

Promoting Environmentally Sustainable Construction Leadership and Innovation

– Working Together
Auckland Council and Fletcher Construction

Simon Gaines, Fletcher Construction

Adam Benli, Auckland Council

Overview

- ✓ Sustainable drivers for Auckland Council
- ✓ Integrated Whole Building Design Process
- ✓ Key project requirements
- ✓ Collaboration for success
- ✓ Contractor EMS
- ✓ Waste management
- ✓ Reuse
- ✓ Recycling
- ✓ Waste reporting and landfill diversion
- ✓ Fletcher Infrastructure- Water View Project

The Client

Auckland Council Sustainability Drivers

Economic Development Strategy

“...support opportunities to deliver catalytic projects that fast-track the adoption of new and emerging low-carbon technologies.”

Waste Management and Minimisation Plan

Promote waste minimisation and the use of recovered materials in its contracts.

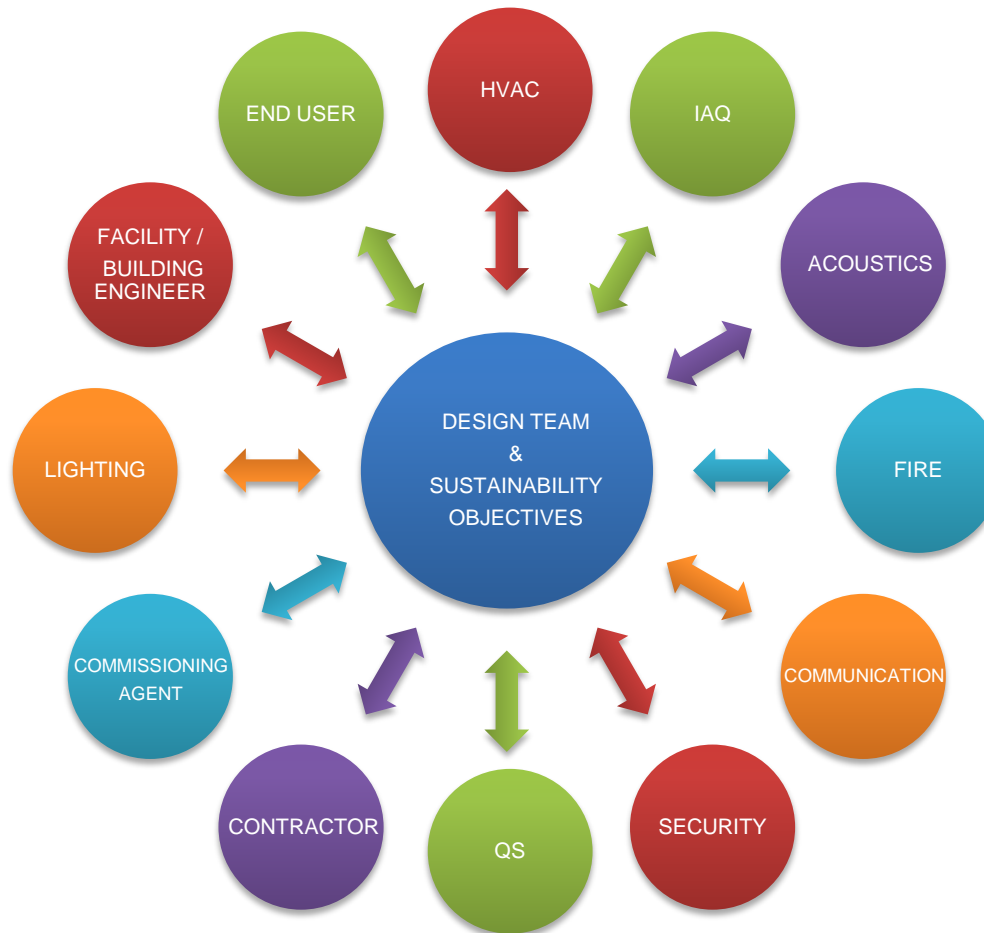
Draft Unitary Plan

Commercial or industrial buildings over 5,000m² would require a Green Star rating of 5.

The Auckland Plan

To reduce greenhouse gas emissions 40% by 2040 based on 1990 levels.

