Structural Composites Proposal

Development of products that specifically benefit the environment

Stage-gate approval for funds and resources to establish a commercial market entry plan

TARMAC
A CRH COMPANY

The Opportunity

Innovative
Superior

Award winning
cost effective
proven technology

Window of
opportunity

Sustainable
Made from
waste

Current
opportunities

Financial
reward

Growth
The goal

Global
opportunities

The Vision

The route to UK market

Market and products

Coastal, River & Flood Defence	Rail Network	Power & Comms Distribution	Residential, Highways and amenities
			
£310m of timber replacement works up to 2021	65k timber sleepers replaced per annum valued at c. £5m pa	7m telegraph poles in the UK. £2bn of potential lifetime market.	Housebuilders use approx. 1m kerbs PA Potential for 'plastic roads'

Drivers

UK: Environmental Agency	UK: Network Rail London Underground Metro systems	UK: National Grid	UK: Highways England / Merchants / Housebuilders
Hardwood issues Reputation Whole life issues	Creosote ban Hardwood issues Government targets	Creosote ban Government targets Sustainability	Sustainability Lower cost Whole life issues Noise abatement

The Opportunities

< 1 Million

1 – 20 Million

> 20 Million

£600M

>£10B

Market Evolution

Commitment to purchase

Committed to using composite sleepers

Trials underway

Trials underway

Trials underway
Ceasing the use of hardwoods

Spending £10b on the upgrade of its light rail systems

Commitment to purchase

Product trials underway with competitor

The Benefits

Benefits

- ✔ RONA
- ✔ Strengthens relationships with customers
- ✔ First to market with superior technology
- ✔ Raise environmental profile
- ✔ Diversification
- ✔ PRN trading
- ✔ Adjacencies

- ✔ RONA
- ✔ Raise environmental profile
- ✔ Diversification
- ✔ Global opportunity
- ✔ Low risk acquisition
- ✔ Raise company profile
- ✔ Fit with company vision

- ✔ Longer life
- ✔ Lower cost alternative
- ✔ Lower transport cost
- ✔ Environmentally sustainable
- ✔ Meets Government legislation

- ✔ Easy to work with
- ✔ Fits with current installation methodology
- ✔ Weather proof
- ✔ Lighter

