The Designers Institute.

*THE BUILDING BLOCKS OF A*

# Sustainable Design Project

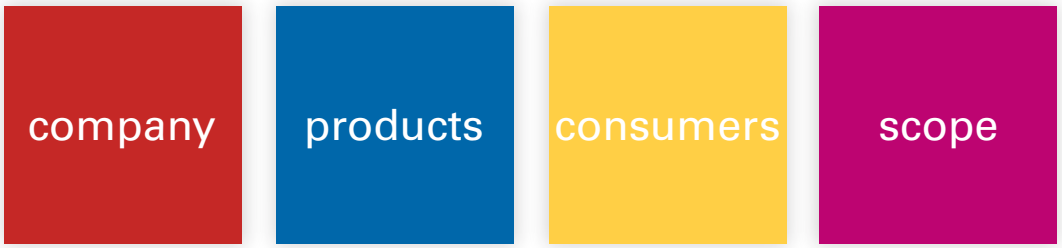

A guide for designers and their clients to help the uptake of sustainable design in commercial practice.



locus research
Product Development

# Introduction

The Building Blocks of Sustainable Design are designed to promote discussion, provide guidance, and encourage investigation; helping you to create uptake for your company or clients.




Company (or client company)

Product or Service (or product service system)

Customer and/or user (there may be more than one over the life)

Scope (of the project being undertaken)

## The Building Blocks of Sustainable Design

The building blocks create a 'Road Map' for both designers and clients to help with the uptake of sustainable design.

Rather than prescribe a process, the series of building blocks enable both designers and client companies to apply different aspects of the approach to their own company's activities.

### How This Guide Works

This guide is provided in a logical sequence allowing you to work through each key stage in order. It follows the basic principal that it is important to develop wider organisational support for sustainable design before undertaking a sustainable design project.

It may be useful for those just starting to develop a toward a sustainable design project to follow the building blocks sequence. However, if you have experience the guide can be used more selectively to improve your organisational support of sustainable design.

### What is Sustainable Design?

Sustainable design enlarges the scope of considerations to include environmental and social factors. These factors are considered in addition to, not a replacement of, the other factors such as user experience, cost, and performance.

Considering environmental and social factors means taking into account the impacts of a product or service on people and our environment over the whole life cycle. A product life cycle has been generically defined as:

- Raw Material Acquisition
- Processing and Manufacturing
- Distribution and Transportation
- Use, Reuse, and Maintenance
- Recycle
- Waste Management

### The Foundations

The four key elements, or foundation building blocks of a sustainable design project are common for both designers and client companies. They are listed in sequence as follows:

- Company (or client company)
- Product or Service (or product service system)
- Customer and/or User (there may be more than one over the life)
- Scope (of the project being undertaken)

The logic is simple; the further you move away from your company or your clients company into the life cycle the more difficult it becomes to get information and the less control you have over the outcome.

Each major foundation block has a number of smaller blocks which provide either a question or an idea to assist definition and promote effective project establishment, development and implementation.

This system is a platform for discussion and it does not prohibit other elements being added or existing elements subtracted from your discussion.

# structure

## The guide is simple to use. It sequentially steps you through the four foundation blocks. Each section starts with a summary of the foundation block, followed by smaller building blocks which provide prompts about things to consider.

Smaller building blocks which provide prompts about things to consider, or alternative approaches. The guide has been designed in a way that enables it to be written on or used for brainstorming. Don't be shy!

Opposite each section is an additional worksheet which provides you with an exercise and space to expand on the ideas you have formed.

### The Starting Point

The first step is understanding your company. This will provide a better platform for sustainable design. Organisational support is an important enabler of sustainable design. Building from the centre (your company) is an effective way to build confidence and understanding for the designer and the company or client.

The second step is to look at the life cycle of your product. This gives you an insight into the problems and opportunities that can inform the design process.

The third step is looking at your customer. How they interact, use and dispose of your product has an influence on its environmental performance.