Integrated Whole Building Design Process (IWBDP)



Integrated Whole Building Design Process (IWBDP)

The benefits of using an IWBDP for a building can include:

- ✓ Reduced operation and maintenance costs
- ✓ Reduced energy consumption
- ✓ Reduced water use and waste water production
- ✓ Reduced waste production
- ✓ Improved comfort levels for occupants
- ✓ Improved productivity of occupants
- ✓ A healthier environment for occupants

Council requirements

- ✓ Good thermal envelope
- ✓ Energy efficient LED light fittings
 - Occupancy control
 - Reprogrammable lighting zones
 - Daylight dimming control
- ✓ Desktop power points (easier to switch off)
- ✓ Efficient appliances
- ✓ Real time energy monitoring
 - Better information for our staff
 - Energy monitored on every floor

Council requirements

- ✓ NABERSNZ assessment 'ready'
- ✓ Water efficient fittings and fixtures
- ✓ Increased fresh air to occupants
- ✓ Use of sustainability sourced timber
- ✓ Support for product stewardship
- ✓ Low VOC and low formaldehyde products
- ✓ Indoor planting
- ✓ Recycled content in fit-out items
 - Energy monitored on every floor

Collaboration

- ✓ Council and Contractor prestart collaboration, essential common goals
- ✓ As a team analysing and quantifying the deconstruction and waste management processes
- ✓ Project set high aspirations, e.g. waste diversion from landfill greater than the maximum requirements of Green Star
- ✓ Very particular about materials e.g. low formaldehyde, PVC etc
- ✓ Pushing the boundaries of deconstruction and reuse streams
- ✓ Raising the bar to the standard of environmental management
- ✓ Recycled and rejuvenated property optimised to achieve long term whole of life value
- ✓ Contractor support and buy-in from the outset is essential to success

The Contractor

Environmental Management ISO14001:2004

- ✓ Demonstrate that organisations are thinking about their environmental impact and putting in place robust systems.
- ✓ Systems that will not only benefit the environment but will also reduce costs and improve efficiency within the organisation.

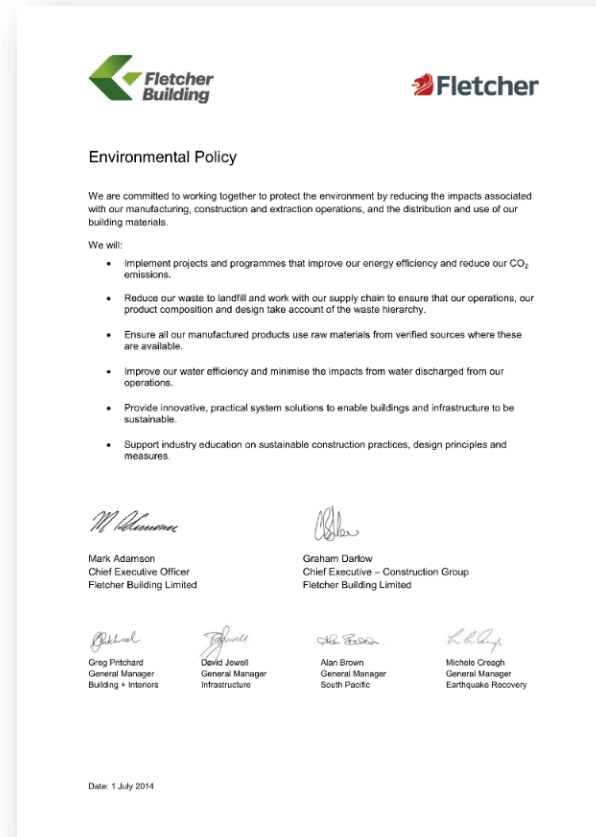


Additional benefits of a robust EMS

- ✓ Cost savings in waste, recycling and consumption
- ✓ Advantage over competitors when tendering for business
- ✓ Management of environmental risks
- ✓ Compliance with environmental regulations
- ✓ Demonstrates the commitment to improving the environment
- ✓ Shows you are a responsible and future focused organisation
- ✓ Can reduce insurance cover costs
- ✓ Can increase employee engagement in the knowledge that they are working in an environmentally friendly organisation

