

# Construction forecasts: navigating inflationary risk

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# Agenda

- ▶ What forecasts can tell us about the construction market
- ▶ Different approaches to forecasting and where the potential pitfalls lie
- ▶ BCIS's track record in forecasting and what we've learnt
- ▶ How using appropriate construction indices forecasts can increase cost confidence

# Forecasts used in the construction industry

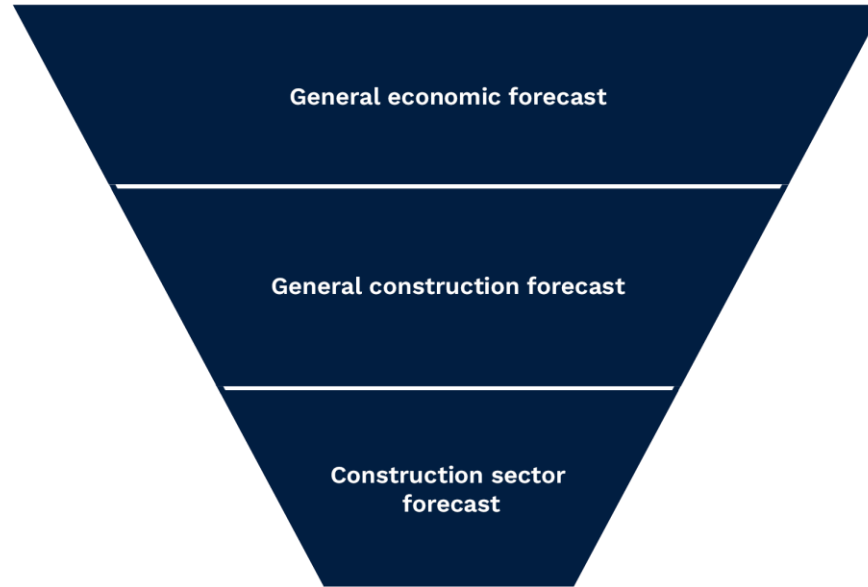


General economic forecast

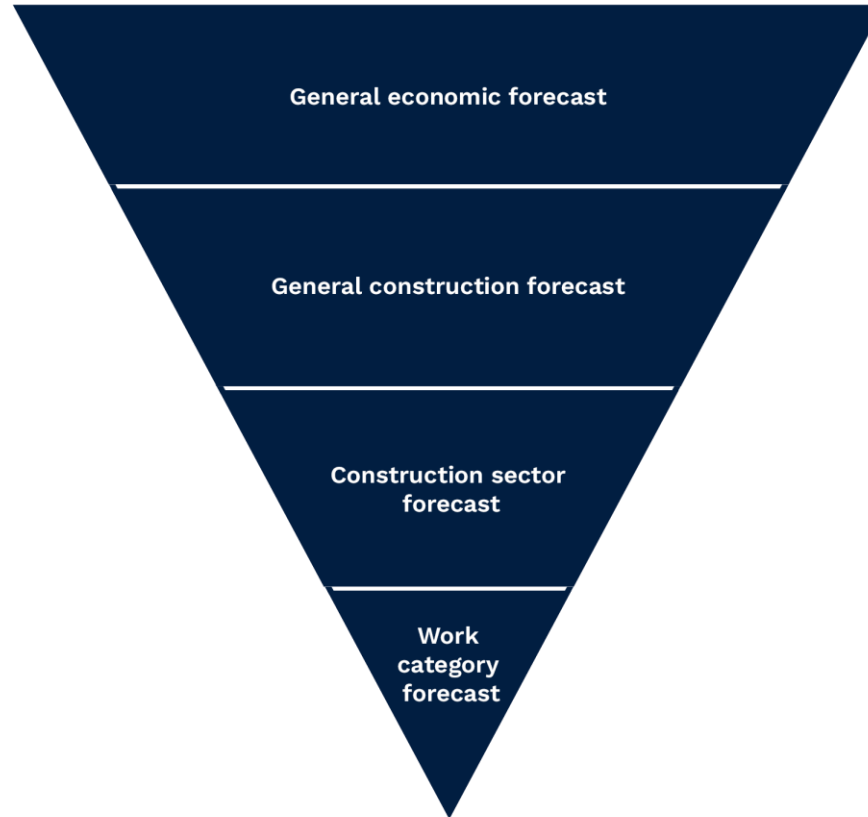
# Forecasts used in the construction industry



