst the Guidelines specify 5 Star NABERS energy ratings only. The IWC targets are based on the City of Sydney Performance Pathways to Net-Zero Energy Buildings Report, which is an in-depth analysis of the best practice building design and planning controls which can promote energy efficiency. The 5.5 Star + 25% NABERS energy target was shown to be feasible for office buildings greater than 1,000m², whilst delivering best practice energy efficiency outcomes (City of Sydney, WSP, Common Capital and WT Patnership, 2021). As this study was completed in 2021, it has captured improvements in technology and building

standards that the Guidelines of 2016 may not have considered. Therefore, although this energy target is greater than what was outlined in the Guidelines, it is aligned with current best practice energy targets and will deliver better outcomes than those envisaged in the Guidelines.

With a higher energy target than what is outlined in the Guidelines, the IWC Planning Proposal is demonstrating better outcomes than those envisaged in the PRCUTS November 2016 and the *Parramatta Road Corridor Urban Implementation Plan 2016-2023*.

3.3 Best Practice Planning Policies

The following local council planning policies were reviewed to ensure the Planning Proposal’s proposed energy and water targets were considered rigorous and best practice.

- City of Canada Bay LEP
- City of Sydney LEP and DCP
- Draft Inner West Council Low Carbon Precincts Study
- Waverley Council LEP and DCP

It was found that very few councils had energy and water targets outlined in their LEP or equivalent legislative framework. For this reason, local council DCPs were also reviewed, noting that DCPs are a guide for future development and the targets hold less legislative weight.

3.3.1 City of Sydney Planning for Net-Zero Energy Buildings

Minimum Energy Targets

The City of Sydney (CoS) have prepared a Planning Proposal to amend their LEP to include energy targets for office, hotel and shopping centre major developments from 2023 onwards. These targets are based on the latest study considering the feasibility and practicality of including more energy efficient systems within a building (City of Sydney, WSP, Common Capital and WT Patnership, 2021). The CoS have also outlined future energy targets from 2026 onwards, ensuring buildings continue reduce their energy consumption and achieve net-zero energy use.

The IWC Planning Proposal has been drafted to align with the CoS targets for 2023 for office, retail and hotel asset types.

Table 3.15 Comparison of IWC Planning Proposal targets with CoS 2023 and CoS 2026 targets for office, retail, and hotel development

	IWC Planning Proposal targets	City of Sydney 2023 targets	City of Sydney 2026 targets
Office	<ul style="list-style-type: none"> • Maximum 45 kWh/yr/m² of gross floor area (GFA) or, • 5.5 Star NABERS Energy Commitment Agreement (CA) + 25% or, • Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or • Equivalent. 	<ul style="list-style-type: none"> • Maximum 45 kWh/yr/m², or • 5.5 Star NABERS Energy Commitment Agreement (+25%), or • Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy use, or • Equivalent 	<ul style="list-style-type: none"> • 2023 target, and • Renewable Energy Procurement equivalent to “net zero energy” or a maximum of 45 kWh/yr/m² of GFA

Retail	<ul style="list-style-type: none"> Maximum 55 kWh/yr/m² of GFA or, 4 Star NABERS Energy CA, or Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or Equivalent 	<ul style="list-style-type: none"> 55 kWh/yr/m², or 4 Star NABERS Energy Commitment Agreement, or Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or Equivalent 	<ul style="list-style-type: none"> 45 kWh/yr/m² GFA, or 5 Star NABERS Energy Commitment Agreement, or Certified Green Star Buildings rating with “exceptional performance” in Credit 22: Energy Use, or Equivalent, and Renewable Energy Procurement equivalent to “net zero energy” or a maximum of 45 kWh/yr/m² of GFA
Hotel	<ul style="list-style-type: none"> Maximum 245 kWh/yr/m² of gross floor area (GFA) or, 4 Star NABERS Energy CA, or Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or Equivalent. 	<ul style="list-style-type: none"> 245 kWh/yr/m², or 4 Star NABERS Energy Commitment Agreement, or Certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or Equivalent 	<ul style="list-style-type: none"> 240 kWh/yr/m², or 4 Star NABERS Energy Commitment Agreement (+10%), or Certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or Equivalent, and Renewable Energy Procurement equivalent to “net zero energy” or a maximum of 240 kWh/yr/m² of GFA

For the Residential asset type, the following energy requirements were proposed for the CoS through the Planning for Net-Zero Energy Buildings Study (City of Sydney, WSP, Common Capital and WT Patnership, 2021). These targets are considered best practice, particularly where incentive-based clauses can facilitate their inclusion into LEPs.

Table.3.16 Comparison of IWC targets with CoS 2023 and CoS 2026 targets for high rise residential development

IWC Planning Proposal targets		City of Sydney 2023 targets		City of Sydney 2026 targets
Asset type	Target	Asset type	Target	Target
High-rise greater than 6 storeys	BASIX Energy 40 (<i>BASIX 2004</i>)	6-10 storeys	BASIX 40 (<i>BASIX 2004</i>)	BASIX 45 (<i>BASIX 2004</i>), and Renewable energy procurement equivalent to “net zero energy” or a maximum of 85 kWh/yr/m ² of GFA
		11-20 storeys	BASIX 35 (<i>BASIX 2004</i>)	BASIX 40 (<i>BASIX 2004</i>), and Renewable energy procurement equivalent to “net zero energy” or a maximum of 90 kWh/yr/m ² of GFA
		21-30 storeys	BASIX 30 (<i>BASIX 2004</i>)	BASIX 35 (<i>BASIX 2004</i>), and Renewable energy procurement equivalent to “net zero energy” or a maximum of 95 kWh/yr/m ² of GFA

Conclusion and next steps

The IWC energy targets are aligned with the CoS 2023 targets for office, retail and hotel asset types, providing confidence that they are considered best practice planning controls in Australia. Furthermore, for residential assets, the

IWC residential energy targets are aligned with the CoS for 6-10 storey developments, and greater than the CoS for 11-20 and 21-30 storey developments.

It is recommended that Council considers aligning with the CoS 2026 targets and incorporating the requirement to procure renewable energy into a future iterations of the Planning Proposal. However, to implement this, Council will need to devise a verification pathway that ensures developers and/or operators commit to procuring renewable energy over the duration of the building’s lifespan.

3.3.2 Inner West Council Draft Marrickville and Dulwich Hill Low Carbon Precincts Study

In 2022, WSP and Common Capital prepared a draft Inner West Council Low Carbon Precincts study, which undertook detailed analysis and provided recommendations for increased energy targets for residential flat buildings up to five storeys within the Marrickville and Dulwich Hill areas (WSP and Common Capital, 2022).