Commitment- Protecting the Environment

- ☑ Committed to working together to protect the environment
- ☑ Reducing the impacts associated with our construction and extraction operations
- ☑ Reducing the impacts associated with the distribution and use of our building materials



Key deliverables at 135 Albert Street

Pre-construction Service

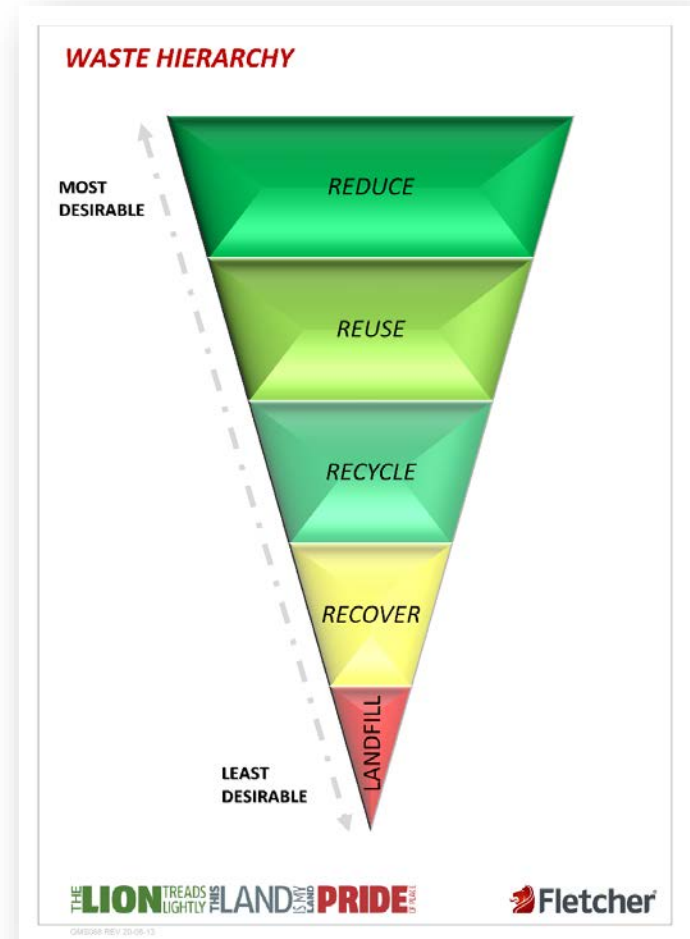


- ✓ **Deliver** a 5 Star Green Star NZ Interior 2009
- ✓ Landfill diversion **greater** than the **maximum requirements** of Green Star
- ✓ Adopt an **integrated** whole building design process
- ✓ Delivering an energy efficient and sustainable building
- ✓ Understand the aim of achieving a **NABERS^{NZ}** rating for the building and the preparation required

Waste and Deconstruction Management

Sending a message – Waste Hierarchy

- ✓ Working with Auckland Council we set out to redefine the term **waste** to the project team
- ✓ We understood the need to provide a **clear and fundamental** message
- ✓ Throughout pre-start meetings, toolbox talks and review meetings we pressed the basic principle
- ✓ We always communicated successful results as we progressed



Waste / Deconstruction Management

We developed detailed systems as part of our Environmental Management Plan.

