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Wyndham Environmentally Sustainable Design Standards (Part 2)

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Introduction

This Environmentally Sustainable Design (ESD) Standards Document is part *two* of a *two*-part document. This Standards document is designed to be read in conjunction with part *one* – Wyndham Sustainable Infrastructure Framework.

The ESD Standards is a live working document designed to be updated when relevant industry or internal standards and technical advances arise.

As our municipality faces increasing environmental challenges, the need for sustainable infrastructure becomes paramount. This framework aids Council in achieving legislative requirements in relation to climate change and in making more informed sustainable design decisions on all infrastructure projects. The implementation of the Framework is achieved through sustainable standards, guides and processes to cover all types of Council design and construction work.

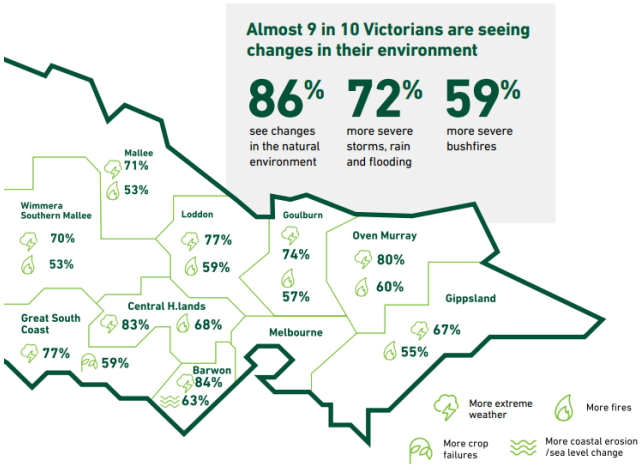
The value of sustainable infrastructure is widely recognised in industry and projects captured under this framework will aim to be more efficient, durable, lower risk, will take opportunities to adapt to and mitigate climate change.

Why are we doing this?

Desire

When surveyed via Sustainability Victoria's Perceptions of Climate Change Survey (2023), a representative sample of the Wyndham community said they:

- are concerned about climate change (84%), with the majority indicating they are "very" concerned.
- understand that 'Climate change is an issue that requires urgent action NOW' (79%).
- agree 'It's cheaper to act on climate change now than to pay the price later' (84%).



Need

The Adaptive Community Assets Project was an assessment undertaken by the local government sector within Greater Melbourne to assess value of damage from climate hazards to council owned assets without adaptation (i.e. business as usual).

The scope of the project included direct damages to the asset classes of buildings, roads, drainage, natural assets and built assets in open space from the climate hazards of coastal flooding, inland flooding, bushfires, and heatwaves. Damage to council assets was quantified in terms of average annual damage (AADs), which reflect the average damage per year that would occur over a very long period. An increase in AADs of approximately 200% in the nearer future and 400% in the more distant future from present day was observed for Wyndham City Council.

Requirement

Under the Victorian Local Government Act 2020 and Climate Change Act 2017 (See Appendix 1), Councils are required to respond to climate change, by doing so a number of benefits can be realised.

Benefits

Social

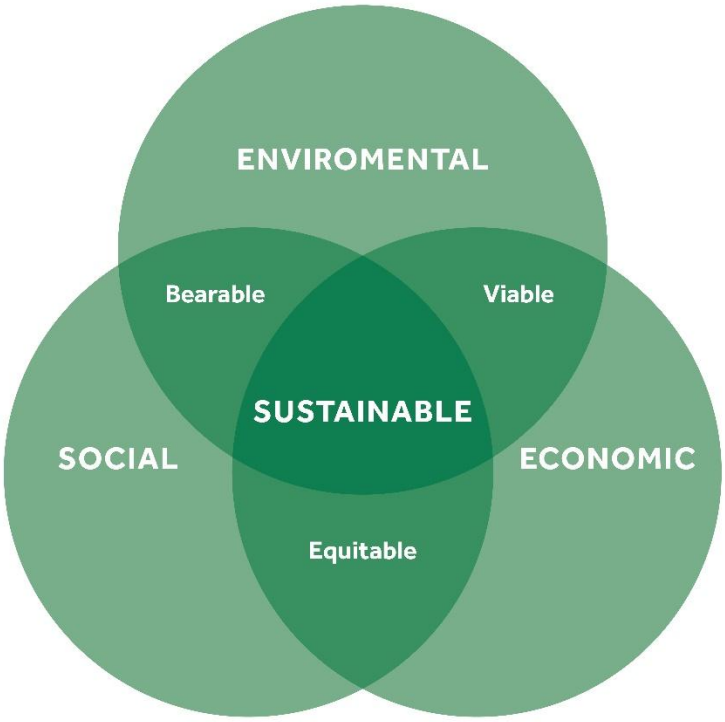
- Sustainably designed building assets provide a healthier and more comfortable place for staff and community, which can lead to increased occupancy and occupant productivity, reduced staff absenteeism, increases in satisfaction and other associated health benefits.
- Demonstration of corporate responsibility and leadership to the community on sustainability and environmental issues.
- Making Council assets and services more resilient against climate change makes them more durable and long lasting, without need for additional intervention and disruption.