The previous three steps inform the scope of your project. So the fourth is around defining and refining the exact scope of your design project. Scoping your first project so it can succeed is a way to manage risk and prove the approach is beneficial to the company.

Following the four foundation building blocks will provide a clearer picture and can inform the brief for a designer or client company. The resulting brief will have considered all important factors within your company or client company to provide a managed uptake of sustainable design.

# company

| | | |
|---|---|---|
| **Policy:** Have you got an environmental policy or a stated position on sustainability that is publicly available to internal and external stakeholders? | **Implementation & Integration** How have you embedded environmental considerations in your companies processes? | **Actions:** How is sustainability incorporated into your company's actions, does the action match the rhetoric? |
| **Culture** How does sustainability relate to the organisations values? are responsibilities defined? | **Communication** How do you communicate sustainability to your consumers. | **Manufacture** Do you have processes or systems for managing site specific environmental issues? |
| **Supply Chain:** Are you aware of your suppliers environmental performance? Do you track the source of your raw materials. | **Sustainable Innovation** How do environmental and social trends affect your business context? do you maximise the opportunity to generate value. | **Design** How does your new product development process consider social & environmental factors? |

ARE WE CONSISTENT FROM POLICY THROUGH TO OUR ACTIONS?

POLICY

COMMUNICATION

ACTIONS

## Your company or your client is the best place to start when thinking about a sustainable design project.

Understanding how your company relates to sustainability provides an important insight about how you can achieve change.If the company is already engaged in environmental or sustainability based activities, undertaking sustainable design is alot easier.

A basic operational commitment to sustainability provides a robust platform for sustainable design and innovation to flourish. Businesses that have made a commitment to sustainability will usually have:

DOES OUR TEAM HAVE SUPPORT FROM THE TOP?

1. **Senior management committed** to applying sustainability principles.
2. **A sustainability policy** that is publicly available
3. **A long-term plan** and invests strategically in its future and innovation.
4. **An outline of key areas** of the company life-cycle that might need change.
5. **Systems for ensuring resources are used efficiently**, selected for being the most sustainable option available and reused or recycled.
6. **Sustainability incorporated into design** of products or services, their manufacture or delivery
7. **Sustainability as integrated into the company's values** and culture and staff behaviors reinforcing sustainability are supported.
8. **Accreditation verifying business practices**, operations and products.
9. **Communications** and marketing which involves sustainability demonstrating transparency and accountability.

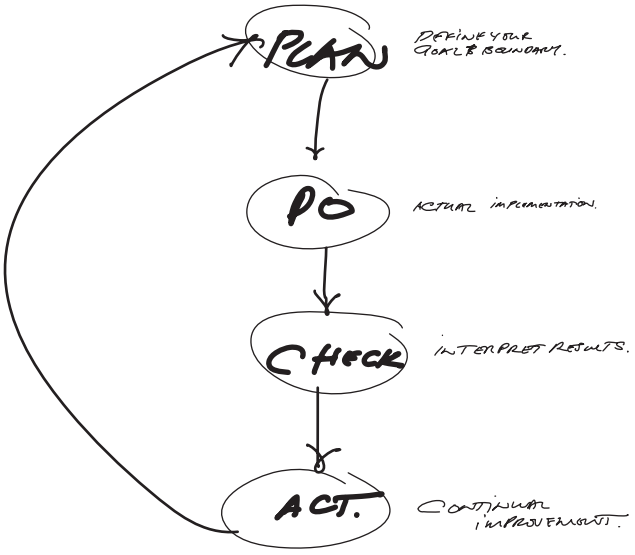
Many companies that excel at environmental sustainability have highly successful cross-functional teams.

WE NEED TO GET OUR TEAMS TO COLLABORATE.

