S.I.M.P.L.E.

Six circular design moves for Unit 4: Sustainable design.

S	I	M	P	L	E
Smart materials	**Intelligence**	**Modularity**	**As a service**	**Life extension**	**End-of-life take back**

Three pillars

Economic, social and ecological sustainability

Economic

Markets, consumer appeal and profitability across private, public and non-profit sectors.

Links to Quality, Desirability, Product as a service, Product life extension, Closed loop / take back

Social

Wellbeing, quality of life, equality, diversity and social cohesion.

Links to Function, Desirability, Embedding intelligence, Modularity, Product as a service

Ecological

Human systems are overwhelming the natural systems people depend on.

Links to Quality, Smart material choices, Product life extension, Closed loop / take back

KEY IDEA

Sustainable design aims to support human wellbeing over the long term by balancing all three pillars.

Planned obsolescence

How linear design shortens a product's life

Function

Newer designs make existing ones inferior.

Links to Social, Embedding intelligence, Modularity

Quality

How quickly a product wears out or breaks.

Links to Economic, Ecological, Smart material choices, Modularity, Product life extension

Desirability

Fashion moves on, so the product feels outdated.

Links to Economic, Social, Product as a service, Product life extension

KEY IDEA

The linear take, make and dispose model uses planned obsolescence to keep consumption growing. Circular design is the response.

Circular design

Features that keep products and materials in use

Smart material choices — S

Choosing materials, such as biodegradable ones, that reduce harm over the life cycle.

Links to Ecological, Quality

Embedding intelligence — I

Building in software or sensors so a product can be upgraded or reprogrammed.

Links to Social, Function

Modularity — M

Parts that can be swapped, repaired or upgraded instead of replacing the whole.

Links to Social, Function, Quality

Product as a service — P

Providing the benefit, such as personal mobility, instead of selling a new product.

Links to Economic, Social, Desirability

Product life extension — L

Designing for durability, repair and reuse so products last longer.

Links to Economic, Ecological, Quality, Desirability

Closed loop / take back — E

Products are returned and repurposed so materials stay in use.

Links to Economic, Ecological

Summarised from the QCAA Senior Design syllabus (2025), Unit 4: Sustainable design influences. The syllabus uses the term circular design.