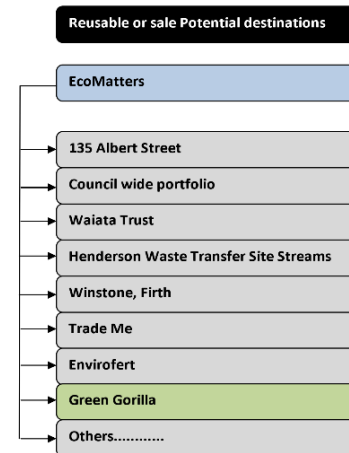
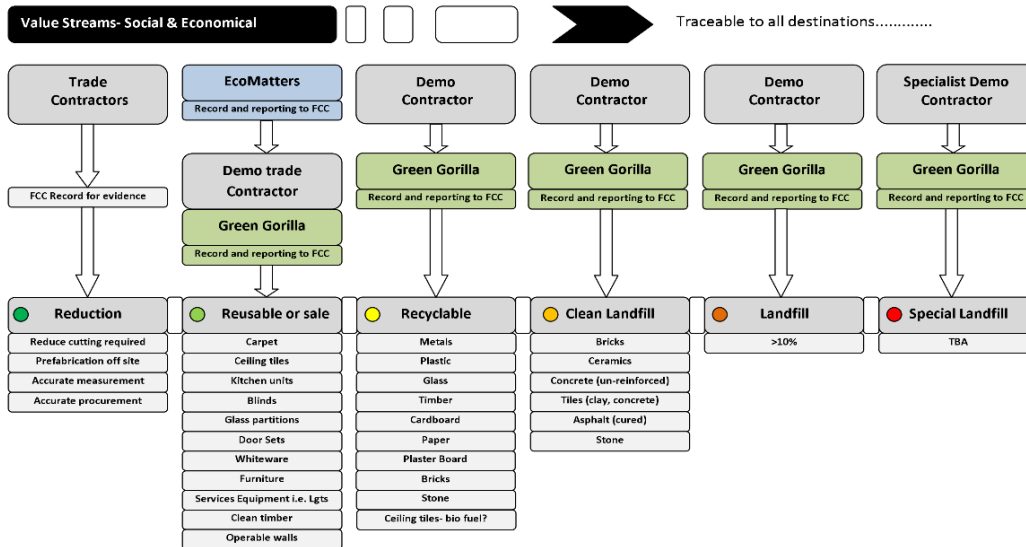
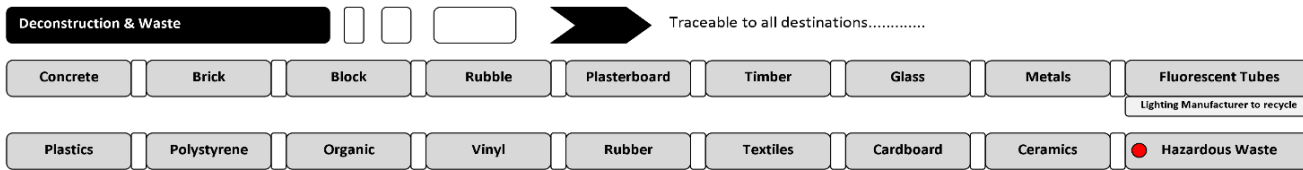
When considering deconstruction we asked ourselves the basic but important questions:

- ✓ What can be reused?
- ✓ What is deemed to be waste, a landfill item, and can we change the outcome?
- ✓ Who is going to deconstruct, sort and validate?
- ✓ Where do the deconstruction materials go?
- ✓ Who is going to appraise and identify the waste streams?
- ✓ How would we manage and record not only the quantitative, but the qualitative?
- ✓ How do we convey this information?
- ✓ **Quantify waste**, helps with planning, logistics, risk management and successful outcomes.