Minimum Energy Targets

The IWC Planning Proposal’s targets and the recommended energy targets in the draft Marrickville and Dulwich Hill Low Carbon Precincts study are compared in Table 3.17. The Low Carbon Precinct study outlined energy targets as a point-increase over the BASIX SEPP targets.

Table 3.17 Comparison of IWC proposed energy targets and the draft Inner West Council Marrickville and Dulwich Hill Low Carbon Precincts study recommended energy targets

	IWC Planning Proposal targets	IWC Draft Marrickville and Dulwich Hill Low Carbon Precincts Study
Residential 2-3 Storey	BASIX Energy 55 (<i>BASIX 2004</i>) = to a 10-point increase over BASIX SEPP 2004 requirements	BASIX Energy 52 (<i>BASIX 2004</i>) = to a 7-point increase over BASIX SEPP 2004 requirements
Residential 4-5 Storey	BASIX Energy 50 (<i>BASIX 2004</i>) = to a 15-point increase over BASIX SEPP 2004 requirements	BASIX Energy 44 (<i>BASIX 2004</i>) = to a 9-point increase over BASIX SEPP 2004 requirements
Residential 6+ Storeys	BASIX Energy 40 (<i>BASIX 2004</i>) = to a 15-point increase over BASIX SEPP 2004 requirements	<i>Not included</i>

Conclusion and next steps

The IWC Planning Proposal energy targets are greater than the recommended targets in the draft Inner West Council Marrickville and Dulwich Hill Low Carbon Precincts study.

3.3.3 Canada Bay

The Canada Bay LEP (2013) has been updated to include FSR incentives for greater BASIX Energy and Water commitments. The incentives apply to BASIX affected buildings in select precincts only.

Minimum energy targets

The IWC proposed energy targets have been compared to the Canada Bay LEP energy targets in Table 3.18.

Table 3.18 Comparison of IWC proposed energy targets and Canada Bay LEP requirements

	IWC Planning Proposal targets	Canada Bay LEP targets
Residential	BASIX Energy 55 (<i>BASIX 2004</i>)	BASIX Energy 60 (<i>BASIX 2004</i>)

2-3 Storey	= to a 10-point increase over BASIX SEPP 2004 requirements	= to a 15-point increase over BASIX SEPP 2004 requirements
Residential 4-5 Storey	BASIX Energy 50 (<i>BASIX 2004</i>) = to a 15-point increase over BASIX SEPP 2004 requirements	BASIX Energy 50 (<i>BASIX 2004</i>) = to a 15-point increase over BASIX SEPP 2004 requirements
Residential 6+ Storey	BASIX Energy 40 (<i>BASIX 2004</i>) = to a 15-point increase over BASIX SEPP 2004 requirements	BASIX Energy 40 (<i>BASIX 2004</i>) = to a 15-point increase over BASIX SEPP 2004 requirements

Minimum water targets

The IWC proposed water targets and Canada Bay’s LEP water targets are outlined in Table 3.19 below.

Table 3.19 Comparison of IWC proposed water targets and Canada Bay requirements

	IWC Planning Proposal targets	Canada Bay LEP targets
Residential buildings	BASIX Water 50 (and up to 60 where recycled water is available) = to a 10-20-point increase over BASIX SEPP 2004 requirements	BASIX Water 60 = to a 20-point increase over BASIX SEPP 2004 requirements

Conclusion

The IWC proposed energy targets are aligned with the Canada Bay LEP requirements for residential buildings four storeys or greater. The remaining IWC proposed energy and water targets do not align with the Canada Bay requirements, however, these targets are quite high and exceed other examples of energy targets in local planning policies. Alignment with Canada Bay LEP’s sustainability provisions is not recommended at this stage as setting much higher targets should be considered carefully alongside a feasibility and technical study.

3.3.4 Waverley DCP

The Waverley DCP (2022) includes requirements for energy and water efficiency for office, retail, and hotel developments. It is noted DCP requirements hold less legislative weight than requirements outlined in an LEP, however, these have been included for comparative purposes.

Minimum Energy Targets

The IWC Planning Proposal’s energy targets and Waverley DCP energy targets are compared in Table 3.20.

Table 3.20 Comparison of the IWC proposed energy targets and the Waverley DCP requirements.

IWC Planning Proposal targets		Waverley DCP targets	
Asset Type	Requirement	Asset Type	Requirement
A new office building $\geq 1,000$ m ² NLA or more + refurbishments that contains NLA of 1,000m ² or more + additions of 500m ² or more NLA	5.5 Star NABERS Energy Commitment Agreement + 25% or equivalent.	Office buildings > 1000 m ² NLA	5.5 Star NABERS Energy Rating
A new shopping centre containing a gross lettable area – retail (GLAR) of 5,000m ² or more. + additions of 2,500m ² or more NLA	4 Star NABERS Energy Commitment Agreement or equivalent.	Retail premises > 5,000m ² GLA	5.5 Star NABERS Energy Rating

IWC Planning Proposal targets		Waverley DCP targets	
Asset Type	Requirement	Asset Type	Requirement
A new hotel of 100 rooms or more + refurbishments 100 rooms or more	4 Star NABERS Energy Commitment Agreement or equivalent.	Hotels > 100 rooms	5.5 Star NABERS Energy Rating

Minimum Water Targets

The IWC proposed water targets and Waverley DCP water targets are compared in Table 3.21.

Table 3.21 Comparison of the IWC proposed water targets and the Waverley DCP requirements.

IWC Planning Proposal targets		Waverley DCP targets	
Asset Type	Requirement	Asset Type	Requirement
A new office building ≥1,000 m ² NLA or more + refurbishments that contains NLA of 1,000m ² or more + additions of 500m ² or more NLA	4 Star NABERS Water, and 5 Star NABERS Water where recycled water is available	Office buildings > 1000 m ² NLA	4 Star NABERS Water
A new shopping centre containing a gross lettable area – retail (GLAR) of 5,000m ² or more + additions of 2,500m ² or more NLA		Retail premises > 5,000m ² GLA	
A new hotel of 100 rooms or more + refurbishments 100 rooms or more		Hotels > 100 rooms	

Conclusion and next steps

The IWC energy targets for office developments exceed Waverley Council’s DCP targets. However, for retail and hotel assets, Waverley has specified a higher NABERS rating. Waverley Council’s targets, however, hold less legislative weight as they are included in a DCP.

The IWC Planning Proposal’s proposed water targets are aligned with the Waverley DCP targets where no recycled water is available, and are greater than Waverley Councils targets for developments that rely on recycled water services.