TARMAC
A CRH COMPANY

PESTLE

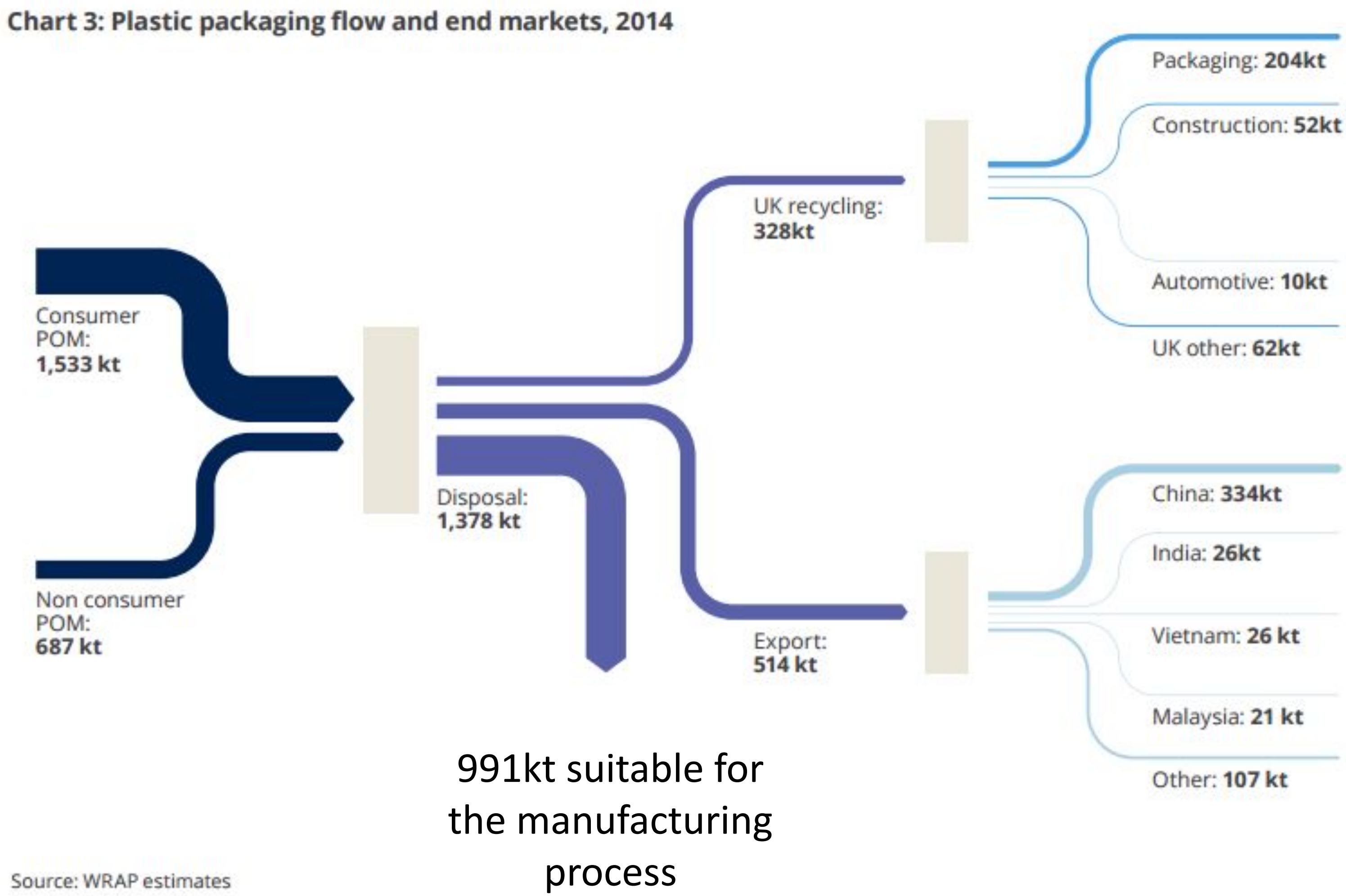
Political	Economic	Social	Technological	Legal	Environmental
• Landfill targets • Public sector procurement policy • Environmental Agency advice against using hard wood • DEFRA - increase in targets - recycled plastic waste • Creosote - ban in EU April 2018	• Recyclate Prices • Market pull/demand • Virgin material Costs • Landfill Tax • Trading Schemes • Incentives e.g. recycling credits • Reduced maintenance costs for end products	• UK recycling patterns • Local authority cost reduction - alternative weekly collection • Pro green sentiment • Reduced impact of waste	• Sorting technology • Reprocessing technology • Material technology • End Use technologies • Disruptive technology •Novel diversification	• Waste protocols •Facility permitting • Product stewardship legislation • Landfill restrictions	• Oil reserves • Virgin resource availability • Landfill availability • Exploitation impacts - damage to forests • Climate change - temperature rises and impacts • Carbon balance recyclate vs virgin