Economic

- Durable, future proofed assets experience improved financial performance through a whole-of-lifecycle approach to managing Council assets.
- Lower operating costs of buildings through energy and water efficiencies and good passive design.
- Management of the financial risks of rising utility prices.
- Competitive advantage when applying for grants and funding opportunities which require ESD consideration.

Environmental

- Reduced natural resource consumption and conservation of natural systems.
- Reduced greenhouse gas emissions, pollution and waste production.
- Climate change adaptation and mitigation.



How to use this document

This document is to be used to assist in the planning and delivery of a capital works projects/programs for which the Wyndham Sustainable Infrastructure Framework applies. This *standards* document provides the practical details on how and when the framework is applied and more detail about the requirements. The project stages where the standards are recommended to be referenced are:

- During each stage of the enterprise project management office (EPMO) End-to-end Process.
- During feasibility studies and when developing the business case and allocating budgets.
- As part of the brief to architects and consultants (architectural, building services, etc.).

The Standards outline information regarding Council's mandatory ESD requirements. At respective stages of each project, architects/consultants will need to prepare or update a report stating how they will address the Framework or relevant standards to meet the ESD requirements.

What is Environmentally Sustainable Design (ESD)?

ESD is the design philosophy of minimising resources required to create and operate an asset, with the overall aim to minimise negative impacts on the environment. This includes designing to reduce greenhouse gas emissions, utilise renewable resources, minimise waste, increase durability and improve asset performance over its lifespan.

Climate change is one of the greatest risks to urban resilience and is an amplifier of most other risks. ESD integrates opportunities to mitigate climate change but also plans for the future state where we are subject to more extreme weather, rising sea levels and generally will be forced to ask more from our long term assets.

ESD techniques and practices are changing rapidly and current best practices have advanced considerably in recent years. The benefits of designing and constructing with ESD front and centre include:

- Reducing negative impacts on the environment through reducing greenhouse gas emissions, waste, pollution and urban heat island effect.
- Lower operational and maintenance costs.
- Improved stormwater and biodiversity outcomes.
- Providing adaptive and reusable assets.
- Enhancing occupant health in buildings and providing cool climate resilience spaces in open space.

What budget is required and why?

To meet Council's requirements under the Local Government Act 2020 and Climate Change Act 2017, and commitments under the Resilient Wyndham Strategy 21-25, this framework must be applied as a standard similar to NCC or DDA compliance.

At business case stage, 6% of project budget must be allocated for implementation of this framework, ensuring the delivery of quality, sustainable infrastructure.

The budget is inclusive of preliminaries, margins and escalations as defined by the project Quantity Surveyor. The ESD budget may be used to fund:

- Engagement of an ESD/Sustainability or Energy Services consultant.
- Design integration process and workshops during design phases.
- Building simulation, energy modelling and other required design services.
- Incremental costs between conventional design/minimum code or NCC compliance and proposed design. It is not permitted to fund minimum or mandatory compliance items (e.g. Section J) from the ESD budget.
- Costs associated with trialling new or innovative technologies.
- Engagement of Independent Commissioning Agents for commissioning and/or peer-review activities.
- Sustainability and green building certifications (e.g. Green Star) certification and/or user training and education.

Many aspects of good ESD design, such as designing compact buildings with good solar orientation and improved insulation, will have minimal or even positive capital and operational cost implications. For example, a well orientated and insulated building can reduce the size and capital cost of heating and cooling plant, and their usage.