Alignment with Waverley Council’s energy and water targets is not recommended, as these targets are in the DCP and are not strictly enforceable. However, if IWC wish to increase the stringency of their targets, the Waverley DCP benchmarks could be used as a guide.

3.3.5 Overall Results

The overall results of the IWC Planning Proposal comparison to best practice planning policies is shown in Table 3.22 below.

Table 3.22 Overall findings from comparison of IWC Planning Proposal and best practice planning policies

	City of Sydney LEP		IWC Draft Low Carbon Precincts Study		Canada Bay LEP		Waverley DCP	
	Energy	Water	Energy	Water	Energy	Water	Energy	Water
Residential	=/▲	NA	▲	NA	=/▼	▼	NA	NA
Office	=	NA	NA	NA	NA	NA	=	=/▲
Retail	=	NA	NA	NA	NA	NA	▼	=/▲
Hotel	=	NA	NA	NA	NA	NA	▼	=/▲

	City of Sydney LEP		IWC Draft Low Carbon Precincts Study		Canada Bay LEP		Waverley DCP	
	Energy	Water	Energy	Water	Energy	Water	Energy	Water
Comment	The IWC energy targets are aligned with the CoS 2023 targets, which are considered best practice.		The IWC energy targets for residential developments are greater than the targets outlined in the draft IWC Low Carbon Precinct study.		The IWC energy targets are aligned with the Canada Bay LEP targets for all residential build types except 2-3 storey apartment buildings.		Although the Waverley DCP energy targets are greater than IWC for retail and hotel assets, they are DCP provisions only and therefore carry less statutory weight.	
Legend  : IWC target is greater than the planning policy  : IWC target is lesser than the planning policy  : IWC target is equal to the planning policy								

4 DCP Review

As a part of this assessment, a review of the proposed Parramatta Road Corridor DCP provisions was undertaken to ensure the sustainability controls are aligned with best practice requirements. The following table provides an overview of the proposed sustainability controls and their comparison to similar local council DCPs, the National Construction Code (NCC) 2022 requirements, and sustainability rating tools such as Green Star Buildings.

Table 4.1 Review of proposed Parramatta Road Corridor DCP provisions

Area	Proposed Provision	Review Comment	Recommendation
Energy Efficiency	Achieves an average thermal performance of 7-star NatHERS	This requirement is aligned with the NCC 2022	The proposed controls are deemed to be stringent enough and no further updates are required.
	Incorporates ceiling fans in bedrooms and living rooms.	Ceiling fans are required in the NCC 2022 in bedrooms and living rooms.	
Electrification	Achieves full electrification of utilities including cooking, heating and hot water (heat pumps)	This covers a broader range of assets than the NCC 2022 and Sustainable Buildings SEPP electrification requirements. Furthermore, the Sustainable Buildings SEPP does not require buildings to be electric at development but show they can be all electric by 2035. The NCC 2022 does not include electrification requirements.	The proposed controls exceed the NCC 2022 and are sufficient.
Electric Vehicle Charging Infrastructure	For residential developments - provide Level 1 or faster electric vehicle (EV) ready to use (includes cabling, power outlet or charging head) parking spaces, at a rate of: a. 20% for resident spaces b. 10% for visitor spaces.	Provision of EV chargers: The IWC provisions for EV chargers are greater than those in the Green Star Buildings tool, which requires EV chargers for 5% of all car parking spaces and car share spaces. The NCC does not require the installation of EV chargers at Practical Completion, and therefore, the IWC DCP requirements exceed the NCC 2022.	The proposed controls exceed the NCC 2022 and Green Star requirements, and are sufficient.
	For non-residential development, provide electric vehicle (EV) ready to use car parking spaces: – Level 3, or faster, at a rate of 10% for all spaces – dedicated and visitor	Future infrastructure requirements: The IWC requirements are aligned with and exceed the NCC 2022, which requires features that facilitate the future installation of EV charging equipment, covering:	
	Design electric infrastructure services (distribution boards, conduits and cabling) to ensure 100% of all parking spaces have: <ul style="list-style-type: none"> sufficient energy and capacity, preferably from renewable sources reticulated fixed charging facilities Any future EV charger does not require a cable of more than 50m	<ul style="list-style-type: none"> 100% of parking spaces for residential 10% for commercial and retail 	

Area	Proposed Provision	Review Comment	Recommendation
	from the parking space to the EV-ready connection.	<ul style="list-style-type: none"> 20% for hotel developments <p>The IWC requirement to provide EV charging is also greater than the Green Star Buildings rating tool which requires electrical infrastructure to be provided for the future installation of EV charges for 25% of all parking spaces.</p>	
Urban Heat Island Effect	<p>Measures to reduce Urban Heat Island Effect, including:</p> <ul style="list-style-type: none"> Green infrastructure in the form of landscape and surface treatments that incorporate water storage and treatment while reducing water usage. Trees that offer shade to built form, hard surfaces and vegetation. Building materials and colours that reduce heat impacts, contribute to energy efficiency and thermal comfort and minimise nuisance caused by glare or heat radiation. 	<p>With no urban heat mitigation measures in the Sustainable Buildings SEPP, these controls will promote better outcomes than minimum standards.</p>	<p>The proposed controls exceed minimum standards and are sufficient.</p>
Access and Parking - Residential	<p>Residential Bicycle parking:</p> <ul style="list-style-type: none"> Residents – 1 space per dwelling Visitors – 1 space per 10 dwellings <p>Ready to use charging points – 1 per two spaces</p>	<p>The bicycle parking requirements are aligned with the City of Sydney DCP.</p> <p>The Green Star Buildings tool does not specify the number of bicycle parking spaces to provide, however, the previous version of the Green Star tool (Design and As Built) specified one parking space per unit for up to 50 units, and 1 per 5 dwellings for visitors, however, this tool has been superseded.</p> <p>The provision of charging points is not included in the CoS DCP or Green Star tools. This initiative responds well to increasing micro-mobility trends and will drive great outcomes for sustainable transport.</p>	<p>Controls are aligned with current best practice examples and no further updates are required.</p>
Access and Parking Non-Residential	<p>Non-Residential Bicycle Parking: Commercial</p>	<p>The IWC bicycle parking requirements are aligned with the CoS DCP for all asset types except industrial.</p>	<p>Controls for commercial and retail developments are aligned with current best practice examples and no further updates are required.</p>