Environmentally-driven product innovation

PERPETUAL PROBLEM

SUSTAINABLE SOLUTION

Sustainable source of raw material

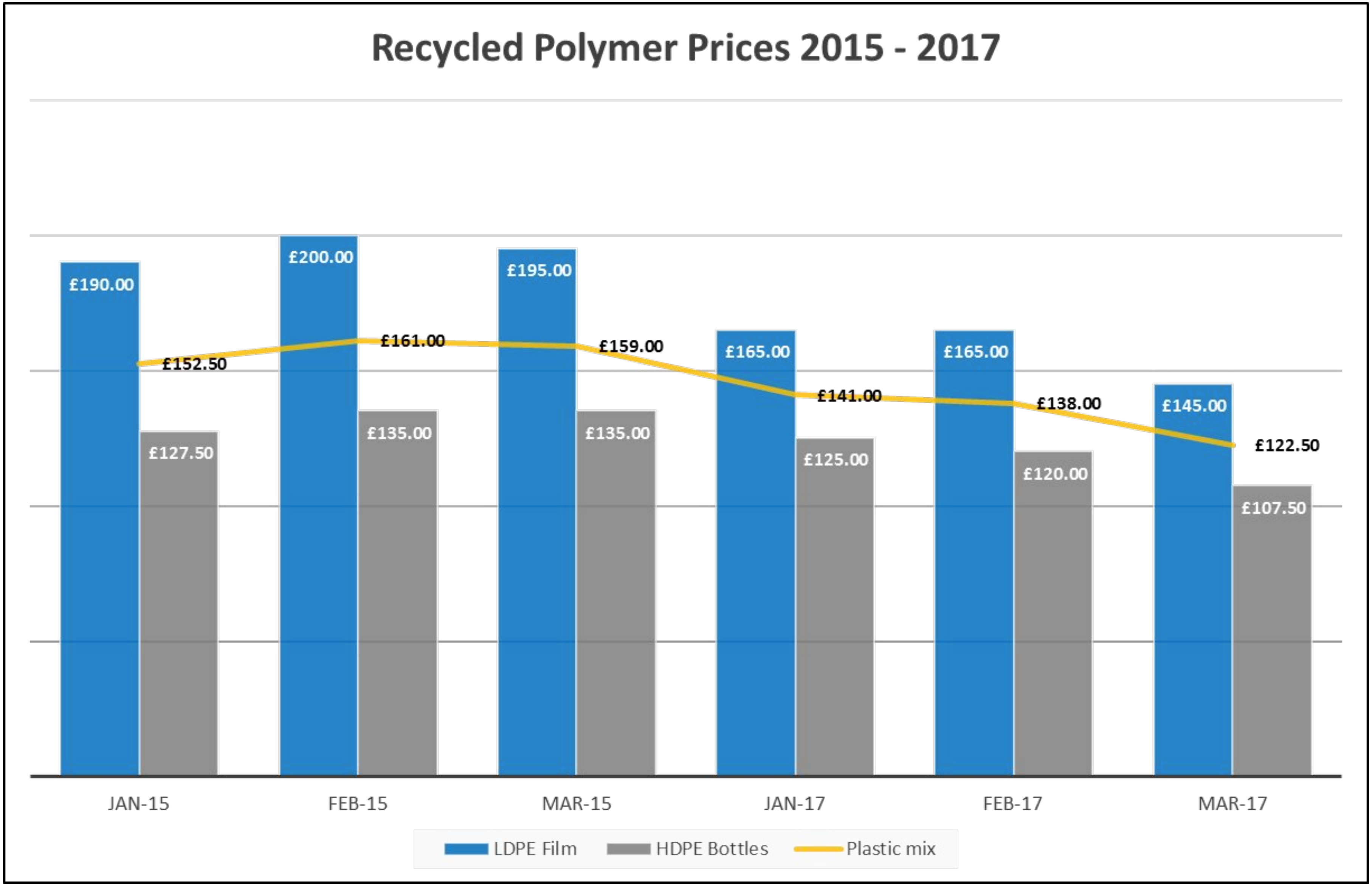


991kt suitable for the manufacturing process

Raw materials availability

suez environnement	Viridor Transforming waste™	Biffa	VEOLIA	DS Smith	Nevis	jayplas
SUPPLY CHAIN PARTNERS						
IDENTIFIED 200k TONNES PER ANNUM SUITABLE PLASTIC WASTE						