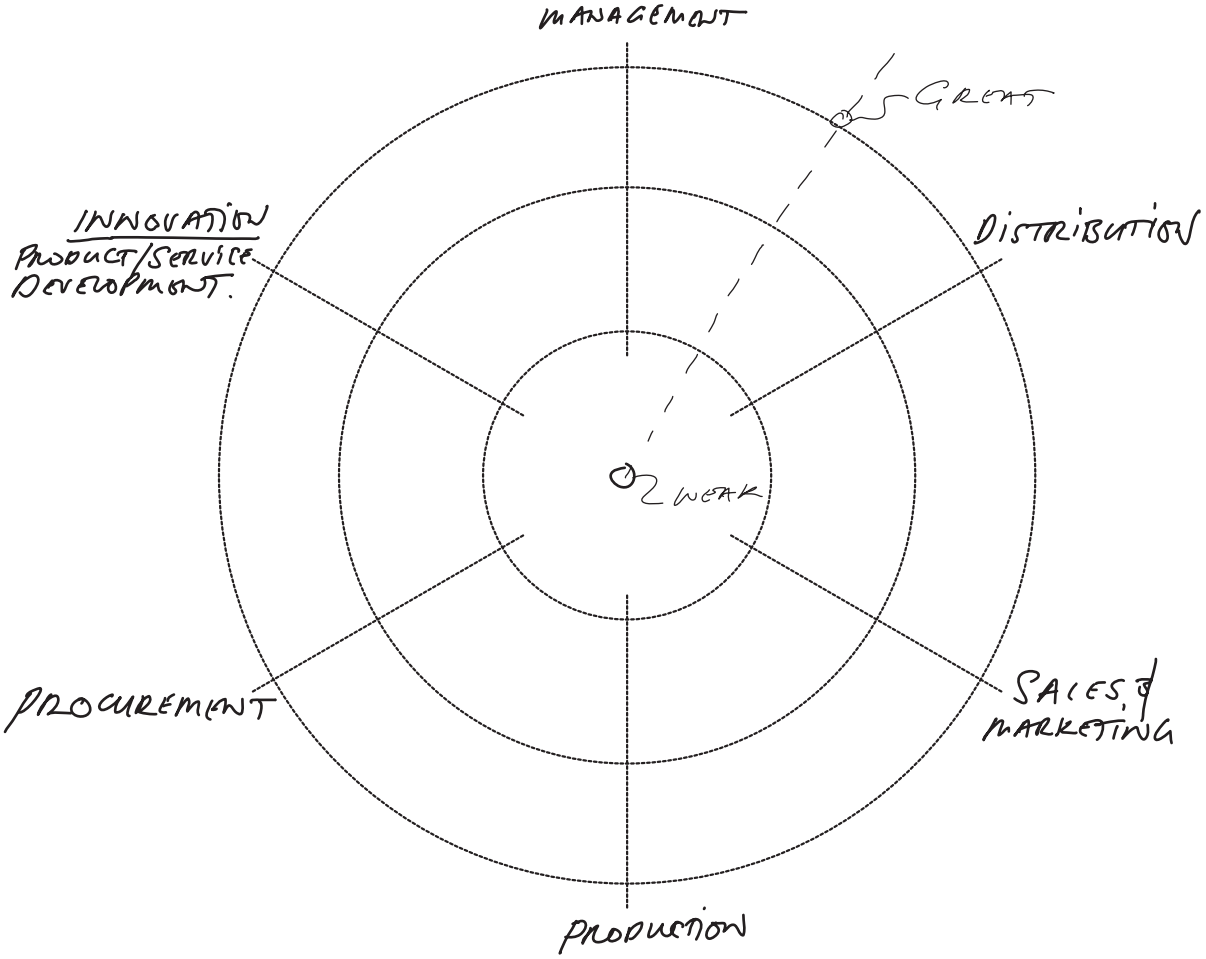
Sustainable design and innovation is a cross-functional activity, by having top level buy-in it encourages staff to collaborate to understand and create new ideas.

### Key Points:

- An operational commitment to sustainability provides an effective platform for sustainable design and innovation
- Sustainable design and innovation is cross-functional, your team will need to collaborate to create change



# worksheet




SCORE YOUR COMPANY.
IN THE KEY AREAS.

