fdf in partnership with SmartParc Food Production Reimagined

Sphere Expert Engineering. Innovative Design.

FUTURE-PROOF FOOD FACTORIES

Design for Efficiency,
Sustainability and Compliance



Agenda

1. Welcome & Introductions
2. The state of the estate
3. Converging pressures
4. Why the design stage matters most
5. Right site right future
6. Case study: Lessons from SmartParc Derby
7. Instigating future plans
8. Q&A



Introductions



Adrienne Howells

Chief Operating Officer, SmartParc

Food Production Reimagined: the UK's first low-carbon food manufacturing community



Kate Hancock

Chief Operating Officer, Sphere Design

Expert engineering and innovative design for future-proof food factories

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The state of the estate

Ageing facilities and an investment gap: the evidence behind the pressure to modernise.

AGEING ESTATE

20+

YEARS OLD

Many UK and European food factories are more than 20 years old, tied to inefficient legacy buildings with high energy costs and constrained processes.

LONG-RUNNING

2011

FDF WARNING

In 2011 the FDF warned of 19th and 20th century infrastructure. A 2015 report still described an ageing stock, with projects mainly upgrading existing assets.

INVESTMENT GAP

-30.5%

VS 2019

Industry investment is down 30.5% on 2019. Uncertainty about upcoming regulation (49%) was the top barrier in an FDF survey.

SCALE

500,000

PEOPLE EMPLOYED

The UK's largest advanced manufacturing sector. An FDF 2025 report counted 12,000+ sites, employing nearly 500,000 people providing 24.2% of total UK manufacturing

THE PATTERN

There is no single authoritative figure for average factory age in the UK, but the pattern is well evidenced.

The pressure on food manufacturers is coming from everywhere

Reshaping how and where food is made.

Energy bills in Great Britain forecast to rise by 26% to £2,166 from January

Government under pressure to help households as increase would add £443 to average annual dual-fuel bill

Source: The Guardian

UK and EU agree deal to remove Brexit checks on food and animal products

Agreement to ease rules on food imports and exports is expected to come into force in first quarter of 2028

Source: The Guardian

GLP-1 food boom: Market growth, big brands, and key challenges

Source: Food Navigator

Government urged to protect £42bn food manufacturing industry amid global volatility and cost of living crisis, as costs and insolvencies rise

Published: 20 March 2026 | Updated: 20 March 2026

Source: The Food and Drink Federation

Supply-chain disruption could see double-digit food price rises this Christmas, CIPS warns

Source: Grocery Gazette

UK Food System Net Zero plan outlines how industry and government can achieve ambitious 2050 emission reduction targets

Source: Retail Times

Thousands of UK fridges protected from hackers in secret operation

Source: Evening Standard

Has the UK food supply chain become too lean to withstand extreme weather?

Source: Retail Gazette

How geopolitical volatility is impacting the food and drink industry

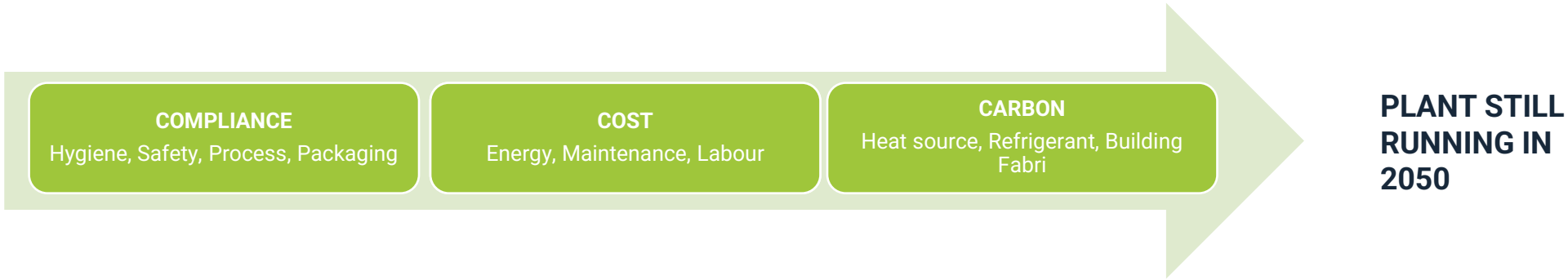
Source: Food Management Today

Skills shortages are pervasive in the UK. They have significant costs for UK businesses, the economy, the environment, and young people.