# Forecasts used in the construction industry



# Forecasts used in the construction industry



# Cost indices

- ▶ BCIS General Building Cost Index
- ▶ BCIS General Building Cost (excluding M and E) Index
- ▶ BCIS Steel Framed Construction Cost Index
- ▶ BCIS Concrete Framed Construction Cost Index
- ▶ BCIS Brick Construction Cost Index
- ▶ BCIS M and E Cost Index
- ▶ BCIS Labour Cost Index
- ▶ BCIS Materials Cost Index
- ▶ BCIS Plant Cost Index
- ▶ BCIS General Civil Engineering Cost Index
- ▶ BCIS Rail Cost Index
- ▶ BCIS Road Cost Index
- ▶ BCIS Water and Sewerage Cost Index
- ▶ BCIS All-in Maintenance Cost Indices – General
- ▶ BCIS All-in Maintenance Cost Indices – Redecorations
- ▶ BCIS All-in Maintenance Cost Indices – Fabric
- ▶ BCIS All-in Maintenance Cost Indices – Services
- ▶ BCIS Health Service Maintenance Cost Indices – General
- ▶ BCIS Health Service Maintenance Cost Indices – Redecorations
- ▶ BCIS Health Service Maintenance Cost Indices – Fabric
- ▶ BCIS Health Service Maintenance Cost Indices – Services
- ▶ BCIS Local Authority Maintenance Cost Indices – General
- ▶ BCIS Local Authority Maintenance Cost Indices – Redecorations
- ▶ BCIS Local Authority Maintenance Cost Indices – Fabric
- ▶ BCIS Local Authority Maintenance Cost Indices – Services
- ▶ BCIS Private Sector Maintenance Cost Indices – General
- ▶ BCIS Private Sector Maintenance Cost Indices – Redecorations
- ▶ BCIS Private Sector Maintenance Cost Indices – Fabric
- ▶ BCIS Private Sector Maintenance Cost Indices – Services
- ▶ BCIS Maintenance Materials Cost Indices – General
- ▶ BCIS Maintenance Materials Cost Indices – Redecorations
- ▶ BCIS Maintenance Materials Cost Indices – Fabric
- ▶ BCIS Maintenance Materials Cost Indices – Services
- ▶ BCIS Cleaning Cost Indices – General
- ▶ BCIS Cleaning Cost Indices – Materials
- ▶ BCIS Energy Cost Indices – General

# Tender price and Output price indices

## Tender price indices

- ▶ BCIS All-in TPI
- ▶ BCIS Building Market Conditions Factor
- ▶ BCIS Civil Engineering Market Conditions Factor
- ▶ BCIS Civil Engineering Tender Price Index
- ▶ BCIS Road Tender Price Index
- ▶ BCIS Roads Market Conditions Factor