TAKE AWAYS.

- OPERATIONAL COMMITMENT PROVIDES A GOOD PLATFORM.
- SUSTAINABLE DESIGN IS CROSS-FUNCTIONAL

# product

**Core Function**
Describe the service your product delivers and think about all the things that contribute to this over its life.

**Product Life Cycle**
Document the life cycle of your product/service include inputs, outputs and life cycle stages.

**Problems & Opportunities**
Document the problems and opportunities related to your product life cycle.

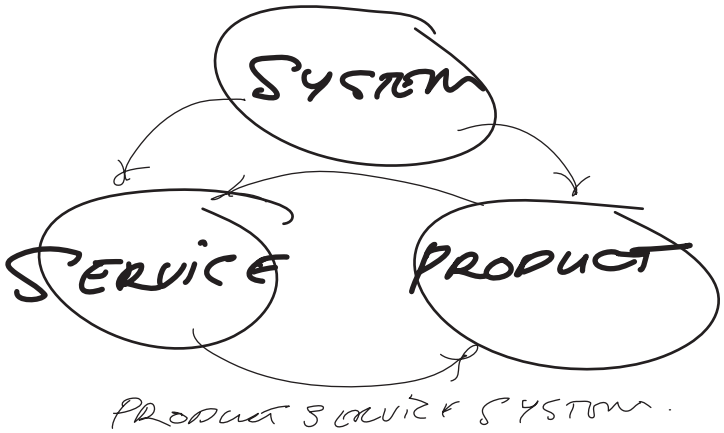
**Key Environmental Product Indicators (KEPI)** Identify the most important product environmental issues or indicators, and define the targets measures.

**Supply Chain**
Document the supply chain of your product from manufacture through to end consumer.

**Compliance**
What standards existing in leading markets can you use to assist improving the environmental impact of your product.

**Benchmarking**
Research existing product/service life cycle and analyse the environmental impact to create a benchmark.

**Competitors**
Assess your products environmental performance against leading product's and brands.




## After understanding how sustainability relates to the company, the next step is building a more specific understanding of the product/service life cycle. This will enable a better business case to be made for a sustainable design project.

Products and Services effectively operate together in a system over the life cycle. A useful approach to understanding this is to define the 'service' being delivered by your product. This enables you to stand back from what you are designing and create a more effective and open brief. Think about a milk bottle, the service being provide is 'convenient fresh milk' not delivering you a plastic bottle. Understanding the service provides a more in depth understanding about what you are delivering your consumers.

Illustrating your product life cycle is an easy way for your team to gain a better understanding about your product or service sustainability. Most companies understand a lot more than they think about their product life cycle, get your team together and draw this information out. Isolate the areas of greatest impact or 'Key Environmental Impact Indicators' (KEPI). This can empower your design, development and production teams with simple priorities.

Benchmarking leading products in your domain can help to provide insight into important areas for improvement, nothing wrong with leg up to start the process, and sometimes having a competitive example is just what is needed to motivate change.

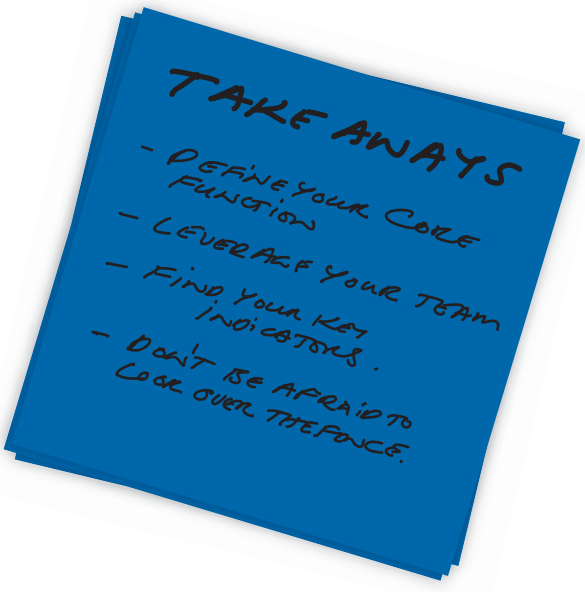
Compliance may seem a boring area, but meeting leading developed country standards may provide a good case for improvement.