Area	Proposed Provision	Review Comment	Recommendation
	<ul style="list-style-type: none"> • Worker - 1 space per 150m² GFA • Visitor - 1 space per 400m² GFA <p>Retail</p> <ul style="list-style-type: none"> • Worker - 1 space per 250m² GFA • Visitor - 2 spaces + 1 per 100m² GFA <p>Industrial</p> <ul style="list-style-type: none"> • Worker - 1 per 250m² GFA • Visitor - 1 space per 500m² GFA 	<p>The CoS bicycle parking requirements for industrial assets are:</p> <p>Industrial:</p> <ul style="list-style-type: none"> • 1 per 10 staff <p>The IWC DCP uses GFA as a scaling metric, whilst the CoS uses staff numbers. As the GFA of industrial assets is not always representative of the staff numbers (for instance, large storage warehouses will have more GFA, but not necessarily more staff members), it is recommended that the IWC targets are updated to align with the CoS bicycle parking targets.</p> <p>The Green Star Buildings tool does not specify the number of bicycle parking spaces to provide.</p> <p>The Design and As Built tool specified one secure bicycle parking space in 20 (5% of peak visitors) for all building classes excluding multi-unit residential. Secure bicycle parking is also required for regular occupants of office, retail centres, industrial and healthcare (7.5% of total regular occupants). However, this tool has been superseded.</p>	<p>For industrial assets, the bicycle parking requirements are scaled per GFA. However, for this asset type, GFA is not always representative of the staff numbers at the site.</p> <p>It is recommended that the bicycle parking targets for industrial assets are updated to align with the CoS targets, which use staff numbers as the scaling metric.</p>
Car Share	<p>Development includes car share vehicle(s) that:</p> <ul style="list-style-type: none"> - are located either on-site or on the street at the discretion of Council - do not result in the maximum car parking rates being exceeded - are publicly available, and readily accessible at all times. 	<p>There are no specific car share requirements within Green Star Buildings outside of requiring a Sustainable Transport Plan.</p> <p>The car share requirements in the City of Sydney DCP are more stringent and range from 1 per 50 car spaces through to 1 per 90 car spaces provided on a residential development other than dwelling houses and dual occupancies.</p> <p>For non-residential developments, the car share requirements in the City of Sydney DCP range from 1 per 30 car spaces through to 1 per 50 car spaces provided on office, business or retail premises.</p>	<p>Car share requirements in the City of Sydney are more stringent.</p> <p>However, as the City of Sydney is a central business district, higher car share activity could be expected.</p> <p>IWC could consider updating their car share targets to align with the City of Sydney.</p>

5 Recommendations

In summary, the in-depth review of the IWC's Parramatta Road Corridor Stage 1 Planning Proposal and DCP against the Sustainable Buildings SEPP, PRCUT P&D Guidelines and best practice planning policies found:

Sustainable Buildings SEPP

- The proposed BASIX energy targets should be updated to align with the new BASIX 2022 energy tool. Furthermore, the stringency of the proposed BASIX energy targets should be increased to exceed the minimum requirements in the Sustainable Buildings SEPP.
- The thresholds for residential buildings greater than 6-storeys should be divided into two categories (i.e. 6-20 storeys and 20+ storeys) to align with the Sustainable Buildings SEPP.
- The proposed energy and water targets for office assets are greater than the Sustainable Buildings SEPP requirements, and therefore, are still appropriate for the FSR and HOB incentives. No further updates are recommended.
- The proposed energy targets for hotel assets are equivalent to Sustainable Buildings SEPP targets should be increased above minimum requirements if they are to trigger additional FSR and HOB incentives.
- The Sustainable Building SEPP provides energy and water targets for serviced apartments, whilst the current IWC Planning Proposal does not account for this asset type. To ensure alignment with the Sustainable Buildings SEPP, the Council could consider incorporating serviced apartments within the hotel category. This is also aligned with the NCC 2022 which classifies serviced apartments with hotels under Class 3 buildings.

PRCUT P&D Guidelines

- The proposed energy and water targets for all asset types are largely aligned with the PRCUT Planning & Design Guidelines. However, the retail energy targets should be increased to align with the PRCUTS targets.

Best Practice Planning Policies

- Very few councils specified energy and water targets in their local legislative planning framework. In comparison with the councils which have specified targets, IWC's Planning Proposal targets are aligned with the CoS Planning for Net-Zero Energy Buildings Study for all asset types, and Canada Bay LEP energy targets for residential assets greater than 3 storeys.
- The proposed energy targets for residential assets between 2-3 storeys, are lower than the Canada Bay LEP energy targets. The same applies to water targets across all asset types. However, this is not deemed an area of concern as Canada Bay's targets are quite stringent, and alignment to these are not recommended in order to avoid discouraging the uptake of FSR and HOB incentives to drive higher performing buildings.
- For future iterations of the IWC Planning Proposal, Council could consider aligning with the CoS 2026 targets and incorporating the requirement to procure renewable energy. However, to implement this, Council will need to devise a verification pathway that ensures developers and/or operators commit to procuring renewable energy over the duration of the building's lifespan.

DCP Review

- The review of IWCs DCP against the NCC 2022, Green Star rating tools and minimum requirements in the SEPP found the provisions were sufficiently stringent. A review of other council DCPs found that the City of Sydney uses staff numbers to determine bicycle parking for industrial development. It is recommended that the IWC controls adopt this approach.

6 Planning Proposal Amendments

6.1 Overview

To ensure the targets in IWC's planning proposal align with the PRCUT P&D Guidelines, exceed the Sustainable Buildings SEPP and are appropriate for the new BASIX 2022 tool, the following updates are required:

- The proposed residential energy targets should be updated to align with the new BASIX tool and scoring methodology, and be increased in stringency where they do not exceed the Sustainable Buildings SEPP.
- The proposed hotel energy targets should be increased to exceed the minimum requirements in the Sustainable Buildings SEPP.
- The proposed retail energy targets should be updated to align with the PRCUT Planning & Design Guidelines.
- Include provision of serviced apartment energy and water targets to align with the large commercial development definition and exceeding the minimum requirements in the Sustainable Buildings SEPP.
- The thresholds triggering increased energy targets for additions to office and shopping centres developments should be amended from a percentage (50%) to lettable area (500m² for office and 2500m² for shopping centre) to ensure that larger developments are not disproportionately advantaged.

The following section recommends appropriate targets for the IWC Planning Proposal to ensure the conditions of the Gateway Determination are met.

6.2 Methodology

To determine appropriate BASIX Energy targets for IWC's Planning Proposal which align with the BASIX 2022 tool and exceed minimum Sustainable Buildings SEPP requirements, a detailed BASIX assessment was conducted. This study utilised the building typologies developed for the study which are detailed in Section 2.1.1.4 above.