## Output price indices

- ▶ BCIS All-in OPI

# BCIS Forecasts of Price Adjustment Formulae Indices (Building) series 3

- ▶ 3/01 Demolitions
- ▶ 3/02 Excavation and Disposal
- ▶ 3/03 Filling: Imported, Hardcore and Granular
- ▶ 3/04 Piling: Concrete
- ▶ 3/05 Piling: Steel
- ▶ 3/06 Concrete: In Situ
- ▶ 3/07 Concrete: Formwork
- ▶ 3/08 Concrete: Reinforcement
- ▶ 3/09 Concrete: Precast
- ▶ 3/10 Brickwork and Blockwork
- ▶ 3/11 Stonework
- ▶ 3/12 Softwood Carcassing and Structural Members
- ▶ 3/13 Metal: Decking
- ▶ 3/14 Metal: Miscellaneous
- ▶ 3/15 Cladding and Covering: Glazed
- ▶ 3/16 Cladding and Covering: Fibre Cement
- ▶ 3/17 Cladding and Covering: Coated Steel
- ▶ 3/18 Cladding and Covering: Plastics
- ▶ 3/19 Cladding and Covering: Glass Reinforced Plastics
- ▶ 3/20 Cladding and Covering: Slate and Tile
- ▶ 3/21 Cladding and Covering: Lead
- ▶ 3/22 Cladding and Covering: Aluminium
- ▶ 3/23 Cladding and Covering: Copper
- ▶ 3/24 Cladding and Covering: Zinc
- ▶ 3/25 Waterproofing: Asphalt
- ▶ 3/26 Waterproofing: Built Up Felt Roofing
- ▶ 3/27 Waterproofing: Liquid Applied Coatings
- ▶ 3/28 Boards, Fittings and Trims: Softwood
- ▶ 3/29 Boards, Fittings and Trims: Hardwood
- ▶ 3/30 Boards, Fittings and Trims: Manufactured
- ▶ 3/31 Linings and Partitions: Plasterboard
- ▶ 3/32 Linings and Partitions: Self Finishing
- ▶ 3/33 Suspended Ceilings
- ▶ 3/34 Raised Access Floors
- ▶ 3/35 Windows and Doors: Softwood
- ▶ 3/36 Windows and Doors: Hardwood
- ▶ 3/37 Windows and Doors: Steel
- ▶ 3/38 Windows and Doors: Aluminium
- ▶ 3/39 Windows and Doors: Plastic
- ▶ 3/40 Ironmongery
- ▶ 3/41 Glazing
- ▶ 3/42 Finishes: Screeds
- ▶ 3/43 Finishes: Bitumen, Resin and Rubber Latex Flooring
- ▶ 3/44 Finishes: Plaster
- ▶ 3/45 Finishes: Rigid Tiles and Terrazzo Work
- ▶ 3/46 Finishes: Flexible Tiles and Sheet Coverings
- ▶ 3/47 Finishes: Carpets
- ▶ 3/48 Finishes: Painting and Decorating
- ▶ 3/49 Sanitary Appliances
- ▶ 3/50 Insulation
- ▶ 3/51 Pavings: Coated Macadam and Asphalt
- ▶ 3/52 Pavings: Slab and Block
- ▶ 3/53 Site Planting
- ▶ 3/54 Fencing
- ▶ 3/55 Pipes and Accessories: Spun and Cast Iron
- ▶ 3/56 Pipes and Accessories: Steel
- ▶ 3/57 Pipes and Accessories: Plastics
- ▶ 3/58 Pipes and Accessories: Copper
- ▶ 3/59 Pipes and Accessories: Aluminium
- ▶ 3/60 Pipes and Accessories: Clay and Concrete
- ▶ App/1 Scaffolding: Labour and Materials
- ▶ App/2 Scaffolding: Materials Only
- ▶ App/3 Plant
- ▶ App/4 Labour: Building
- ▶ App/5 Labour: Plumbing