### Key Points:

- Define the service your product delivers, this creates a rich design perspective
- Leverage your team's implicit knowledge of your product life cycle
- Find your key indicators and focus on them
- Don't be afraid to look over the fence and learn

# worksheet

| | (MATERIALS & ENERGY) | | | | | | |
|---|---|---|---|---|---|---|---|
| INPUTS | | | | | | | |
| LIFECYCLE STAGES. | i.e EXTRACTION | | | | | | |
| PROCESSES. | i.e. MINING/OIL MANUFACT. | | | | | | |
| OUTPUTS. | | | | | | | |
| | (EMMISSIONS TO AIR, SOIL & WATER) | | | | | | |



# customer

**Communication**
How do you communicate your companies sustainability issues/solutions to your consumers?

**Market Position**
What environmental issues are important to your market and consumers?

**Interaction**
Define how the customers and users interact with your product life cycle & define their roles.

**Key customer groups**
From your interactions define who the most important customers are.

**Forecast**
Look at the medium term trends (2-3) in your market and changes in your consumers.

**Supply chain**
Where do your products come from? How can you communicate this transparently to your consumers.

**Do your customers understand**
Are you communicting the impact of your products in a way your consumers understand.


## You've developed a great understanding of your company and the life cycle of the products and services. There is one variable easily forgotten in this: the customer and user.

Consumer behaviour will have a profound impact on the environmental sustainability of your product. This ranges from: how you communicate, how consumers interact with a product over its life cycle, and what they do with it once its useful life is over.

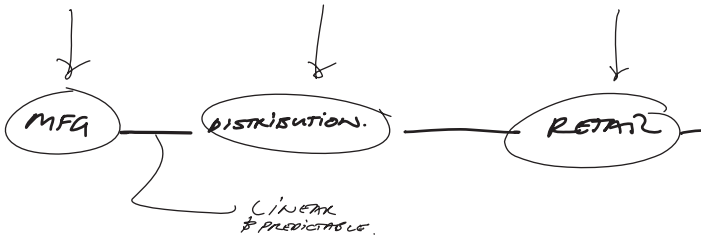
Develop a clear picture about how consumers are using and consuming the products and services you or your clients make. Consider adding questions around the environment to your customer satisfaction surveys or establishing a consumer user group to discuss the environment. The result of understanding the environmental attitudes of your customer is enables key customer driven insights to be generated which could provide support direction and focus for a sustainable design project.

Information on overseas markets is collected by New Zealand Trade and Enterprise; check this information regularly for changes in the attitudes or business settings of your markets. Understanding the market you are trading in, and the trends for the future, can give you ideas for your sustainable design project.

It is also important to think about how and what you communicate to the consumer about your products environmental credentials and those of your companies. Sustainability is a journey for a company and often it is good to explain this to your customers, telling them what you are doing now, but also where you are planning to get to in the future. You may also want to consider obtaining external verification of your claims to provide customer certainty. Some markets may require verification, or contain companies who already verify and therefore you will need to in order to compete.

### Key Points:

- Consumers are a critical component of life cycle thinking
- Understand how consumers think, purchase, use, consume and dispose of your products and services over the life cycle, this information can drive the innovation process
- Your consumers are part of the recipe for change
- Saying you do everything right, doesn't sound right. Tell customers about your journey.