Roles and Responsibilities at the various project stages

Implementation of ESD is the responsibility of the entire project team and requirements will be held by multiple parties during the lifetime of a project.

Generally, during each stage of the EPMO end-to-end Process, the framework will be implemented as follows:

- Identification- Be aware of the project requirements under the Framework.
- Development- Incorporate budget and ESD deliverables into the business case.
- Delivery- Engage relevant consultants, design to ESD Standards, monitor implementation and Finalise all ESD reporting.

A detailed summary of requirements over the life of a project is provided in table 1. Some variation in process is expected for the delivery of projects, given the large range of scale and type of projects captured under this framework. If deviation from the structure in table 1 occurs, a revised approach is to be approved by the Sustainability Officer and Project manager.

To support implementation, the ESD checklist provided in table 2 can be adapted to suit projects.

Table 1 – Wyndham Sustainable Infrastructure Framework Requirements

PMF Stages	Project Management Framework, Project Activities, Phases and Sustainable Infrastructure Framework Requirements		
	Activity	**Requirement**	**Responsibility**
Identification	**Phase 0 – Proposal**		
	Identify Need	Consider ESD strategies to reduce the environmental impact of the proposed project, during construction and throughout it's lifecycle.	Project Owner
	Scope Project	Review the relevant ESD Standards according to Sustainable Infrastructure Framework; describe these in the project brief	Project Manager (where relevant)
	Approval from the Project Owner	Owner is clear on their accountabilities	
Development	**Phase 1 – Initiation**		
	Complete the Business Case	Discuss with Sustainability Officer any ESD strategies to reduce the environmental impact of the proposed project, as required. Identify relevant ESD standards and requirements according to the Sustainable Infrastructure Framework. Ensure budget is allocated for ESD requirements before proceeding with project development. Determine all environmental risks for the project. The Sustainability officer reviews and approves of business case	Project Manager Project Owner Sustainability Officer
	Phase 2 – Definition		
	Plan and Design the Project Management Plan (PMP)	Role and scope of ESD consultant is defined. ESD review and approval hold points are included in project management plan	Project Manager Sustainability Officer
	Phase 3 – Preparation		
	Procurement documentation	Include ESD scope and requirements in all prepared procurement information	Project Manager
	Approval from the Project Sponsor	Sponsor is clear on the project's ESD deliverables	Project Sponsor
Delivery	**Phase 4 – Execution**		
	Implement the Project		
	Consultant Services Brief	Include scope for an ESD consultant in the design services tender brief as required and attach Sustainable Infrastructure Framework and ESD Standards. Scope of lead consultant must include incorporation and co-ordination of ESD requirements into design documentation.	Project Manager
	Concept Design	Concept is developed in accordance with ESD standards	Project Manager Head Contractor
	Schematic Design	Schematic is developed in collaboration with ESD Consultant where required and in accordance with ESD standards. ESD report is developed by ESD consultant or head contractor and Sustainability Officer approves of ESD report and design documentation.	Project Manager Head Contractor Sustainability Officer ESD Consultant

			Design Consultants
	Detailed Design	Detailed design is developed in collaboration with ESD Consultant where required and in accordance with ESD standards. Any related specialist design work is undertaken. Sustainability Officer approves of ESD.	Project Manager Head Contractor Sustainability Officer ESD Consultant Design Consultants
	Construction Documentation	ESD is incorporated into construction documentation and reviewed by ESD consultant or Sustainability Officer.	Project Manager ESD Consultant Sustainability Officer
	Phase 5 – Closure		
	Defects Liability Period	Any operational ESD tasks are assigned to the relevant services. PM to Ensure documentation for certifications/reporting is collected for submission. ESD is signed off by ESD consultant or Sustainability Officer prior to practical completion.	Project Manager Head Contractor ESD Consultant Sustainability Officer
	Activation	Promotion of ESD outcomes	
	Handover and close project	Provide information and training for Facility Managers and user groups for optimal ESD performance in handover.	Project Manager, ESD Consultant, Facilities Management, Assets Management
	Lessons learned report	Include data from any return or verification activities and key achievements or findings from the design documentation.	Project Manager, ESD Consultant, Facilities Management, Assets Management
	Evaluate project benefits	ESD outcomes included.	Project Manager