# BCIS Forecasts of Price Adjustment Formulae Indices series 4 – Civil Engineering and related specialist

- ▶ 4/CE/01 Civil Engineering Labour
- ▶ 4/CE/02 Management and Administration
- ▶ 4/CE/03 Professional Services
- ▶ 4/CE/04 Purchased Plant
- ▶ 4/CE/05 Hired Plant
- ▶ 4/CE/06 Site Accommodation
- ▶ 4/CE/07 Information and Communications Technology (ICT)
- ▶ 4/CE/08 Transport and Logistics
- ▶ 4/CE/09 Aggregates including Levy
- ▶ 4/CE/10 Aggregates excluding Levy
- ▶ 4/CE/11 Steel Sheet Piling
- ▶ 4/CE/12 Cements
- ▶ 4/CE/13 Ready Mixed Concrete
- ▶ 4/CE/14 Precast Concrete Non-Structural Components
- ▶ 4/CE/15 Precast Concrete Structural Components (including pipes)
- ▶ 4/CE/16 Stone
- ▶ 4/CE/17 Asphalt for Paving
- ▶ 4/CE/18 Steel for Reinforcement
- ▶ 4/CE/19 Bricks and Clay Products
- ▶ 4/CE/20 Steel Sections
- ▶ 4/CE/21 Timber
- ▶ 4/CE/22 Cast and Spun Iron Products (including pipes)
- ▶ 4/CE/23 Steel Pipes
- ▶ 4/CE/24 Plastic Products (including pipes)
- ▶ 4/CE/25 Aluminium Products
- ▶ 4/CE/26 Metal Structures
- ▶ 4/CE/27 DERV Fuel
- ▶ 4/CE/28 Gas Oil (Diesel in Construction)
- ▶ 4/CE/28a Gas Oil (Red Diesel)
- ▶ 4/CE/29 Geotextiles and Membranes
- ▶ 4/CE/ST/01 Structural Steelwork Labour
- ▶ 4/CE/ST/02 Structural Steelwork Materials
- ▶ 4/CE/EL/01 Electrical Engineering Labour
- ▶ 4/CE/EL/02 Electrical Engineering Materials
- ▶ 4/CE/EL/03 Electrical Cables
- ▶ 4/CE/SS/01 Signals and Signs Labour
- ▶ 4/CE/SS/02 Signals and Signs Materials
- ▶ 4/CE/ME/01 Mechanical Engineering Labour
- ▶ 4/CE/ME/02 Mechanical Engineering Materials
- ▶ 4/CE/SP/01 Sprinklers Labour
- ▶ 4/CE/SP/02 Sprinklers Materials
- ▶ 4/CE/LE/01 Lifts and Escalators Labour
- ▶ 4/CE/LE/02 Lifts and Escalators Materials

# BCIS Forecasts of Price Adjustment Formulae Indices series 4 – Highways Maintenance

- ▶ 4/HM/R/01 Management and Administration
- ▶ 4/HM/R/02 Highways Maintenance Labour
- ▶ 4/HM/R/03 Highways Lighting Labour
- ▶ 4/HM/R/04 Road Vehicles
- ▶ 4/HM/R/05 Operational Plant
- ▶ 4/HM/R/06 Aggregates including Levy
- ▶ 4/HM/R/07 Aggregates for Surface Dressing
- ▶ 4/HM/R/08 Ready Mixed Concrete
- ▶ 4/HM/R/09 Cast and Spun Iron Products (including pipes)
- ▶ 4/HM/R/10 Plastic Products (including pipes)
- ▶ 4/HM/R/11 Asphalt for Paving
- ▶ 4/HM/R/12 DERV Fuel 4/HM/R/13 Gas Oil (Diesel in Construction)
- ▶ 4/HM/R/13a Gas Oil (Red Diesel)
- ▶ 4/HM/R/14 Metal Sections
- ▶ 4/HM/R/15 Waste Disposal
- ▶ 4/HM/R/01 Management and Administration
- ▶ 4/HM/R/16 Precast Concrete Non-Structural Components
- ▶ 4/HM/R/17 Bitumen Emulsion for Surface Dressing
- ▶ 4/HM/R/18 Thermoplastic
- ▶ 4/HM/R/19 Lighting Supplies
- ▶ 4/HM/R/20 Information and Communications Technology (ICT)
- ▶ 4/HM/R/21 Insurance
- ▶ 4/HM/R/22 Vehicle Parts
- ▶ 4/HM/WC/01 Routine, Cyclic and Time Charge Works
- ▶ 4/HM/WC/02 Renewals and Construction Works
- ▶ 4/HM/WC/03 Professional Services
- ▶ 4/HM/WC/04 Machine Surfacing
- ▶ 4/HM/WC/05 Hand Surfacing/Patching
- ▶ 4/HM/WC/06 Surface Dressing
- ▶ 4/HM/WC/07 Road Markings
- ▶ 4/HM/WC/08 Street Lighting
- ▶ 4/HM/WC/09 Vehicle Maintenance