Waste / Deconstruction Streams

Auckland Council Workplace Strategy
135 Albert Street Refurbishment & Fit out

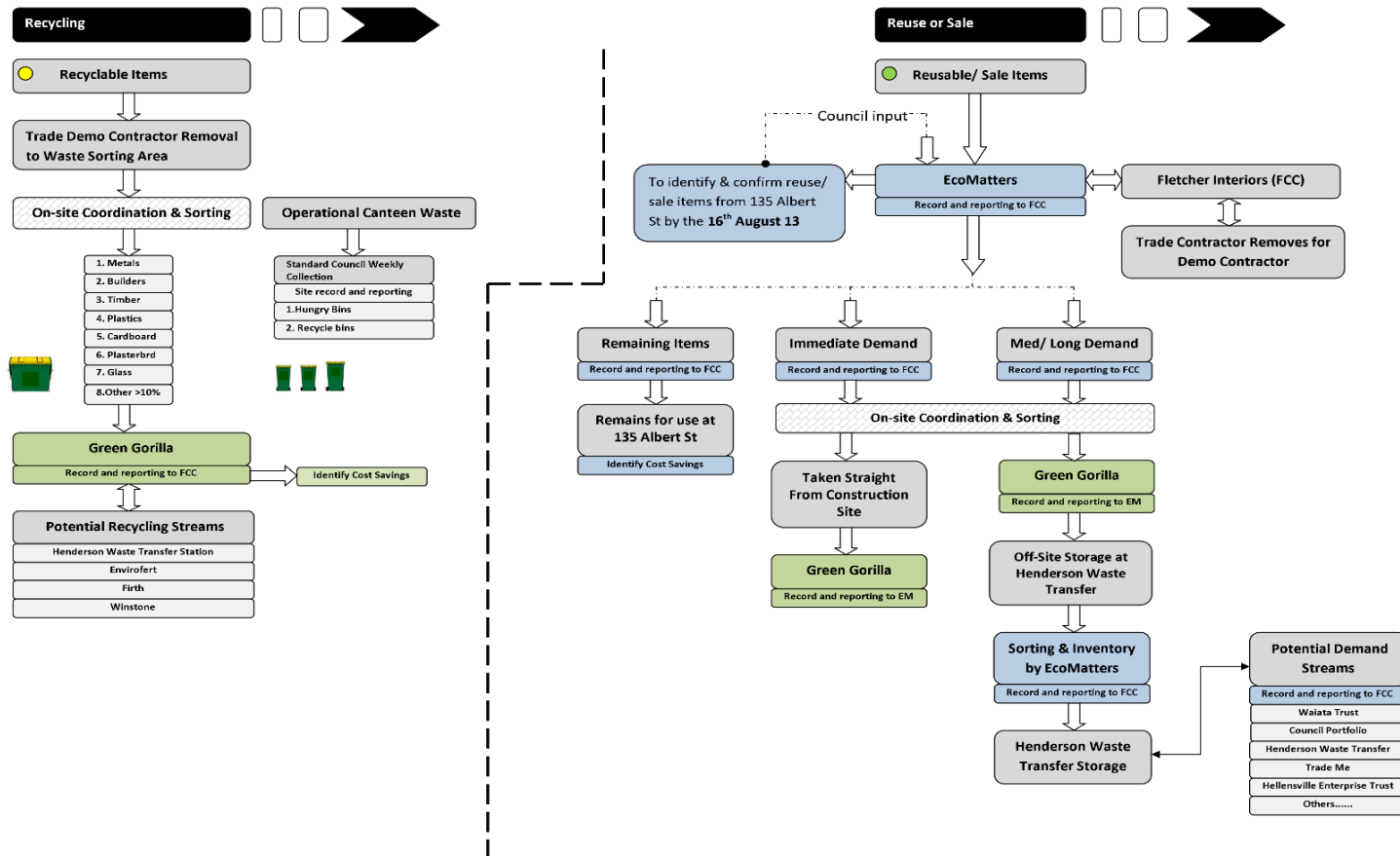
DECONSTRUCTION & WASTE MAPPING- REV 5



Waste / Deconstruction Streams

Auckland Council Workplace Strategy
135 Albert Street Refurbishment & Fit out

DECONSTRUCTION & WASTE MAPPING- REV 5



Supporting Sub Contractors- Green Star



Auckland Council Workplace Strategy
135 Albert Street Refurbishment & Fit-out

Guide Note 1

This process guide is relevant to the following credits of Green Star:

1. EQ-3 Indoor Air Quality
 - Applied coatings
 - Adhesives and sealants
 - Floor coverings
 - Fibre items
 - Engineered wood products and ceiling tiles
2. MX1-2 Applied Coatings
3. MX1-6 Timber
4. MX1-8 Wall Partitions and Joinery
5. IMB-2 Insulant ODP

Guide Note 4

Do not forget to check that the material you are about to procure, is Green Star compliant. If in doubt always ask the Contractor's QSAP for additional guidance, email: stphons@fcs.co.nz

Order Confirmation Form for Green Star Compliant Materials held on the FCC Green Star Drop Box <https://www.fcc.govt.nz/736061e9a6b0021m4533a>

Procurement of Green Star compliant materials

You should use a supplier who can provide environmentally recognised materials. Material certification will need to be obtained to provide Green Star compliant evidence

Ensure before ordering your materials that they comply with your contract specification and drawings, and that materials also meet the specific Green Star requirements