Table 2 - ESD checklist for PMs

Requirement	Project Phase	Applicability	QA and project notes
Ensure that the business case references the *Framework* and *Standards* and includes 6% budget for items required to meet sustainability principles and that respective teams are consulted at business case stage.	Initiation Definition	☐ ☐	
Include ESD principles into the project brief at inception, concept design, detailed design and in tender documents.	Initiation Execution	☐ ☐	
Demonstrate at business case stage how project can contribute towards achieving Council's sustainability targets.	Definition	☐ ☐	
Seek specialist ESD technical advice proportionate to the requirements and size of the project.	Preparation Execution	☐ ☐ ☐	
Include ESD review and hold points within the project management plan.	Preparation	☐	
Document at concept design stage how the project or program will meet the ESD requirements.	Execution	☐	
Use the ESD reports to consult with other internal stakeholders as necessary, including: Sustainability, Facilities Management, Drainage, Engineering, Transport and Environmental officers.	Execution	☐	
Ensure that ESD objectives and the requirements of the *Standards* are specifically written into contracts and the deliverables at tender.	Preparation Execution	☐	
Prior to awarding tender, review ESD requirements response for accuracy and achievability, and ensure ESD checks and balances are written into contracts and all relevant documentation.	Execution	☐	
During construction conduct checks and balances at relevant points (i.e. after insulation is installed but before plasterboard goes up), with reviews documented.	Execution	☐	
Ensure that commissioning, building tuning and handover is undertaken in a comprehensive way and that it includes the management of sustainable design initiatives.	Execution Closure	☐ ☐	
Report to Council on the key achievements of the framework and Standards, including sustainable spend and emissions/quantities data.	Closure	☐	

Applying the Standards – Project Specific Requirements

The Wyndham Environmentally Sustainable Design Standards and associated template or design specification documents are maintained by the Climate & Resilience Unit and will be updated as industry changes occur or as Council expectations change. Once a schedule has been included in a project, the schedule for that project will not change, regardless of any updates during the program.

Attachment 1 – The ESD Schedule provides all standards to be achieved through capital works projects of various categories and scale.

Tender responses must clearly state their ability to meet the standards. The ESD schedule must be updated and provided to Council for approval through the various design stages, as indicated in the schedule.

The Schedule details the responsible consultant and required information to show compliance with the standard. The level of detail required for compliance will correspond to the level of detail provided in the design stages.

An ESD report or summary is to be provided, complementing the schedule, which is to be revised inline with agreed hold points. The report must detail the status of the ESD deliverables and collate any associated design documents such as:

- Climate Change Risk Assessment
- Passive Design approach and Thermal Strategy including Zones and Airtightness Barrier (red line diagram)
- Air tightness testing results
- Submetering/BMS Strategy
- Plantroom equipment audit
- Daylight Assessment
- Upfront Carbon summaries/NABERS Embodied Energy Form/Lifecycle Analysis (LCA)
- Waste Recovery Statement
- WSUD Assessment
- NCC Section J DTS or JV3 report

The ESD Schedule will be approved in stages by the Sustainability officer once adequate evidence is provided in the ESD report to show compliance with each standard. Evidence will be relevant to each project stage, i.e. design details shown during design and as built evidence during construction.

The third-party certification process Green Star is proposed for ‘flagship’ Buildings projects, in this instance, reporting and compliance is managed by the ESD Consultant and the Green Building Council of Australia or alternative governing body (e.g. Passive House, IFIA, IWBI, LEED etc.), not Council. With this approach, compliance with the ESD Schedule is not mandatory, Council do however require mandatory Green Star Buildings credits which are detailed in Appendix 2.

The Wyndham Sustainability Officer responsible for the capital works project must sign off on the ESD report and updated schedule at the indicated design stage before commencing the next stage of development or project.

The ESD standards are to be applied as minimum Wyndham design standards/expectations, however unexpected scenarios can occur that may require variation or could result in non-compliance. Any changes to the ESD scope mid project or non-compliance with a standard must be approved by the Sustainability Officer. In the instance of a non-compliance;

- Falling within project ESD budget, the sustainability officer can approve, in conjunction with the asset owner and project manager, with any PWG being informed of the process.
- Exceeding the ESD budget, the PWG must be consulted and approve the non-compliance.