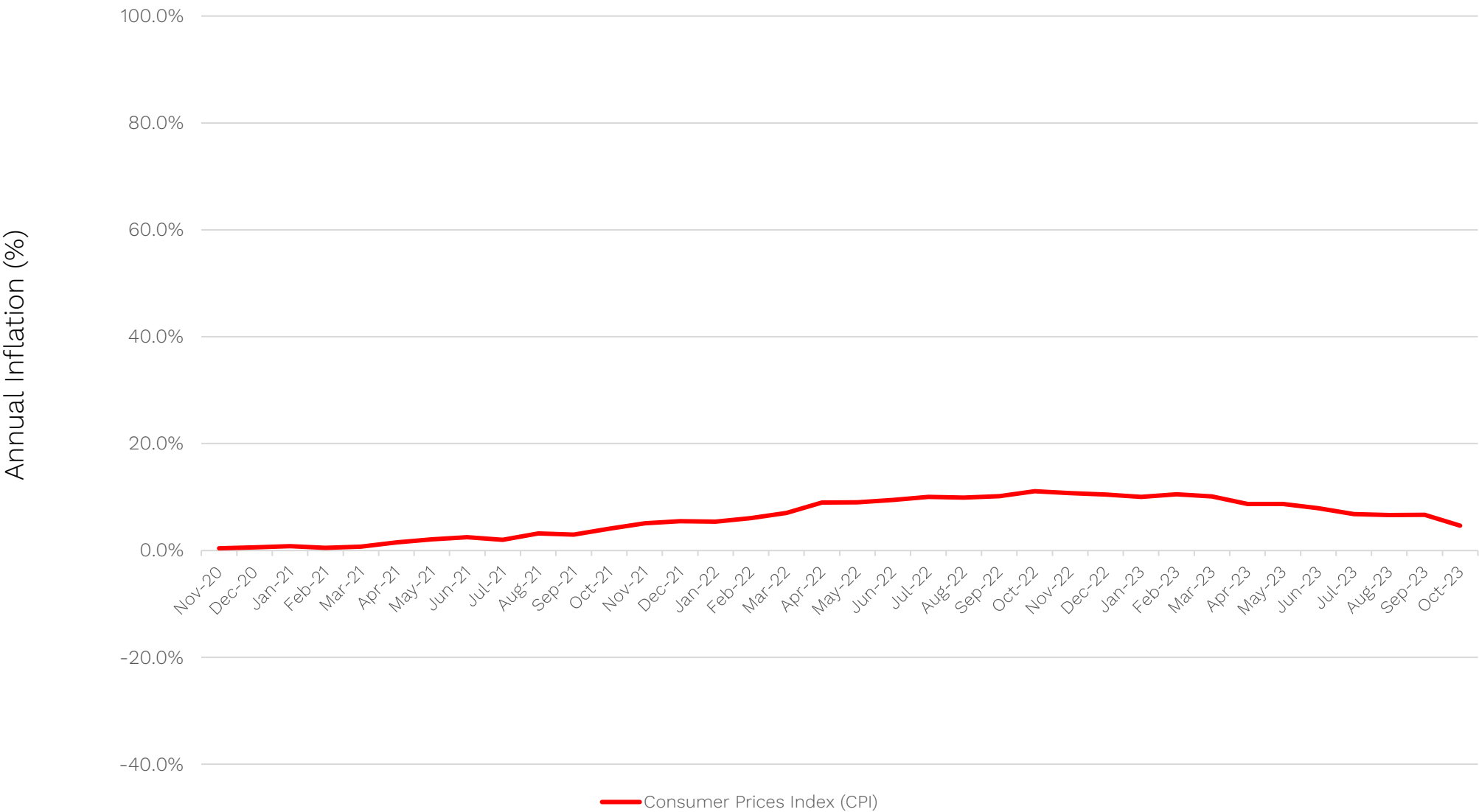
# BCIS Forecasts of Price Adjustment Formulae Indices (Specialist Engineering) – Series 3

- ▶ 4/HM/R/01 Management and Administration
- ▶ 3/C1 Catering Equipment - Labour
- ▶ 3/C2 Catering Equipment - Mechanical Engineering Materials
- ▶ 3/C3 Catering Equipment - Stainless Steel
- ▶ 3/C4 Catering Equipment - Factor Items 3/E1 Electrical - Labour
- ▶ 3/E2 Electrical - Materials
- ▶ 3/H1 Mechanical - Labour
- ▶ 3/H2 Mechanical - Materials: Non-Housing
- ▶ 3/H3 Mechanical - Materials: Housing Only
- ▶ 3/H4 Mechanical - Materials: Sprinklers Only
- ▶ 3/L1 Lift - Mechanical Engineering Labour
- ▶ 3/L2 Lift - Mechanical Engineering Materials
- ▶ 3/L3 Lift - Electrical Engineering Materials
- ▶ 3/L4 Lift - Electrical Engineering Labour
- ▶ 3/S1 Structural Steelwork - Labour
- ▶ 3/S2 Structural Steelwork - Materials: Building Work
- ▶ 3/S3 Structural Steelwork - Materials: Civil Engineering Work