company | products | consumers | scope

# worksheet


| # | LIFE CYCLE STAGES. | USER | INTERACTION |
|---|---|---|---|
| | | | |
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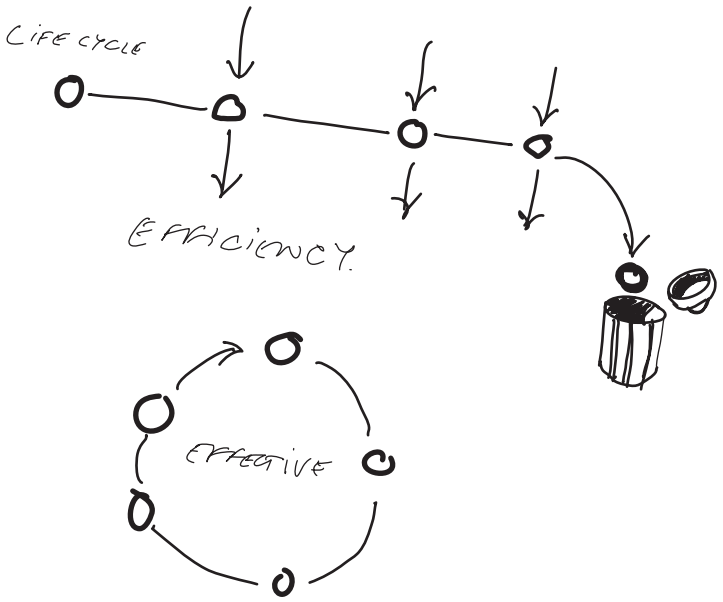
NOTES: INCLUDE BOTH USERS & CONSUMERS. SUCH AS RETAIL & DISTRIBUTION.

TAKE AWAYS

- CONSUMERS ARE CRITICAL.
- UNDERSTAND HOW THEY INTERACT OVER THE LIFE CYCLE
- BE HONEST & TRANSPARENT WITH YOUR COMMUNICATION.

# scope


## Creating a life cycle perspective helps to build a profile of what a sustainable design project should focus on. It also helps to scope of the sustainable design project.

There are five different approaches outlined in the building blocks to help you determine the scope of your sustainable design project. The approaches move from a focus on 'eco-efficiency' to 'eco-effectiveness'. Projects with efficiency improvement targets are smaller in scope and easier to achieve, whereas a target of effectiveness is harder to achieve with greater scope.

1. **Existing product benchmarking** can enable better marketing and communication. It also provides more detailed information that can be used in design( for instance undertaking a life cycle assessment of one of your key products).

2. **Compliance** can provide useful design targets for future product developments. As often standards are the result of a great deal of research (for example complying with new emissions standards).

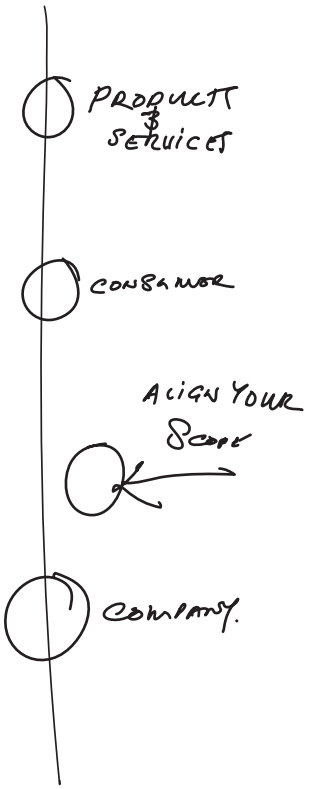
3. **Product improvements** can deliver efficiency improvements without radically affecting product function or performance (for example creating a more fuel efficient vehicle).

4. **New product development** provides an opportunity to develop innovative new products and services that effectively operate within existing systems (think hybrid cars).

5. **Product system innovation** offers the potential to readdress how the system of products and services is design and delivered. This has the greatest potential to deliver eco-effectiveness (this could include new modes of transport or communication which replace existing paradigms).