Source: Edge Foundation

The 25-year decision

Why capital decisions made today lock in 25+ years of cost, carbon and compliance.



WHAT GETS LOCKED IN

A factory layout, a refrigerant choice and a utilities strategy are rarely revisited for decades.

WHAT IT BECOMES

Whatever is specified at design stage becomes the operating cost, carbon footprint and compliance exposure for the whole life of the site.

WHY 2050

It sits beyond the FDF's 2040 net zero target for the sector, so anything built today must still make sense after that date.

"Which decisions on your site were made before most of today's regulations existed?"

Lock-in in practice

Three examples of design-stage decisions that are hard to undo.

01

SITE UTILITIES

A refrigeration plant chosen on HFCs now facing phase-down pressure.

02

LAYOUT

A layout built for one product that can’t flex when the range changes.

03

BUILDING

A building with no space or utility capacity for expansion or automation.

THE F-GAS LESSON

Great Britain’s phase-down timetable is uncertain, but the direction is not. Design for the direction.

The factory of the future is an integrated system

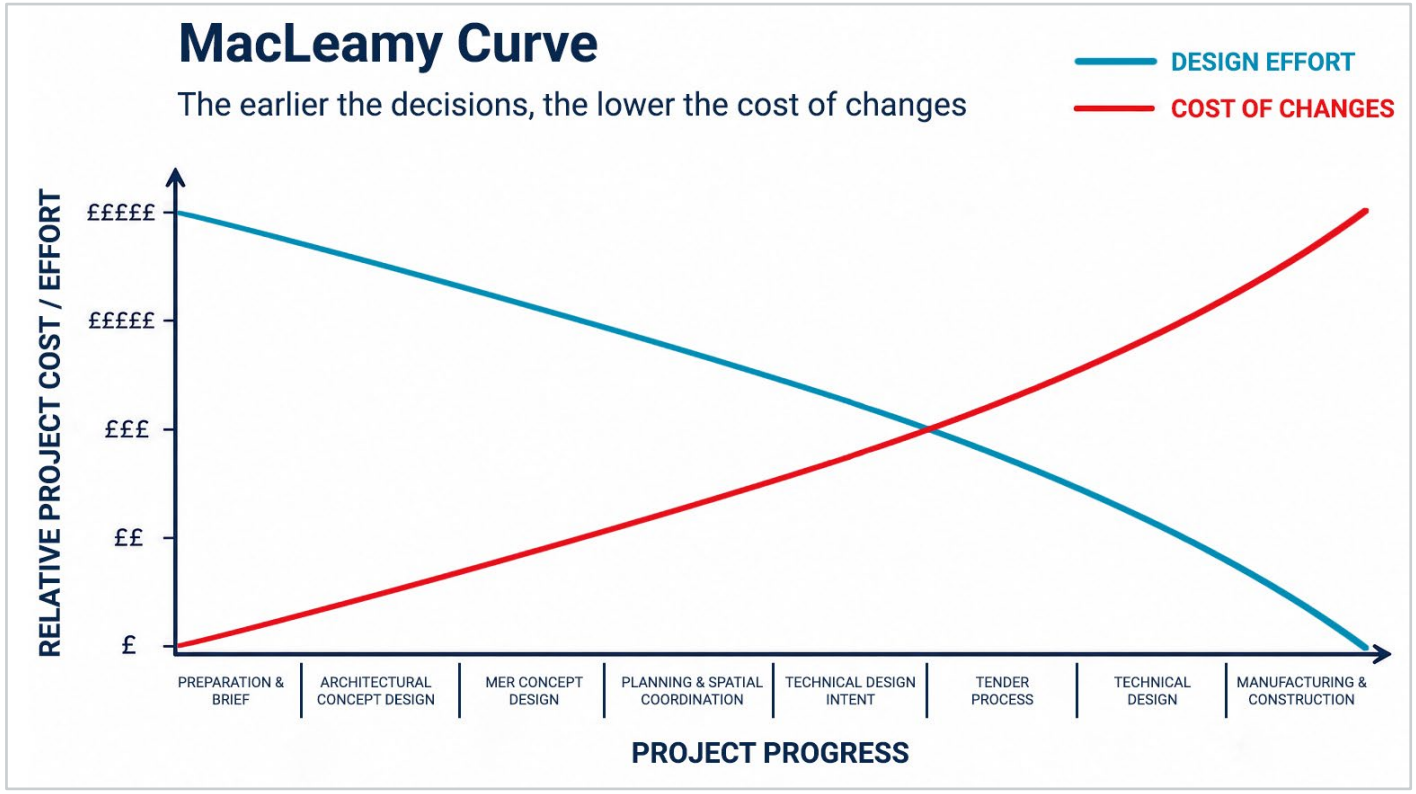
One design principle: decisions must work together.