The building typologies included performance measures such as a 7 Star NaTHERS rating, LED lighting with motion sensors and time clocks, and efficiency appliances to do so. A full list of performance measures included in these buildings is shown in Appendix A1.1. These measures enabled the buildings to meet minimum BASIX requirements in the BASIX 2004 SEPP.

For this secondary assessment, the same building models were modified to increase their energy efficiency performance, ensuring they exceed the targets in the Sustainable Buildings SEPP 2022. Additional performance measures that are considered industry best practice were included in the new building models, such as:

- Rooftop Photovoltaic (PV) to cover up to 50% of the roof space.
- Higher performing air conditioning systems (4 Star Zone Energy Rating Label (ZERL)).
- Higher performing dishwashers (4.5 Star energy rating).

The full list of building attributes is provided in Appendix A1.3.

Using the revised buildings with additional performance measures, an assessment was conducted through the BASIX 2022 tool to understand what BASIX energy target can be achieved and will be appropriate for the sustainability provisions proposed in the revised IWC planning proposal.

Proposed hotel and retail and energy targets were recommended based on an understanding of industry best practice performance standards.

6.3 Recommended Target Updates

The recommended energy targets for the residential, hotel and retail asset classes are outlined in the section below.

6.3.1 Recommended BASIX Energy Targets

The BASIX assessment found that buildings were able to exceed the minimum BASIX energy scores in the Sustainable Buildings SEPP by 5-10 points through additional solar PV and energy efficiency measures. Using these buildings examples, the following BASIX energy targets are recommended for the IWC to ensure the Planning Proposal exceeds minimum requirements in Sustainable Buildings SEPP.

Table 6.1 Recommended BASIX 2022 Energy Targets

Asset	Recommended IWC Planning Proposal Requirement (BASIX 2022)
Low-rise 2-3 storeys	BASIX Energy 75 (BASIX 2022) = 8-point increase over BASIX 67 (Sustainable Buildings SEPP)
Mid-rise 4-5 storeys	BASIX Energy 66 (BASIX 2022) = 5-point increase over BASIX 61 (Sustainable Buildings SEPP)
High-rise 6-20 storeys	BASIX Energy 65 (BASIX 2022) = 5-point increase over BASIX 60 (Sustainable Buildings SEPP)

The proposed energy targets for residential assets should therefore be updated to the following:

- Low-rise 2-3 storeys – BASIX Energy 75
- Mid-rise 4-5 storeys – BASIX Energy 66
- High-rise 6-20 storeys – BASIX Energy 65

6.3.2 Recommended Retail Energy Targets

To align with the PRCUT P&D Guidelines recommendation, a 5 Star NABERS requirement should be adopted for retail assets. There are only four shopping centres in Sydney that have achieved this target (NABERS, 2023), implying that the target is stringent enough to warrant FSR and HOB incentives. To avoid discouraging developers from utilising the FSR and HOB incentives, it is not advised that a target greater than 5 Stars is adopted.

The following table summarises the recommended energy target for retail assets and the equivalent forms of demonstrating compliance.

Table 6.2 Recommended Energy Target for Retail Assets

Asset Class	Recommended Target
Retail	<ul style="list-style-type: none"> • Maximum 44 kWh/yr/m² of GFA or, • 5 Star NABERS Energy Commitment Agreement, or • Certified Green Star Buildings rating achieving the “Credit Achievement” in Credit 22: Energy Use, or • equivalent

6.3.3 Recommended Hotel Energy Targets

It is recommended that the IWC adopts a 4.5 Star energy target for hotel assets to exceed the Sustainable Buildings SEPP target of 4 Stars. A 4.5 Stars NABERS rating is considered high performing for hotels assets, particularly as the addition of luxury items such as heated pools and saunas negatively impact the NABERS performance. The option to increase the target to 5 Stars was explored but not adopted at the risk of discouraging developers from adopting the FSR and HOB incentives.

The following table summarises the recommended energy target for hotel developments and the equivalent forms of showing compliance.

Table 6.3 Recommended Energy Target for Hotel Assets

Asset Class	Recommended Target
Hotel	<ul style="list-style-type: none">• Maximum 199 kWh/yr/m² of GFA or,• 4.5 Star NABERS Energy Commitment Agreement, or• Certified Green Star Buildings rating achieving the “Credit Achievement” in Credit 22: Energy Use, or• equivalent

7 Limitations

- The information presented in this report was based off the best available information on the Sustainable Buildings SEPP and BASIX target updates at the time of publication. The overview of the changes to the Sustainable Buildings SEPP and BASIX tool were obtained from publications on the NSW Government Planning Portal. It should be noted that these summaries were used solely for a high-level understanding, and any information required to draft new planning controls for the IWC were based off detailed assessments conducted in Section 7.
- The detailed assessments on the BASIX 2022 tool were carried out using the Beta version of the tool. Although the final tool had not been published at the time of the study, confirmation was provided from the Department of Planning and Environment (DPE) that there will be no major changes between the BASIX Beta tool and the final BASIX 2022 tool. However, it is important to acknowledge that unforeseen circumstances or developments may occur that could result in alterations to the final BASIX 2022 tool. In this case, the authors of the report cannot be held liable for any discrepancies or changes that may arise in the final version of the BASIX 2022 tool or any subsequent updates.
- The Study acknowledges the inclusion of draft planning policies that are presently undergoing exhibition or review by the DPE, which may lead to subsequent updates. The final outcome of these planning policies will not have an impact on the outcomes of this study and recommendations for the IWC planning controls.
- No warranty, undertaking or guarantee whether expressed or implied, is made with respect to the data reported or the conclusions drawn. To the fullest extent permitted at law, WSP, its related bodies corporate and its officers, employees and agents assumes no responsibility and will not be liable to any third party for, or in relation to any losses, damages or expenses (including any indirect, consequential or punitive losses or damages or any amounts for loss of profit, loss of revenue, loss of opportunity to earn profit, loss of production, loss of contract, increased operational costs, loss of business opportunity, site depredation costs, business interruption or economic loss) of any kind whatsoever, suffered on incurred by a third party.