Once you are satisfied with your material supplier and material order, then an order can be placed

Submit an 'Order Confirmation Form for Green Star Compliant Materials' to the Contractor confirming that it complies with Green Star requirements, along with the required certification as proof

On receipt of your materials you must provide the Contractor with your dispatch note which must identify a unique reference number (URN) relating to the compliant material

Once the process is finalised and compliant materials are certain, then install application proceeds

Guide Note 2

Third party certified by Environmental Choice (ECNZ) or a certification body that has successfully passed through the Green Building Council of Australia (GBCA) assessment framework for product certification schemes. Click link for further details: http://www.ecnz.co.nz/index.php?option=com_content&view=article&id=33&Itemid=208

Guide Note 3

If you intend to use an alternative material to what has been specified then the Contractor must be informed and your alternative proposal must be assessed and approved before procurement. You must ensure that any materials you procure, that are not specified, are also compliant to Green Star requirements, this includes but not limited to consumable items i.e. adhesives, sealants, fibres etc. Refer to 'Green Star Materials List' held on the FCC Green Star Drop Box: <https://www.fcc.govt.nz/736061e9a6b0021m4533a>

Complete/ update your 'Green Star Quantities Spreadsheet' in readiness submission to the Contractor. Spreadsheet templates held on the FCC Green Star Drop Box <https://www.fcc.govt.nz/736061e9a6b0021m4533a>

Guide Note 5

The Contractor will need to see your dispatch note to clarify that Green Star compliant products are being brought to site before they are installed and/or applied

Green Star Guidance

Guide Note 1

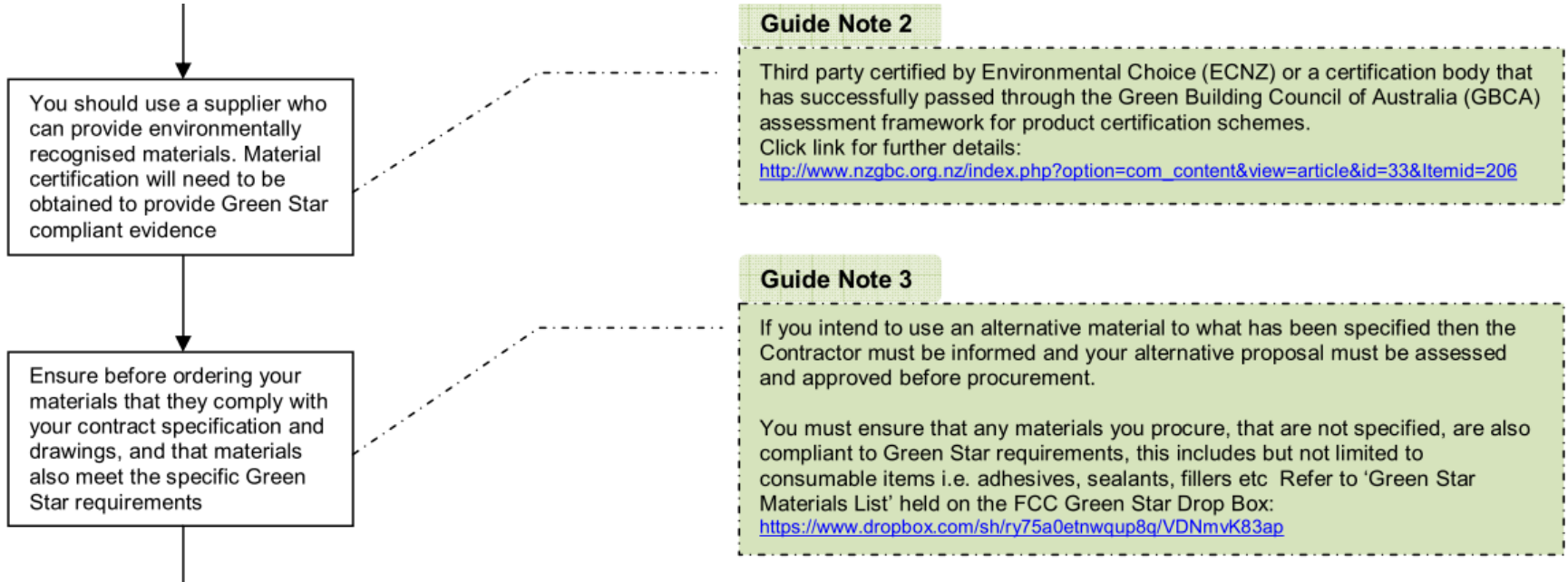
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1. IEQ-3 Indoor Air Quality
 - Applied coatings
 - Adhesives and sealants
 - Floor coverings
 - Fitout items
 - Engineered wood products and ceiling tiles
2. MAT-3 Applied Coatings
3. MAT-6 Timber
4. MAT-B Wall Partitions and Joinery
5. EMI-3 Insulant ODP