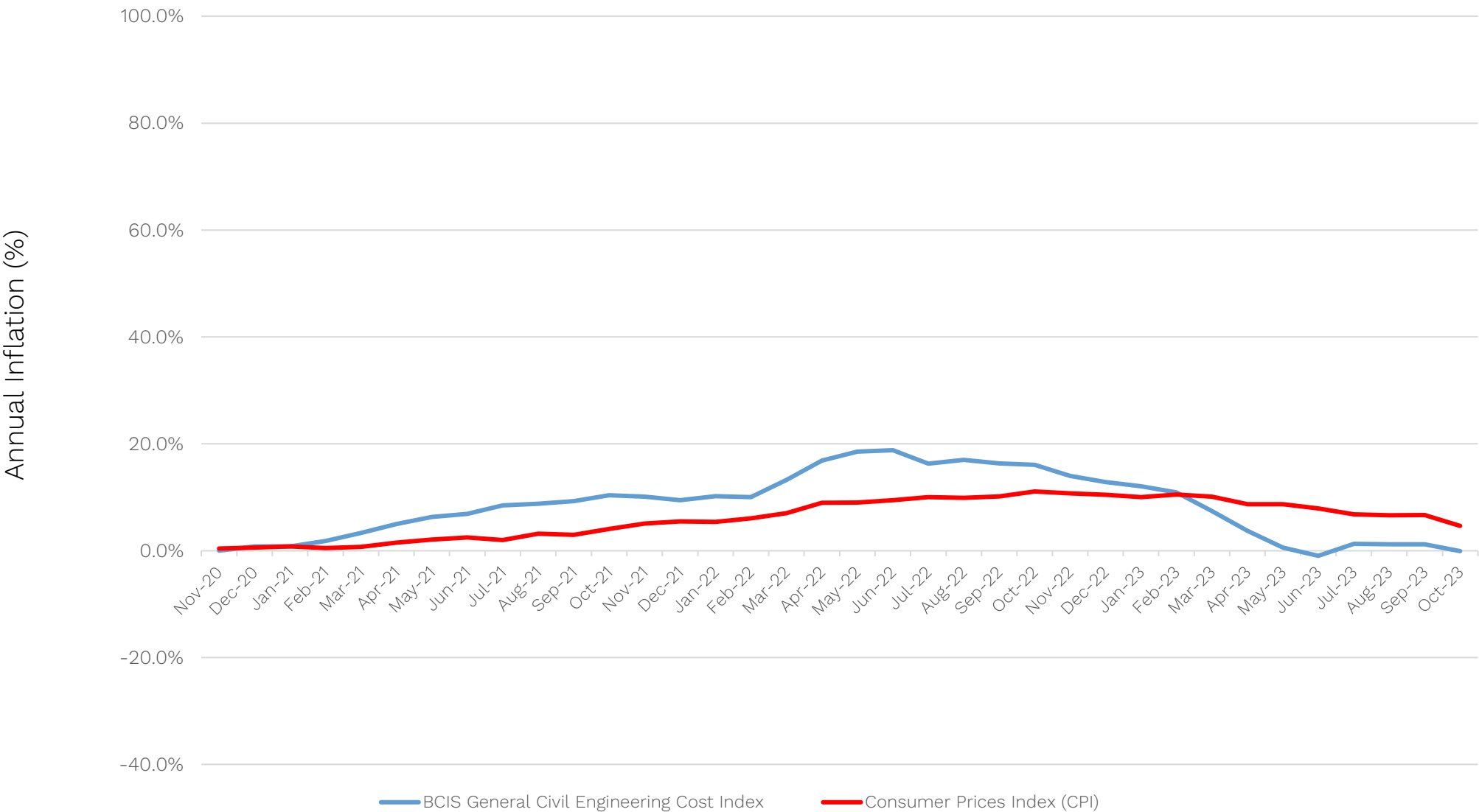
# Why do we need to use forecasts?