01	**PROCESS-FIRST**	Map people, product and waste before fixing the building layout.
02	**AUTOMATION-READY**	Provide power, data, structure, access and expansion space from day one.
03	**SUSTAINABLE UTILITIES**	Connected energy, refrigeration, heat recovery, water and renewable strategy.
04	**HYGIENIC BY DESIGN**	Build drainage, zoning, allergen control and cleanability into the fabric.
05	**RIGHT SITE, RIGHT FUTURE**	Test labour, logistics, utilities, planning and growth capacity early.

Future-proofing is not a technology shopping list. It is coordinated design across process, people, building and utilities.

Design - Time vs Cost

Upfront design is time well spent, the cost of change once construction has started dramatically increases so challenging the norm and predicting future food trends can save £££ later on



PROJECT DEFINITION

Project definition is critical to keep all parties on track and aligned.

OUT-TURN COST

Knowing outturn costs in the early stages shape the project outcome

Design the process first, then build around it

Process flow should be established before the building footprint; and legacy constraints lock in inefficiency.



PEOPLE

Reduce travel, manual handling and ergonomic risk.

PRODUCT

Remove bottlenecks, duplicate handling and unnecessary steps.

WASTE

Separate for recycling, ensure correct containment, reduce handling.

DESIGN TEST

Can each flow be traced end-to-end without avoidable crossing, backtracking or contamination risk?

Automation-ready, even if not automated on day one

The costly mistake is retrofitting automation to a facility that lacks the space, services and data architecture.