Raw Materials Pricing 2015 -2017



The waste source

MRF Sites

The Location

< 1 Million

1 – 20 Million

> 20 Million

MRF Sites

Proposed location

The process dimensions

Estimated

£8-10M

1 = 20000 Tpa = 2% of available raw material = 10% of available market

Footprint

1 Hectare

FTE

25-30

Plant location

South East England

TARMAC
A CRH COMPANY

Process – recycling / polymer separation

Inbound raw materials are shredded

Shredded material loaded into hopper

Washing and transportation to the separation chamber

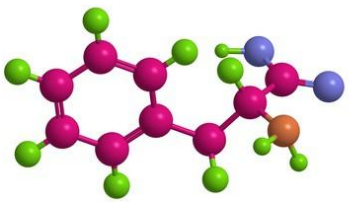
Usable material separated out

SAPPHIRE
A TARMAC | CRH GROUP COMPANY

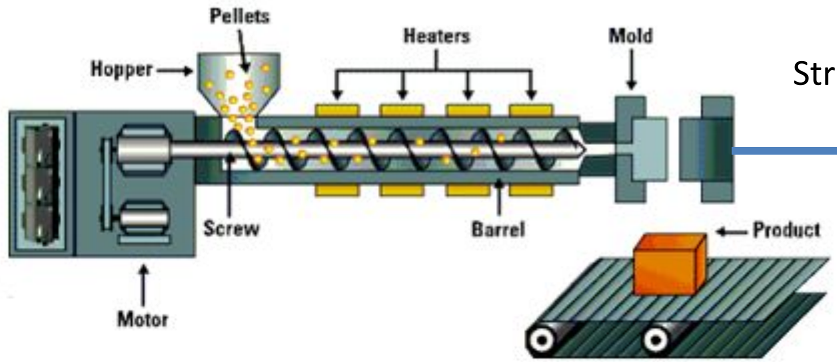
Drying and storage of polymers

Extrusion

The Process



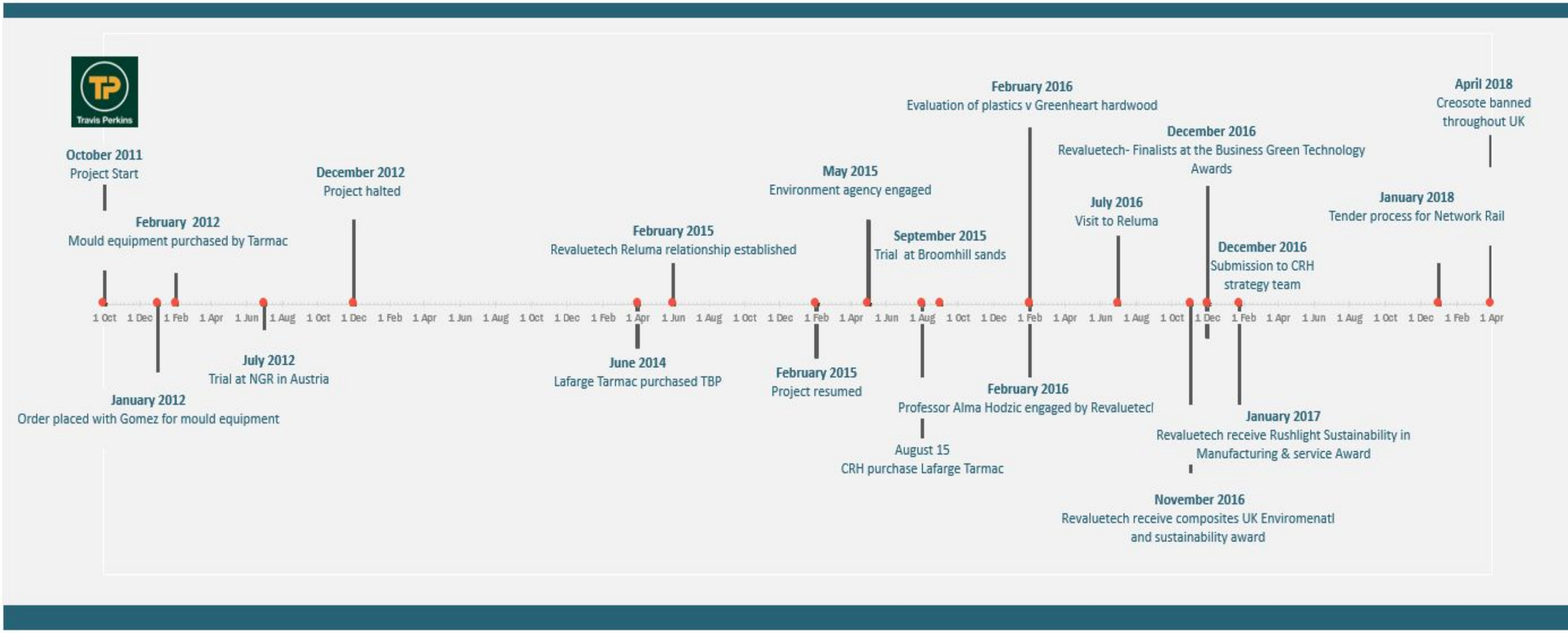
Structural formulation technology



Structural extrusion technology

Innovation through collaboration

Where we are



TARMAC
A CRH COMPANY

Revaluetech

TARMAC
A CRH COMPANY

Revaluetech

businessGreen TECHNOLOGY AWARDS 2016

Rushlight Awards Winner 2016/17

Composites UK Trade Association
Industry Award Winner 2016 - Environmental/Sustainability

ISO

Reluma

What is Reluma?