Table 3 – ESD Reporting Requirements

		NEW BUILDING				EXISTING BUILDING
		PAVILION	MINOR COMMUNITY BUILDING **$2m-$15m**	MAJOR COMMUNITY BUILDING **$15m+**	MAJOR SPORTS, AQUATIC & ARTS CENTRE **$15m+**	MAINTENANCE / REFURBISHMENT **$2m+**
ESD REQUIREMENTS						
Compliance with ESD Buildings Schedule						
5 Star Green Star Certification including WCC minimum credits pathway						
REPORTING REQUIREMENTS						
CONCEPT DESIGN	ESD Strategy					
	Climate Change Risk Assessment					
SCHEMATIC DESIGN	ESD Report		^	^		^
	Green Star Pathway Proposal				*	
DETAILED DESIGN	ESD Report					
	Green Star Pathway Proposal				*	
TENDER	Sustainable Procurement Metrics					
	Green Star Pathway Proposal				*	
CONSTRUCTION	Green Star Progress Report				*	
COMPLETION	Sustainable Procurement Metrics					
	Green Star Submission & Certification				*	
CONSULTANT REQUIREMENTS						
Suitably qualified ESD professional appointed to the Design Team		#				#

^ = Draft report only

* = To be reported on at regular progress meetings

= Only if required to trial innovative approaches

Support and Training

The Sustainability team are available for support in the delivery of the Sustainable Infrastructure Framework during any stage of a project, from inception to completion. The outcomes of the framework will be reported back to the Wyndham project management community annually and regular ESD updates will be provided during delivery of projects to PWGs.

A sustainability outcomes and lessons report will be issued by the Sustainability Officer involved in project delivery. Where a Sustainability Officer is not actively involved in a project, Project Managers should include ESD outcomes in lessons learned processes and provide information on request.

Definitions and Key Terms

BPEM – Best Practice Environmental Guidelines (BPEM) sets pollutant limits and treatment standards for urban development

ESD – Environmentally Sustainable Design/Development

GBCA - *Green Building Council of Australia (GBCA) is an authority on sustainable buildings and communities in Australia.*

Green Star - Green Star is an internationally recognised rating system setting the standard for healthy, resilient, positive buildings and places

NABERS – The National Australian Built Environment Rating System (NABERS) provides simple, reliable, and comparable sustainability measurement across building sectors. NABERS provides a rating from one to six stars for buildings efficiency across: Energy, Water, Waste, Indoor environment

NCC – National Construction code

MUSIC - Model for Urban Stormwater Improvement Conceptualisation (MUSIC) is a computer model representing a project or catchment area, the drainage connections and a series of stormwater treatments. It simulates rainfall and runoff events and then treatment by sediment basins, wetlands and other water sensitive urban design measures to ensure environmental compliance with BPEM.

Appendix 1 Legislative Requirements

Summary of considerations;

- The climate risks are considered today, for future residents, ensuring that they are not more compromised because of our actions.
- That vulnerable communities are supported.
- That climate change consideration extends beyond just temperature or weather, to indirect impacts on service delivery, long term asset management and the cumulative impacts on economies, supply chains and health and wellbeing.

Act	Key Section	Details
Local Government 2020 (Vic)	s 9(2)(b)	Councils are required to give priority 'to achieving the best outcomes for the municipal community, including future generations'
Local Government 2020 (Vic)	s 9(2)(c)	Councils are required to promote 'the economic, social and environmental sustainability of the municipal district, including mitigation and planning for climate change risks'.
Climate Change 2017 (Vic)	Subsection 17(2)	In considering climate change, the relevant decision-maker must have regard to: a. the potential impacts of climate change relevant to the decision or action; and b. the potential contribution to the State's greenhouse gas emissions of the decision or action; and c. any guidelines issued by the Minister under section 18.
Climate Change 2017 (Vic)	Subsection 17(3)	In having regard to the potential impacts of climate change, relevant considerations are: a. potential biophysical impacts; and b. potential long and short term economic, environmental, health and other social impacts; and c. potential beneficial and detrimental impacts; and d. potential direct and indirect impacts; and e. potential cumulative impacts.
National Construction Code 2022 (NCC)	Section F, Section J	The National Construction Code mandates minimum requirements for energy efficiency (Section J), Light, Ventilation and Condensation Management (Section F) for most building classifications.