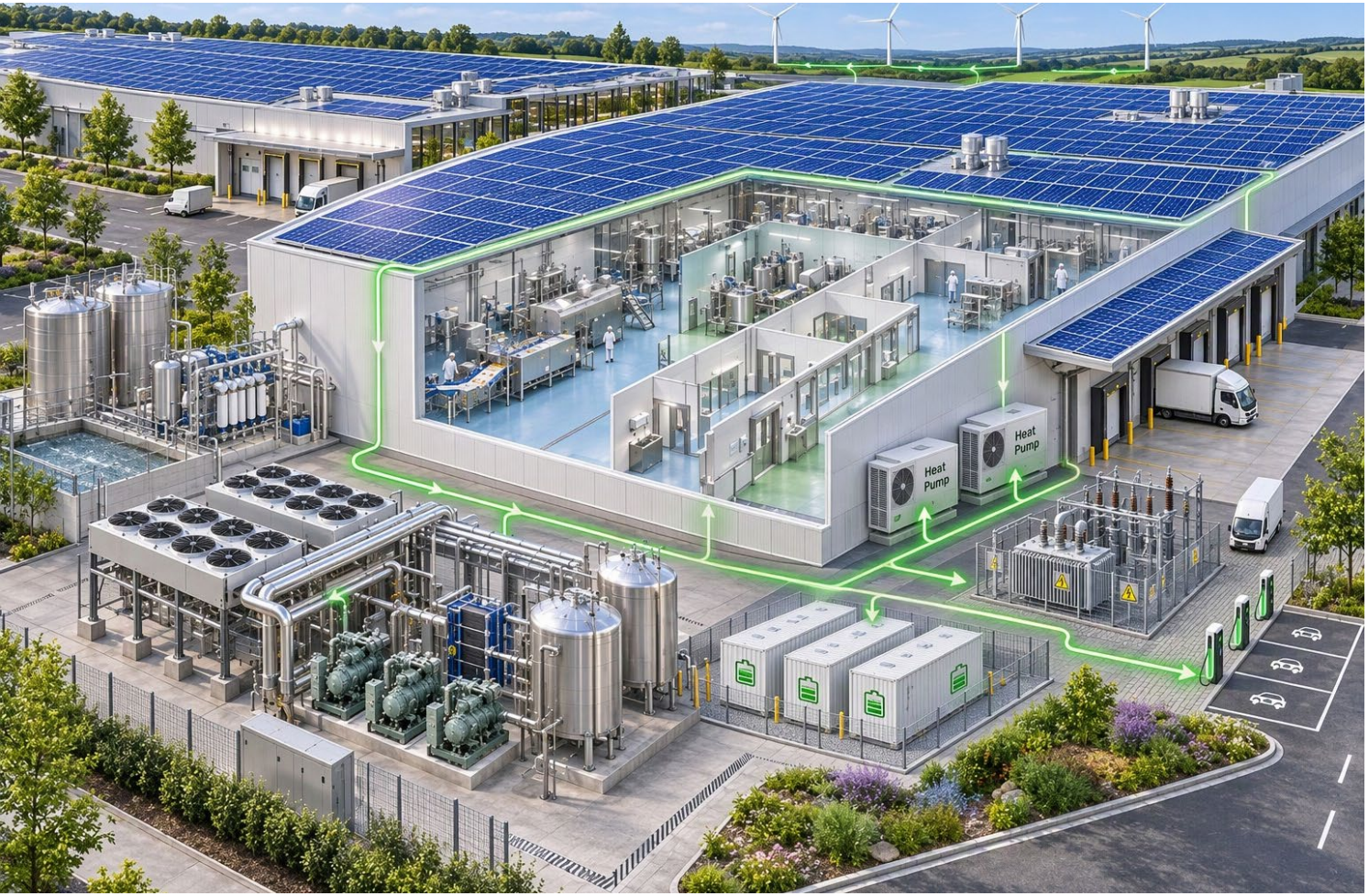
SPACE	How much space does the automation need for optimal performance and maintenance?
POWER	Is there sufficient power available?
DATA	Is the data architecture suitable for secure connections?
STRUCTURE	Are floors designed for the extra loading, is the ceiling high enough?
SKILLS	Can operators and maintenance teams adopt the technology?

BUILD THE ENABLERS BEFORE YOU BUY THE AUTOMATION



Sustainability belongs in the core design

Renewable energy, refrigeration, heat recovery, water and drainage perform best when planned as one connected building strategy.



ENERGY

Model equipment peak and part-load demands from production capacity, then overlay building requirements to define full loads.

REFRIGERATION AND HEAT RECOVERY

Evaluate refrigeration and heat recovery together for whole-life efficiency, maintainability and regulatory direction.

HVAC

Evaluate room volumes for fit for process versus volume of air to be controlled. Challenge the norm with temperature set points

RENEWABLE ENERGY

Evaluate PV, Wind & Batteries now and allow space in the future if not achievable now.

The goal: lower operating cost & carbon without exceeding the capital budget.

Hygienic design is a prerequisite

Above or below ground fabrication is challenging to rectify once in operation, get it right now for the longevity of your facility.



DRAINAGE
Split underground low/medium/high care drain runs to futureproof areas. Choose gulleys or channels to directly capture all waste water

WALLS, KERBS, CEILINGS

Choose fit for purpose solutions which will withstand the washdown and traffic regime.

FLOORS
Design floor finishes, falls, channels/gulleys in harmony considering slip resistance, traffic movement and cleanability

HYGIENE ZONING

Coordinate airflow, allergen controls, personnel routes and maintenance access.

The goal: design and build now for fabrication longevity and food safety assurance.

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Right site, right future - A simple decision guide

Five questions to ask, including the honest cases where staying put is right.

1

Is the site fundamentally sound?

Location, labour, power and water capacity, planning, flood risk. If not, stop here and consider relocating.

2

Is the building or the process the constraint?

If the building shell is fine but the process or services are not, a refit is often enough.

3

Does the plant need to grow or change materially?

If yes, check whether the site can expand within its boundaries, or whether a phased approach is realistic.

4

Is shared infrastructure available or valuable?

If energy, cold chain or logistics are your biggest costs, a campus model deserves serious consideration.