Reluma currently distributing in the following countries

- Germany
- Austria
- The Netherlands
- Sweden
- UAE
- Oman
- Pakistan
- United Kingdom

TARMAC
A CRH COMPANY

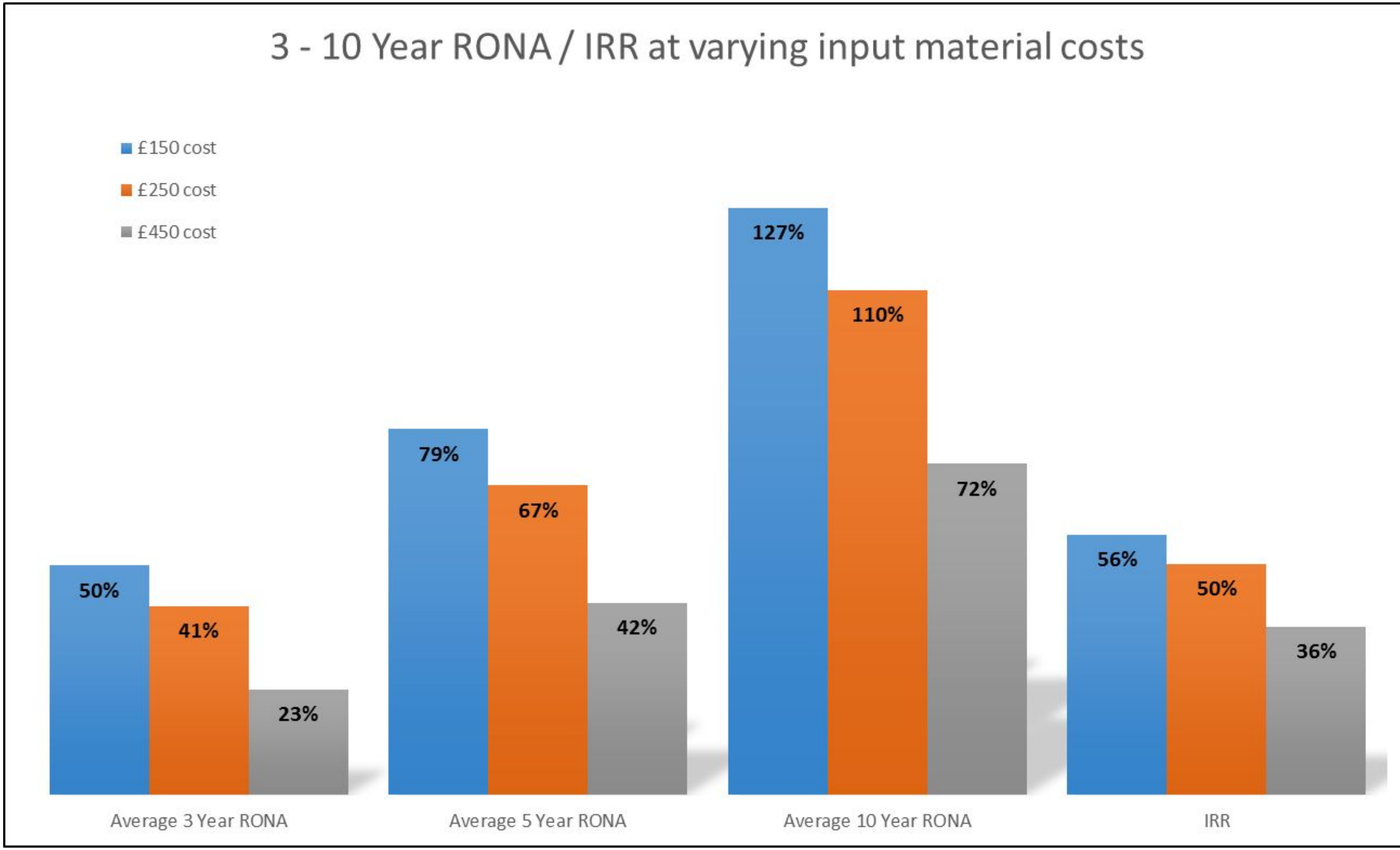
Our first step to success ?