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Appendix A

BASIX 2004 and BASIX 2022 Mapping



A1 BASIX Modelling Inputs

A1.1 BASIX 2004 – Current Targets

BASIX 2004 Model Inputs - Current Targets

Section	Input	2-3 Storeys		4-5 Storeys		6-20 Storeys	
		Building 1	Building 2	Building 1	Building 2	Building 1	Building 2
Site Details	Site Area	894	1104	2499	1717	1035	4711
	Residential Car Spaces	9	12	30	19	16	81
	Non-residential car	-	-	-	-	-	-
	Non-residential floor area	-	-	-	-	-	1626
	Roof Area	294	374	606	377	253	1626
Unit Building Details	Dwellings	11	14	36	23	19	96
	Storeys	3	3	4	5	6	6
Common Areas	Carpark	346	439	1126	717	595	4000
	Switch room	15	15	17	31	20	20
	Garbage room	25	25	30	52	40	40
	Plant/Service room	25	25	40	52	60	60
	Ground floor Lobby	N/A	N/A	N/A	N/A	50	50
	Hallway/lobby	88	112	243	189	152	800
	Fire pump room	N/A	N/A	N/A	N/A	43	43
	Fire Control room	N/A	N/A	N/A	N/A	13	13
	Comms Room	N/A	N/A	N/A	N/A	15	15
	Water Meter room	N/A	N/A	N/A	N/A	13	13
	Community room	N/A	N/A	N/A	N/A	N/A	N/A
Central System	Water Tank	Yes	Yes	Yes	Yes	Yes	Yes
	Fire sprinkler system	No fire sprinkler <25m	No fire sprinkler <25m	No fire sprinkler <25m	No fire sprinkler <25m	Yes	Yes
	Central hot water systems	It is simpler to have individual systems for shorter buildings	It is simpler to have individual systems for shorter buildings	No central - simpler to have individual systems for shorter buildings	It is simpler to have individual systems for shorter buildings	Yes	Yes
	Lifts	1 lift (accessibility)	1 lift (accessibility)	1 lift (accessibility)	1 lift (accessibility)	2	2
Dwelling Details	Conditioned floor area	76	76	64	78	76	80
	Unconditioned floor area	-	-	-	-	-	-
	Garden and lawn	-	-	-	-	-	-
	Indigenous/low water use species	-	-	-	-	-	-
Water							
Central System	Area of lawn	100	100	100	100	200	200
	Area of garden	100	100	100	100	100	100
	Area of Indigenous/ low water use species	-	-	-	-	-	-
	Area diverted to tank - Roof	100	100	100	100	200	200
	Area diverted to tank - Impervious area	-	-	-	-	-	-
	Area diverted to tank - Garden/ lawn area	-	-	-	-	-	-
	Area diverted to tank - Planter box area	-	-	-	-	-	-

	Tank size	2000	2000	2000	2000	5000	5000
	Overflow	not diverted	not diverted	not diverted	not diverted	not diverted	not diverted
	Alternative water use - common landscape	200	200	200	200	300	300
	No. of car washing bays	-	1	1	1	2	2
Common area	Showerheads	No	No	No	No	No	No
	Toilet	No	No	No	No	No	No
	Taps	No	No	No	No	No	No
	Clothes washer rating	No	No	No	No	No	No
	Fire sprinkler - closed loop	N/A	N/A	N/A	N/A	Yes	Yes
Dwellings	Showerheads	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)
	Toilet	4 star	4 star	4 star	4 star	4 star	4 star
	Kitchen Tap	5 star	5 star	5 star	5 star	4 star	4 star
	Bathroom taps	5 star	5 star	5 star	5 star	4 star	4 star
	On demand hot water recirculation or diversion	no	no	no	no	no	no
	Clothes washer rating	4 star	4 star	not specified	not specified	4 star	not specified
	Dishwasher rating	4 star	4 star	3 Star	3 Star	4 star	3 Star
Alternative water	N/A	N/A	N/A	N/A	N/A	N/A	
Thermal Comfort							
Assessor Details	In-slab heating	No	No	No	No	No	No
	Ceiling fans for at least one bedroom in any dwellings	No	No	No	No	No	No
	Ceiling fans for at least one living room or other conditioned areas in any dwellings	No	No	No	No	No	No
Thermal Loads	Heating Loads	23.0	23.0	23.0	23.0	18.15	18.15
	Cooling Loads	15.0	15.0	15.0	15.0	11.84	11.84
Energy							
Central System	Hot water	N/A	N/A	N/A	N/A	Electric heat pump - air sourced. No external pipework Internal piping - R0.6 -25 mm	Electric heat pump - air sourced. No external pipework Internal piping - R0.3 -13 mm
	Cooling	N/A	N/A	N/A	N/A	N/A	N/A
	Heating	N/A	N/A	N/A	N/A	N/A	N/A
	Alt Energy Supply	N/A	N/A	N/A	N/A	N/A	N/A
	Lifts	3 storeys - Gearless traction with V V V F motor	3 storeys - Gearless traction with V V V F motor	4 storeys - Gearless traction with V V V F motor	5 storeys - Gearless traction with V V V F motor	6 storeys - Gearless traction with V V V F motor	6 storeys - Gearless traction with V V V F motor
	Pool and Spa	N/A	N/A	N/A	N/A	N/A	N/A

	Sauna	N/A	N/A	N/A	N/A	N/A	N/A
	BMS	No	No	No	No	No	No
	Active Power Factor Correction	No	No	No	No	No	No
	Common area clothes drying line	No	No	No	No	No	No
	Common area clothes dryer	No	No	No	No	No	No
	Common area clothes washer	No	No	No	No	No	No
Common area ventilation	Carpark	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan
	Switch room	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	Supply only - continuous	Supply only - continuous
	Garbage room	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only
	Plant/Service rooms	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous	Ventilation supply only - interlocked to light	Ventilation supply only - interlocked to light
	Hallway/lobby	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	Ventilation supply only - none ie. continuous	Ventilation supply only - none ie. continuous
	Ground floor lobby	N/A	N/A	N/A	N/A	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous
	Fire pump room	N/A	N/A	N/A	N/A	Supply and exhaust only - none ie. continuous	Supply and exhaust only - none ie. continuous
	Fire control room	N/A	N/A	N/A	N/A	Ventilation supply only - none ie. continuous	Ventilation supply only - none ie. continuous
	Comms room	N/A	N/A	N/A	N/A	Ventilation supply only - none ie. continuous	Ventilation supply only - none ie. continuous
	Water meter room	N/A	N/A	N/A	N/A	No mechanical ventilation	No mechanical ventilation
	Community room	N/A	N/A	N/A	N/A	N/A	N/A
Common area lighting	Carpark	LED - time clock motion sensor - LCS/BMS	LED - time clock motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS
	Switch room	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Garbage room	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Plant/Service rooms	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Hallway/lobby	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - no efficiency measures - LCS/BMS	LED - no efficiency measures - LCS/BMS
	Ground floor lobby	N/A	N/A	N/A	N/A	LED - no efficiency measures - LCS/BMS	LED - no efficiency measures - LCS/BMS
	Lift car	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS
	Fire pump room	N/A	N/A	N/A	N/A	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Fire control room	N/A	N/A	N/A	N/A	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Comms room	N/A	N/A	N/A	N/A	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Water meter room	N/A	N/A	N/A	N/A	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS

	Community room	N/A	N/A	N/A	N/A	N/A	N/A
Dwelling	Hot Water	Individual system - Electric heat pump - air sourced - 31-35 STCs	Individual system - Electric heat pump - air sourced - 31-35 STCs	Individual system - Electric heat pump - air sourced - 21-25 STCs	Individual system - Electric heat pump - air sourced - 26-30 STCs	Central hot water system 1	Central hot water system 1
	Ventilation - Bathroom Exhaust	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off
	Ventilation - Kitchen Exhaust	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off
	Ventilation - Laundry Exhaust	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off
	Cooling	Individual - 1-phase air-conditioning - 3.5 star (average zone)	Individual - 1-phase air-conditioning - 3.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)
	Heating	Individual - 1-phase air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)	1-phase air-conditioning - 3 star (average zone)	1-phase air-conditioning - 3 star (average zone)	1-phase air-conditioning - 3 star (average zone)	1-phase air-conditioning - 3 star (average zone)
	Lighting	All rooms primarily lit by LED with dedicated fittings	All rooms primarily lit by LED with dedicated fittings	All rooms primarily lit by LED with dedicated fittings	All rooms primarily lit by LED with dedicated fittings	All rooms primarily lit by fluorescent or LED with dedicated fittings	All rooms primarily lit by fluorescent or LED with dedicated fittings
	Pool & Spa	N/A	N/A	N/A	N/A	N/A	N/A
Dwelling Appliances	Cooktop	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven
	Refrigerator rating	3 star	4 star	3 star	3 star	3 star	2.5 star
	Well ventilated fridge space	no	no	no	no	no	no
	Dishwasher rating	4 star	4 star	not specified	not specified	4 star	not specified
	Clothes washer rating	4 star	4 star	not specified	not specified	4 star	not specified
	Clothes Dryer rating	2 star	2 star	2 star	2 star	2 star	not specified
Other	Indoor/sheltered clothes drying line	No	No	No	No	No	No
	Private outdoor drying line	No	No	No	No	No	No
	Is AC day-night zoned between bedroom	No	No	No	No	No	No
IWC BASIX Energy Target		BASIX 45	BASIX 45	BASIX 35	BASIX 35	BASIX 25	BASIX 25

A1.2 BASIX 2022 – Current Targets

	Alternative water use - common landscap	200	200	200	200	300	300
	No. of car washing bays	-	1	1	1	2	2
Common area	Showerheads	No	No	No	No	No	No
	Toilet	No	No	No	No	No	No
	Taps	No	No	No	No	No	No
	Clothes washer rating	No	No	No	No	No	No
	Fire sprinkler - closed loop	N/A	N/A	N/A	N/A	Yes	Yes
Dwellings	Showerheads	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)
	Toilet	4 star	4 star	4 star	4 star	4 star	4 star
	Kitchen Tap	5 star	5 star	5 star	5 star	4 star	4 star
	Bathroom taps	5 star	5 star	5 star	5 star	4 star	4 star
	On demand hot water recirculation or diversion	no	no	no	no	no	no
	Clothes washer rating	4 star	4 star	not specified	not specified	4 star	not specified
	Dishwasher rating	4 star	4 star	3 Star	3 Star	4 star	3 Star
Alternative water	N/A	N/A	N/A	N/A	N/A	N/A	
Thermal Comfort							
Assessor Details	In-slab heating	no	no	no	no	no	no
	Ceiling fans for at least one bedroom in any dwellings	no	no	no	no	no	no
	Ceiling fans for at least one living room or other conditioned areas in any dwellings	no	no	no	no	no	no
Thermal Loads	Adjusted heating load	23.0	23.0	23.0	23.0	18.15	18.15
	Adjusted cooling load	15.0	15.0	15.0	15.0	11.84	11.84
Energy							
Central System	Hot water	N/A	N/A	N/A	N/A	Electric heat pump - air sourced - 2.5 < COP < 3 No external pipework Internal piping - R0.6 ~25 mm	Electric heat pump - air sourced - 2.5<COP<3. No external pipework Internal piping - R0.3 ~13 mm,
	Cooling	N/A	N/A	N/A	N/A	N/A	N/A
	Heating	N/A	N/A	N/A	N/A	N/A	N/A
	Alt Energy Supply	N/A	N/A	N/A	N/A	N/A	N/A
	Lifts	3 storeys - Gearless traction with V V V F motor	3 storeys - Gearless traction with V V V F motor	4 storeys - Gearless traction with V V V F motor	5 storeys - Gearless traction with V V V F motor	6 storeys - Gearless traction with V V V F motor	6 storeys - Gearless traction with V V V F motor
	Lift load capacity	<1001kg	<1001kg	<1001kg	<1001kg	>=1001kg but <=1500kg	>=1001kg but <=1500kg
	Pool and Spa	N/A	N/A	N/A	N/A	N/A	N/A
	Sauna	N/A	N/A	N/A	N/A	N/A	N/A
BMS	No	No	No	No	No	No	

Dwelling	Ventilation - Laundry Exhaust	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off
	Cooling	Individual - 1-phase non-ducted air-conditioning - 3.5 star (average zone)	Individual - 1-phase air-conditioning - 3.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)	1-phase air-conditioning - 2.5 star (average zone)
	Heating	Individual - 1-phase non-ducted air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)	1-phase air-conditioning - 3 star (average zone)	1-phase air-conditioning - 3 star (average zone)	1-phase air-conditioning - 3 star (average zone)	1-phase air-conditioning - 3 star (average zone)
	Skylights/Windows	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom
	Lighting	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings
	Pool & Spa	N/A	N/A	N/A	N/A	N/A	N/A
Dwelling Appliances	Cooktop	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven
	Dishwasher rating	4 star	4 star	not specified	not specified	4 star	not specified
	Clothes Dryer rating	2 star	2 star	2 star	2 star	2 star	not specified
Other	Indoor/sheltered clothes drying line	No	No	No	No	No	No
	Private outdoor drying line	No	No	No	No	No	No
Alternative Energy	Solar PV	No	No	No	No	No	No
BASIX Energy Results		57%	55%	48%	52%	46%	48%