5

What is the capital and disruption tolerance?

Be realistic about cash, risk and keeping production running.

Campus or own site? Match the solution to the constraint

A campus suits some manufacturers; for others, staying on their own site is the better call.

A campus is worth serious consideration when...	Staying on your own site may be better when...
Energy, cooling or heating are a major share of your costs	Your current site is sound and your main constraint is process or controls
You need to scale up or add capacity faster than your site allows	Your workforce, suppliers or customers are tied closely to where you are now
Your building is at the end of its life and a refit would cost close to a new build	Your processes are highly bespoke and difficult to relocate
You want to share infrastructure such as energy, logistics or cold storage	You own your site and have expansion potential around you
Retrofitting existing facilities to meet future environmental and decarbonisation requirements can be challenging	Facilities are flexible, future-ready and designed to support ongoing upgrades and evolving requirements
You are planning a long-term commitment and need new facilities fast	Cash, risk appetite or timing do not support a major move this cycle

THE TAKEAWAY **The right answer depends on your constraint, not on the model.**

Honest cases - where staying put is right

A new site is not always the answer: a case study in choosing to expand in place.

THE BRIEF

A major international food manufacturer was seeking to expand its operations.

THE ASSESSMENT

Sphere and SmartParc assessed their requirements against the six design principles and built a business case for a new location at SmartParc.

THE DECISION

Although SmartParc met every criterion, the decision rested on right site, right future: the client chose to expand its existing facility.



THE TAKEAWAY

Not every expansion decision results in a new site. Scoring the options objectively gives key stakeholders a clear basis for decision-making.

Phasing as the middle path

Phased delivery lets you start without betting the whole business.

01

QUICK WINS

Low-risk improvements that deliver benefit early.

02

STRUCTURAL ENABLING WORKS

Groundwork that keeps later options open.

03

MAJOR CAPITAL

The larger investment, committed once earlier phases have proved the case.

THE MIDDLE PATH

Start small, prove the case, then commit: each phase keeps the next decision open.

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The UK’s first low-carbon food manufacturing community

Manufacturers collaborate to cut resources and use new technology to improve efficiency.

Our mission: provide a new asset class for the food industry enabling a shift into designed to suit facilities, providing a collaborative operational model to assist all scales of business the ability to thrive

BOTTOM LINE

Reduced operating costs for businesses on the park.

PEOPLE

A better working environment and improved wellbeing.

MARKET ACCESS

New routes to customers through on-site consolidation and picking of products.

Sustainable collaboration is a significant step towards net-zero.

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SmartParc: what it delivers, and why we built it this way

Purpose-designed space, shared infrastructure and a community of food businesses, in one place.



2m sq ft

F&B manufacturing & logistics space

1.1m sq ft

collaborative space built to date

ENERGY

Central energy, heating & cooling

One shared system for every unit, recycling heat from refrigeration to cut cost and carbon.

FIT FOR PURPOSE

Designed to suit facilities

Food-grade units built around the process, from 3,500 to 400,000 sq ft.

OPERATIONS

Shared business operations

Security, facilities, hygiene and waste managed once, for every tenant.

COMMUNITY

Collaboration and community, just for food

Manufacturers sharing resources, services and expertise on one campus.

OUR TENANTS GREGGS HELLO FRESH COMPASS GROUP

An energy-sharing microgrid, built in phases

Solar generation, thermal storage, EV charging and district heating and cooling, matched to the build-out.