Procurement of
Green Star
compliant materials

You should use a supplier who can provide environmentally recognised materials. Material certification will need to be obtained to provide Green Star compliant evidence

Green Star Guidance



Reuse

Reuse items for 135 - Existing luminaires

- ✓ 2443 light fittings = 3.9 tonne of recyclable material
- ✓ Made up of = diffusers, control gear, wiring, plastic and tubes
- ✓ 4 ton of reuse i.e. steel casings

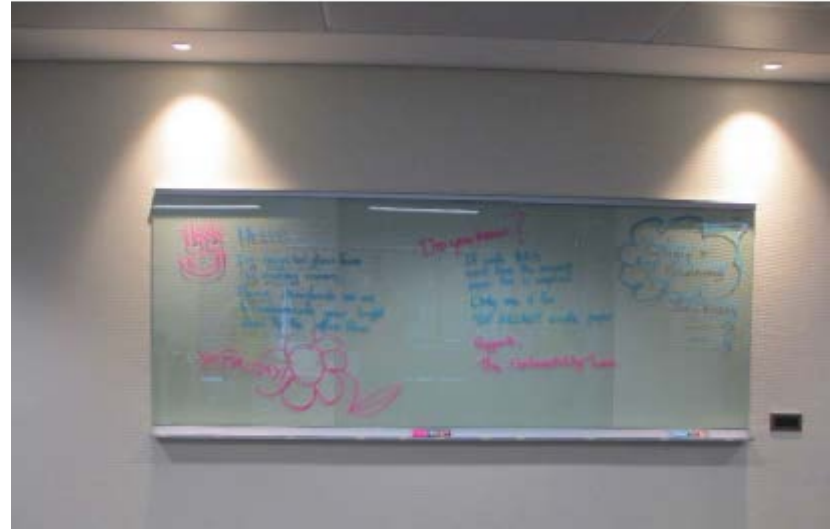


Materials for Reuse 135-Aluminium Trunking

- ✓ Approximately **8.6 ton** of existing aluminium trunking material was modified and reused as part of the fit-out for this project.



Reuse items - Glass Partitions



- ✓ As part of our deconstruction we removed the existing glass partitions.
- ✓ Safely stored on B4 ready for reuse within 135 Albert Street.
- ✓ The finished reuse product as glass mark-up panels as shown above.

Reuse items - Insulation



Removal of acoustic and thermal insulation

Reuse items- Insulation



As a means of working leaner, we sorted, bagged and weighed the insulation whereby creating a **more attractive** prospect for 'reuse'.

Reuse items - Lundia Shelving



- ✓ As part of our deconstruction we removed existing Lundia Shelving.
- ✓ Safely dismantled and stored on B4 ready for reuse within 135 Albert Street.
- ✓ The finished reuse product reassembled, cleaned and installed as shown above.
- ✓ **8.631 ton** of Lundia Shelving

Reuse items - Roller Blinds



- ✓ As part of our deconstruction we removed the existing roller blinds.
- ✓ The finished reuse product reassembled, cleaned and installed as shown above.
- ✓ **1.88 ton** of reuse blinds

Reuse items to the Community

- ☑ In collaboration with Auckland Council and Ecomatters, 29 ton of deconstructed items such as thermal insulation, book shelves, cupboards, furniture, hot water cylinders were transported to Henderson Waste Transfer
- ☑ Inventory was created and items provided at very small cost to the community
- ☑ Example: Kaitaia community group, providing a large amount of furniture for their offices resulting in large cost savings