TARMAC
A CRH COMPANY

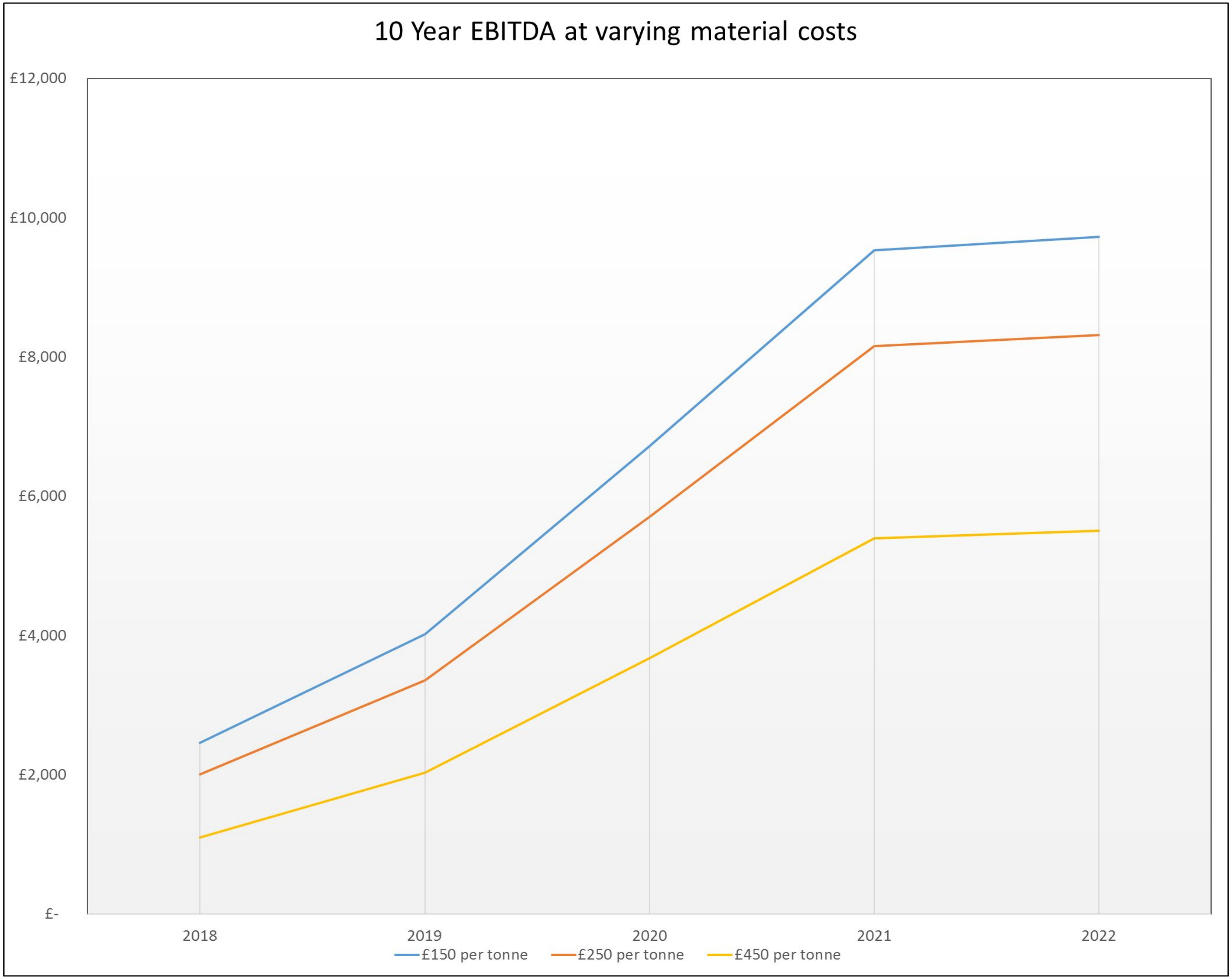
Revaluetech

Reluma

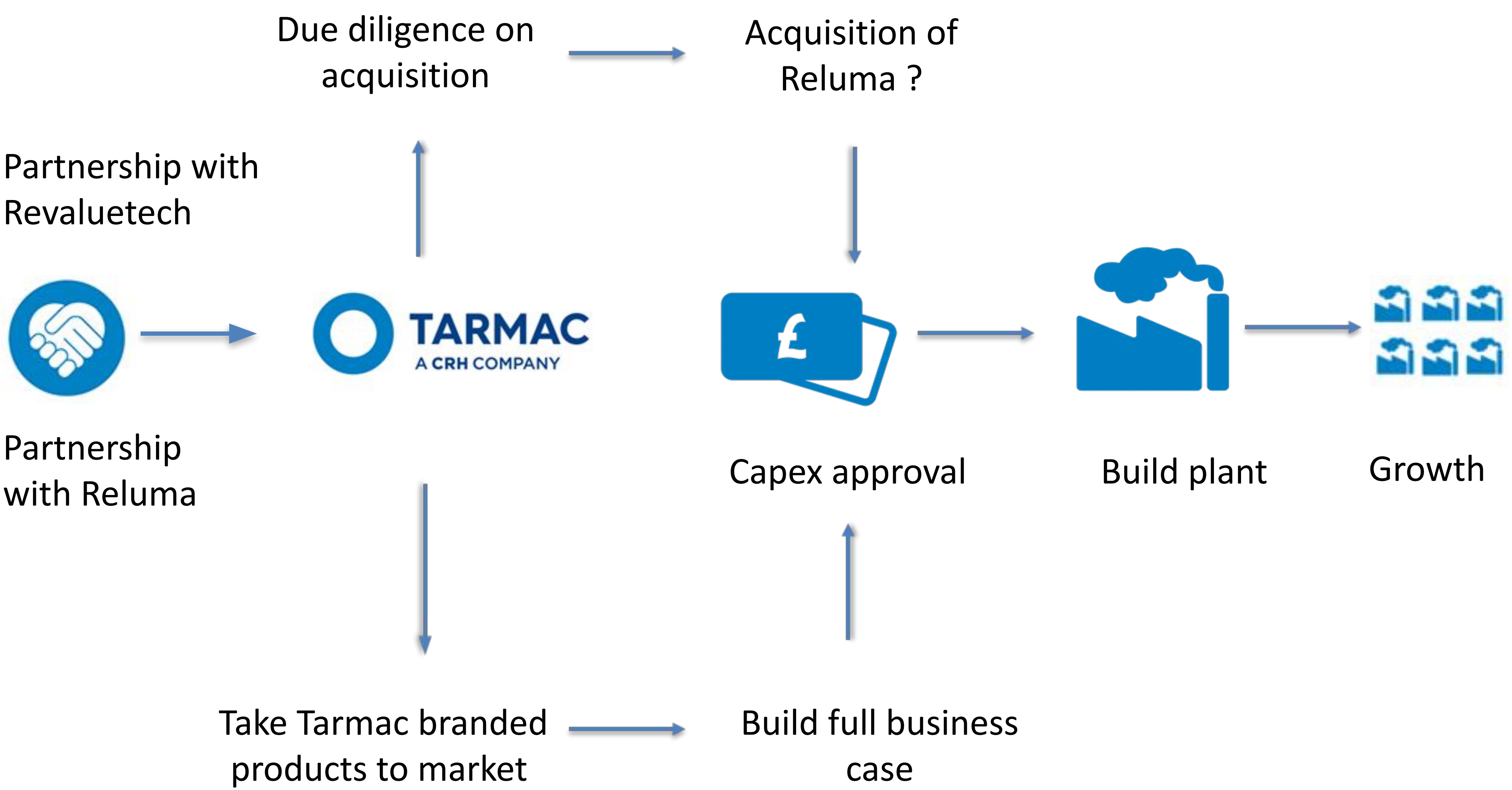
Best Case / Worst Case (RONA vs Raw Material Price)



Best Case / Worst Case (EBITDA vs Raw Material Price)



The Proposal



TARMAC
A CRH COMPANY

What Next

Full Time Project Manager

Internal Resources	Financial Modelling	Due Diligence	Logistics Modelling	Land and Planning	Commercial Negotiation	Capex Preparation

External Resources	Legal	Engineering	Plant Design

Commercial Evaluation – 6-8 months c.£200K

Capital Submission

Stage-gate approval for funds and resources to establish a commercial market entry plan

c. £200k