IMPLEMENTED FROM THE OUTSET

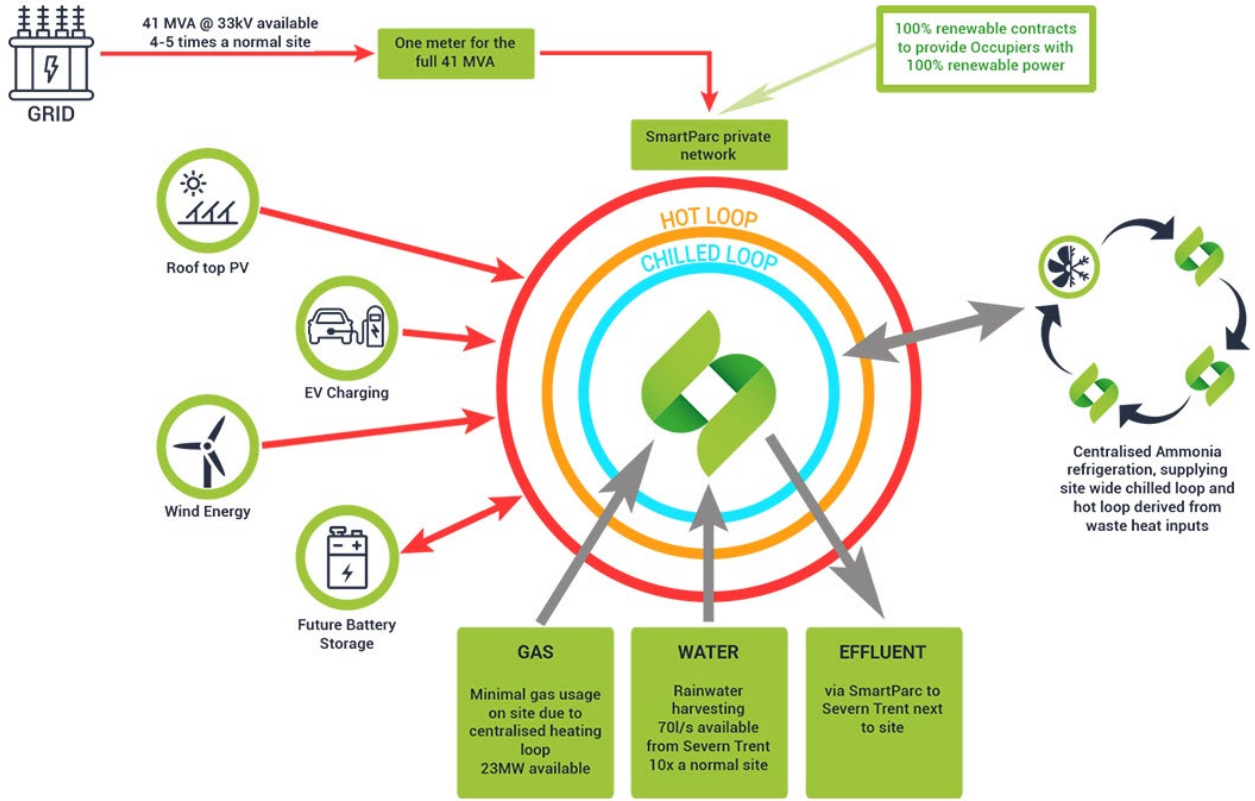
11MW of -6ºC glycol circulating
10MW of +72ºC hot water circulating

Total 9.8km of insulated underground pipe

4.8MW of PV on plot with another 1.0MW planned for 2027.

FLEXIBILITY FOR THE FUTURE

Ability to add new technologies including wind generation, battery storage and utilising cooling loop as a heat sump



Instigating future plans

Answer these questions at the start of any project, before the site, shell, line or utility specification become fixed.

1. Have product, people and waste flows been mapped and capacity tested?
2. Can the layout flex when volumes, products or pack formats change?
3. Are utilities sized for part-load efficiency as well as peak demand?
4. Does the plant sizing take account of load profiles, diversification and peak demand?
5. Are hygiene, drainage, maintenance and allergen controls designed in?
6. Does the site support labour, logistics, planning, utilities and future expansion?

NEXT STEP: SCORE EACH QUESTION GREEN / AMBER / RED

Your next steps: 30 days, 90 days, 12 months

Within 30 days

- Create the baseline: understand site utility usages versus connected loads and list assets by age and condition. Forecast sales for 5/10/15 years out

Within 90 days

- Map the horizon: regulatory changes, product ranges, people plans, aging assets - identify decisions that can't wait; shortlist quick win projects.

Within 12 months

- Set the direction: Fill resources gaps for specialist subjects; define costs; document assumptions and review often; set up project governance

Resources

Downloadable Checklist: Next Steps Planner

Downloadable Six-decision self Assessment

SmartParc visit – we are offering a guided visit of our flagship SmartParc site. See if being on campus is the right next step for you.

Sphere follow-up clinic – we are offering an Enhanced Project Definition session if you are looking to embark on a food processing project.


Q & A