Key Points:

- Start small and get runs on the board
- A clear understanding of your life cycle can reduce risk and provide a platform for system level innovation



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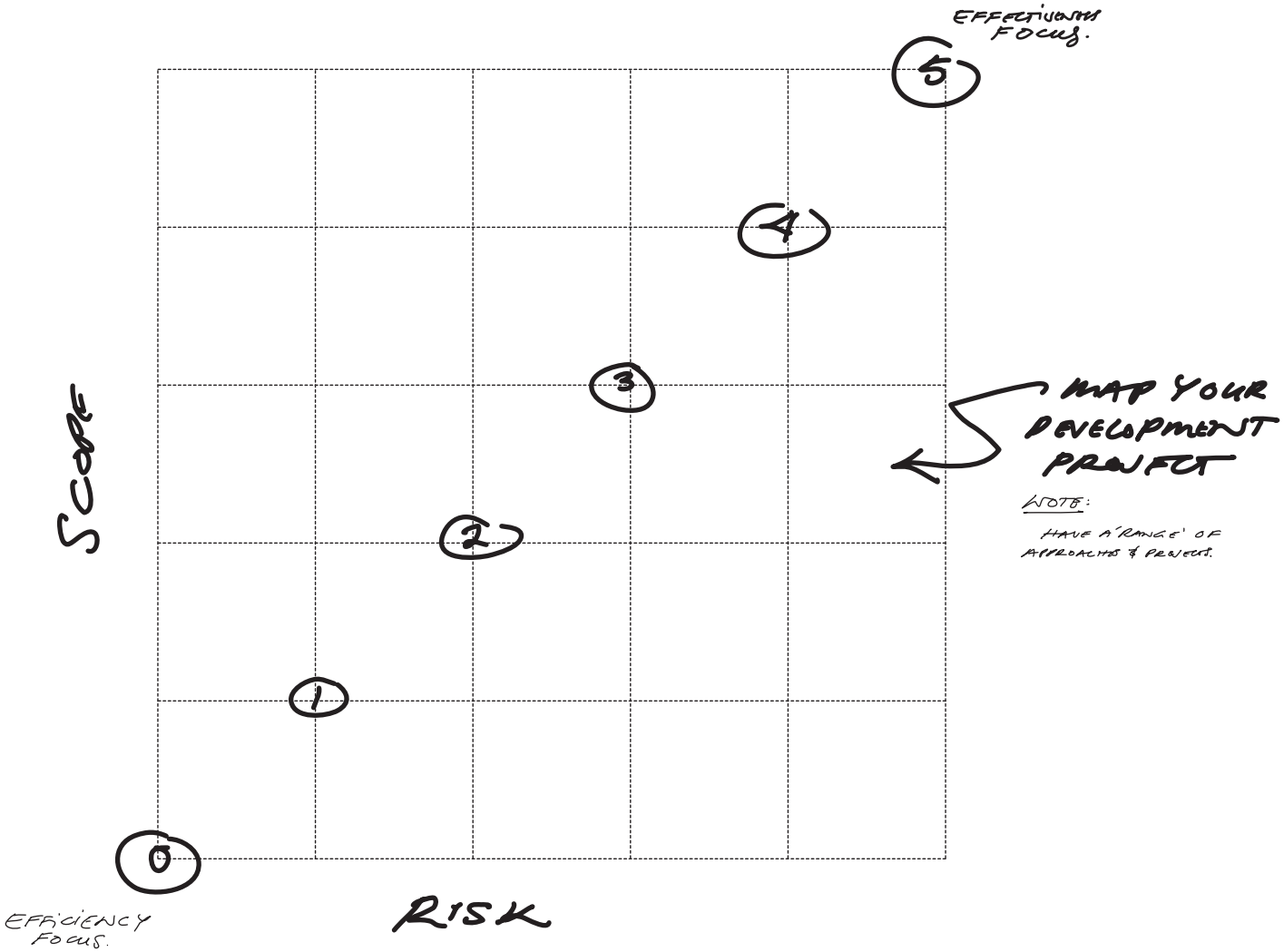
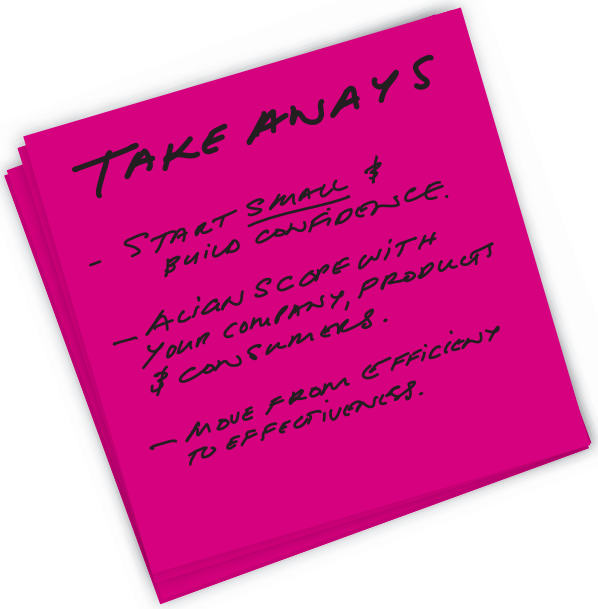