Appendix 2 Green Star Buildings Mandatory Credits

The below Green Star credits detail Council's mandatory pathway for a certified Green Star rating for all flagship Building developments.

Buildings Tool V1

- Credit 2 Responsible Construction ‑ Minimum Expectation
- Credit 3 Verification and Handover ‑ Credit Achievement
- Credit 16 Climate Change Resilience ‑ Minimum Expectation
- Credit 19 Heat Resilience ‑ Credit Achievement
- Credit 23 Energy Source ‑ Exceptional Performance
- Credit 24 Other Carbon Emissions ‑ Credit Achievement
- Credit 32 Indigenous Inclusion ‑ Reconciliation Action Plan

Buildings Tool V1.1

- Credit 2 Responsible Construction – Minimum Expectation
- Credit 3 Verification and Handover – Credit Achievement
- Credit 17 Climate Resilience – Minimum Expectation
- Credit 20 Heat Resilience – Credit Achievement
- Credit 22 Energy Source – Credit Achievement
- Credit 26 Future-ready Refrigeration Equipment – Credit Achievement
- Credit 35 First Nations Inclusion – Reconciliation Action Plan

Appendix 3 Building Fabric Assessment Standards

As it is widely noted in the industry, the most sustainable building is the one already constructed. Repurposing and refurbishing an existing building is the best way to reduce embodied carbon emissions. However, given the changing building code requirements around energy efficiency, a refurbishment of an existing building without upgrading the building fabric will have higher heating and cooling loads than a new building following current building codes. As such, efficient mechanical systems will still be working harder, and operational energy will not be reduced compared to a new building.

Building fabric upgrades will add capital costs to a refurbishment project but will save operational costs through the life of the refurbishment. The operational cost savings will depend greatly on the age of the building and the performance of its building fabric. For all refurbishment projects, a survey of the existing building fabric should be undertaken to understand its current condition and the performance of the building fabric. Based on the age of the building, the following assumptions can be made, where a survey is not possible or practical at the early stages of planning:

- Prior to 2006, there were no energy efficiency requirements for commercial or public buildings as part of the Building Code of Australia (BCA), now better known as the National Construction Code (NCC). For buildings constructed prior to 2006 and it would be expected that few commercial or public buildings would have adequate levels of insulation, and no insulation should be assumed, without a survey noting installed insulation.
- Between 2006 and 2024, there have been several changes, with the major changes coming with the BCA 2010 and NCC 2019. For buildings constructed between 2006 and 2024, the building fabric can be assumed to constructed based on the version of the Deemed-to-Satisfy provisions of the building code that was in effect at the time of construction.
- See next page for Recommended Building Fabric Treatments.

Extent of Refurbishment (Works triggers in accordance to VBA practice note BP 12)	**Building Fabric Treatment Actions**	
Internal fit-out only	Investigate Building fabric within works areas and conduct a cost benefit analysis, over asset lifetime, on the installation of insulation. Consult Sustainability Team for glazing and shading opportunities at concept design stage.	
Minor Alteration (<50% of building volume), where replacement of internal lining (plasterboard) is included in refurbishment scope	Building constructed prior to 2006	Install insulation in external walls and roof, aligning with the WCC minimum requirements. Thermal breaks should be installed on any structural steel, if practical to install. Consult Sustainability Team for glazing and shading opportunities at concept design stage. For minor refurbishments, with no internal lining replacements, consult Sustainability Team for glazing and shading opportunities at concept design stage.
	Building constructed after 2006	Undertake a survey of exiting building fabric to assess the current extent of insulation. Where there is no insulation install insulation to align with the WCC minimum requirements. Thermal breaks should be installed on any structural steel, if practical to install.
Minor Alteration (<50% of building volume), where replacement of external façade is included in Alteration scope	Install insulation in external walls and roof, aligning with the WCC minimum requirements. Thermal breaks should be installed on any structural steel, if practical to install. Install soffit insulation to exposed soffits to areas where external upgrades are being completed. Improve Glazing, to meet WCC requirements in ESD Buildings Schedule, in areas of the façade that are being replaced within project scope.	
Major Alteration (>50% volume)	Where building fabric upgrades to the whole building are required to be completed for NCC compliance. Glazing, wall, roof and floors upgraded to WCC requirements in ESD Buildings Schedule.	