Recycling

Recycled Plaster board and hardfill

- ✓ Plaster board was transported to Envirofert where it was processed
- ✓ Recycled plaster board was used as fertilizer
- ✓ Any hardfill was removed and processed into fill or aggregate for roading or civil engineering works via Green Vision at Penrose



Recycled materials for 135 – Glass

- ✓ Glass was transported to 5R Solutions where it was processed and either sold locally or off shore
- ✓ 5R supply the Tasman Insulation Company locally with all glass fibre product required for the production of pink fibreglass Batts
- ✓ The glass is processed into different grades that range from medium to fine powder



Recycling of Ceiling Tiles



- ✓ As part of our deconstruction we removed all of the existing ceiling tiles
- ✓ The ceiling tiles were then transported to Envirofert for recycling
- ✓ Ceiling tiles at **109.3 ton**

Recycling of Ceiling Tiles

Original plant 60:40 ratio



- ✓ Our initial recyclable recovery rate was 60:40, e.g. **60% recycling 40% landfill**.
- ✓ We worked very closely with Green Gorilla and Envirofert to improve the outcome
- ✓ Pursuing these streams paid off and Envirofert purchased new plant capable of a higher recyclable yield

Recycling of Ceiling Tiles

New plant 80:20 ratio



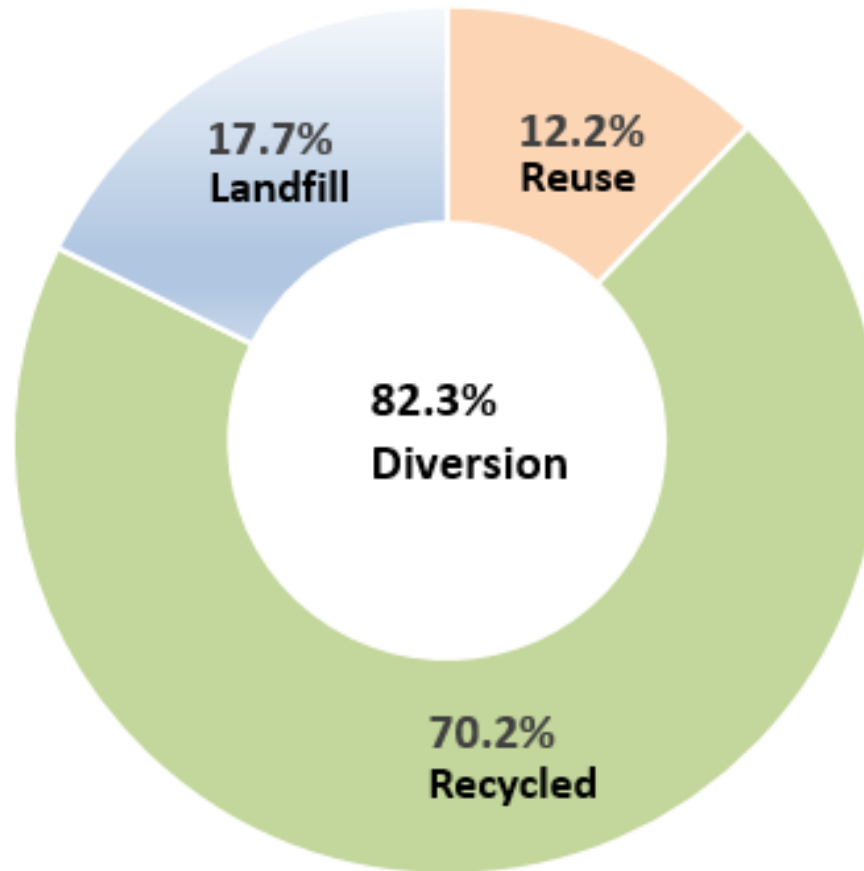
With new plant the recyclable recovery rate improved to 80:20 e.g. **80% recycling** 20% landfill.

Landfill diversion

Waste Split in Tonnes



Waste Stream Percentage Spilt



Waterview

Kylie Eltham, Environmental Manager
Fletcher Infrastructure

Dennis the giant gantry



Ramps at Great North Road Interchange



Thank you!