EFFECTIVENESS FOCUS.
5
4
3
2
1
0
SCOPE
RISK
EFFICIENCY FOCUS.
MAP YOUR DEVELOPMENT PROJECT
NOTE:
HAVE A 'RANGE' OF APPROACHES & PROJECTS.


TAKE ANAYS
- START SMALL & BUILD CONFIDENCE.
- ALIGN SCOPE WITH YOUR COMPANY, PRODUCT & CONSUMERS.
- MOVE FROM EFFICIENCY TO EFFECTIVENESS.

# further information

The Designers Institute.

Rather than provide you an exhaustive list of links we have provided key search terms which are important to each topic.

Links and information are constantly evolving whereas some of the key terms are durable points of reference that can connect with these. These terms do not cover highly specific areas that have developed over the last 5-10 years (such as green house gas accounting). The focus is related closely to the subject matter of this document; sustainable design.

## Company

Creating an operational platform requires management tools and approaches to enable this to occur. Life cycle management broadly encapsulates the application of life cycle thinking to an organisation so is a great place to start.

Key Terms:

- Life Cycle Management (LCM)
- Environmental Management Systems (EMS)
- Eco-Management and Auditing Scheme (EMAS)
- Product Oriented Environmental Management Systems (POEMS)
- Corporate Social Responsibility (CSR)
- Global Reporting Initiative

## Product/Service

Describing the service your product delivers is an important basic step that enables you to widen your perspective of your product and service to the whole life cycle. Life cycle thinking is defined as a production and consumption strategy that aims at taking into account all of the impacts (environmental, economic and social) that a product or service will have throughout its life cycle.

Key Terms:

- Life Cycle Thinking
- Life Cycle Assessment (LCA)
- Functional Unit
- Key Environmental Performance Indicators (KEPI)
- Product Service System (PSS)
- Service Design (1990+)
- Eco-Design (1990-2000)
- Sustainable Design (2000+)

## Customers

Consumers are a central consideration when looking at sustainability. Their interactions over the life cycle with your products and services impact on the sustainability of your company. Social innovation involves incorporating the consumer and user into the process of innovation.

Key Terms:

- Social Innovation
- Design Research
- User Experience (UX)
- User Centred Design

## Scope

Managing the risk involved with change can make companies feel more comfortable about stretching boundaries.

Key Terms:

- Product System Innovation
- Cradle to Cradle
- Cradle to Grave
- Eco-Effective
- Eco-Efficient

## Note:

This document is the companion to the Sustainable Design Resource which is available for download through The Designers Institute website www.dinz.org.nz.
There are also a wide range of links accessible through the Sustainable design resource which is available for download from www.sustainabledesign.org.nz.


## Aknowledgements

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Manatū Mō Te Taiao

sustainable BUSINESS NETWORK

SUSTAINABLE DESIGN GROUP NEW ZEALAND

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