A1.3 BASIX 2022 – Recommended Targets

	Alternative water use - common landscap	200	200	200	200	300	300
	No. of car washing bays	-	1	1	1	2	2
Common area	Showerheads	No	No	No	No	No	No
	Toilet	No	No	No	No	No	No
	Taps	No	No	No	No	No	No
	Clothes washer rating	No	No	No	No	No	No
	Fire sprinkler - closed loop	N/A	N/A	N/A	N/A	Yes	Yes
Dwellings	Showerheads	3 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)	4 Star (>6 but <=7.5L/min)
	Toilet	4 star	4 star	4 star	4 star	4 star	4 star
	Kitchen Tap	5 star	5 star	5 star	5 star	4 star	4 star
	Bathroom taps	5 star	5 star	5 star	5 star	4 star	4 star
	On demand hot water recirculation or diversion	no	no	no	no	no	no
	Clothes washer rating	4 star	4 star	not specified	not specified	4 star	not specified
	Dishwasher rating	4 star	4 star	3 Star	3 Star	4 star	3 Star
Alternative water	N/A	N/A	N/A	N/A	N/A	N/A	
Thermal Comfort							
Assessor Details	In-slab heating	no	no	no	no	no	no
	Ceiling fans for at least one bedroom in any dwellings	no	no	no	no	no	no
	Ceiling fans for at least one living room or other conditioned areas in any dwellings	no	no	no	no	no	no
Thermal Loads	Adjusted heating load	23.0	0.0	23.0	23.0	18.15	18.15
	Adjusted cooling load	15.0	0.0	15.0	15.0	11.84	11.84
Energy							
Central System	Hot water	N/A	N/A	N/A	N/A	Electric heat pump - air sourced - 2.5 < COP < 3 No external pipework Internal piping - R0.6 -25 mm	Electric heat pump - air sourced - 2.5<COP<3. No external pipework Internal piping - R0.3 -13 mm,
	Cooling	N/A	N/A	N/A	N/A	N/A	N/A
	Heating	N/A	N/A	N/A	N/A	N/A	N/A
	Alt Energy Supply	N/A	N/A	N/A	N/A	N/A	N/A
	Lifts	3 storeys - Gearless traction with V V V F motor	3 storeys - Gearless traction with V V V F motor	4 storeys - Gearless traction with V V V F motor	5 storeys - Gearless traction with V V V F motor	6 storeys - Gearless traction with V V V F motor	6 storeys - Gearless traction with V V V F motor
	Lift load capacity	<1001kg	<1001kg	<1001kg	<1001kg	>=1001kg but <=1500kg	>=1001kg but <=1500kg
	Pool and Spa	N/A	N/A	N/A	N/A	N/A	N/A
Sauna	N/A	N/A	N/A	N/A	N/A	N/A	

	BMS	No	No	No	No	No	No
	Active Power Factor Correction	No	No	No	No	No	No
	Common area clothes drying line	No	No	No	No	No	No
	Common area clothes dryer	No	No	No	No	No	No
	Common area clothes washer	No	No	No	No	No	No
Common area ventilation	Carpark	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan	Supply and exhaust - CO Monitor + VSD Fan
	Switch room	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	Supply only - continuous	Supply only - continuous
	Garbage room	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only	Ventilation exhaust only
	Plant/Service rooms	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous	Ventilation supply only - interlocked to light	Ventilation supply only - interlocked to light
	Hallway/lobby	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	No mechanical ventilation	Ventilation supply only - none ie. continuous	Ventilation supply only - none ie. continuous
	Ground floor lobby	N/A	N/A	N/A	N/A	Ventilation supply only - none ie. Continuous	Ventilation supply only - none ie. Continuous
	Community room	N/A	N/A	N/A	N/A	N/A	N/A
Common area lighting	Carpark	LED - time clock motion sensor - LCS/BMS	LED - time clock motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS	LED - zoned switching with motion sensor - LCS/BMS
	Switch room	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Garbage room	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Plant/Service rooms	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS
	Hallway/lobby	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - motion sensors - LCS/BMS	LED - no efficiency measures - LCS/BMS	LED - no efficiency measures - LCS/BMS
	Ground floor lobby	N/A	N/A	N/A	N/A	LED - no efficiency measures - LCS/BMS	LED - no efficiency measures - LCS/BMS
	Lift car	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS	LED connected to lift call button - LCS/BMS
	Community room	N/A	N/A	N/A	N/A	N/A	N/A
Dwelling	Hot Water	Individual system - Electric heat pump - air sourced - 31-35 STCs	Individual system - Electric heat pump - air sourced - 31-35 STCs	Individual system - Electric heat pump - air sourced - 21-25 STCs	Individual system - Electric heat pump - air sourced - 26-30 STCs	Central hot water system 1	Central hot water system 1
	Ventilation - Bathroom Exhaust	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off
	Ventilation - Kitchen Exhaust	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off
	Ventilation - Laundry Exhaust	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off	individual fan, ducted to façade or roof - manual switch on/off
	Cooling	Individual - 1-phase non-ducted air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)	Individual - 1-phase non-ducted air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)	Individual - 1-phase non-ducted air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)

	Heating	Individual - 1-phase non-ducted air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)	Individual - 1-phase non-ducted air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)	Individual - 1-phase non-ducted air-conditioning - 4 star (average zone)	Individual - 1-phase air-conditioning - 4 star (average zone)
	Skylights/Windows	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom	Kitchen & bathroom
	Lighting	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings	All rooms lit by LED with dedicated fittings
	Pool & Spa	N/A	N/A	N/A	N/A	N/A	N/A
Dwelling Appliances	Cooktop	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven	Induction Cooktop and electric oven
	Dishwasher rating	4.5 Star	4.5 Star	4.5 Star	4.5 Star	4.5 Star	4.5 Star
	Clothes Dryer rating	2 star	2 star	2 star	2 star	2 star	not specified
Other	Indoor/sheltered clothes drying line	No	No	No	No	No	No
	Private outdoor drying line	Yes	Yes	Yes	Yes	Yes	Yes
Alternative Energy	Solar PV (kW)	14kW	19.25kW	36kW	30.25kW	16.5	28.35
	Details	50% of roof space - 147sqm, 14 panels, 350W	50% of roof space - 186sqm, 350W panels	50% of roof space - 300sqm, 450W panels	60% of roof space - 226sqm, 550W panels	50% of roof space - 126sqm, 550W panels	15% of roof space, 243sqm, 450W panels
BASIX Energy Results		BASIX 75	BASIX 78	BASIX 68	BASIX 68	BASIX 65	BASIX 73