- ▶ Why does inflation matter?
- ▶ What are the risks to a project?

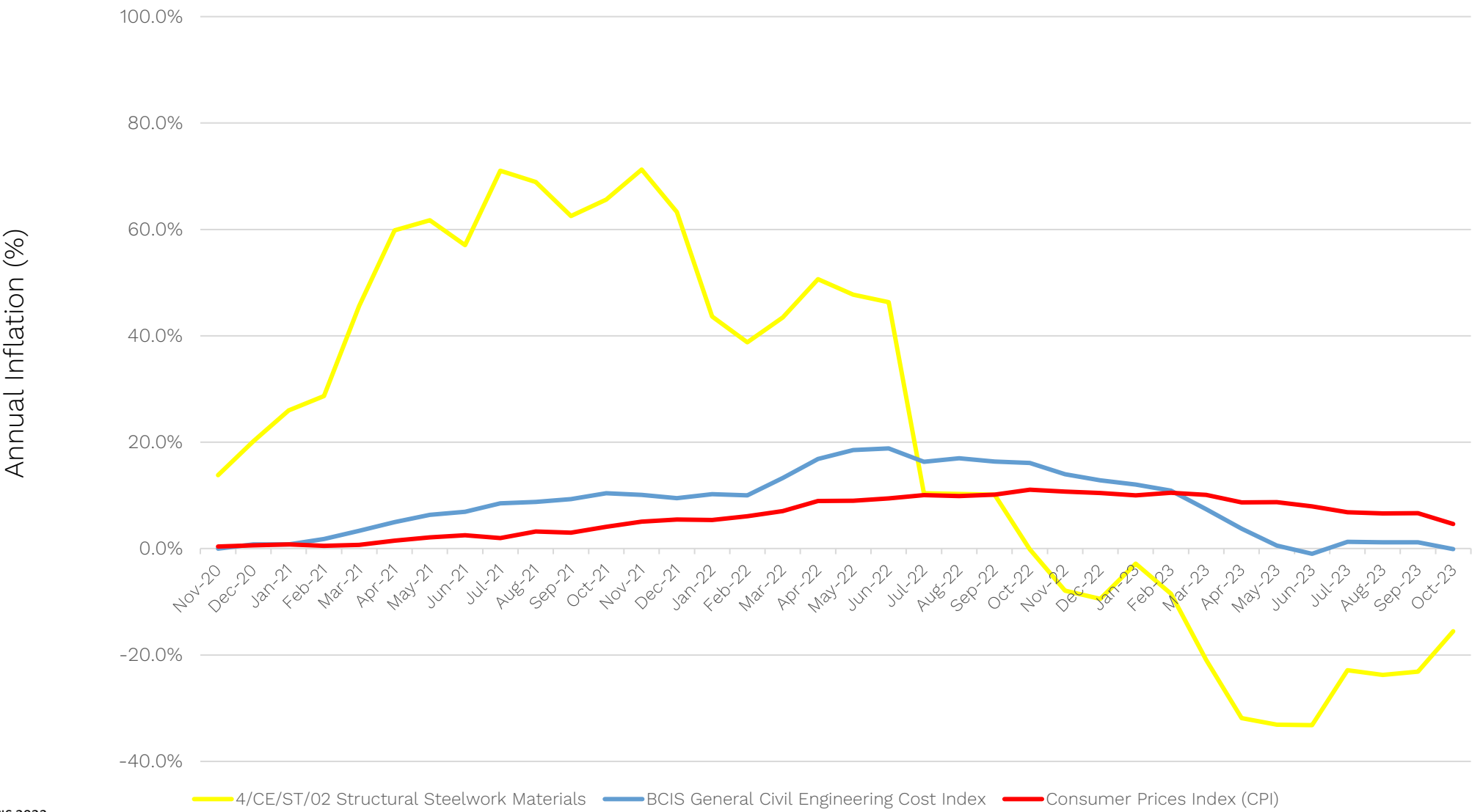
# General inflation (CPI)



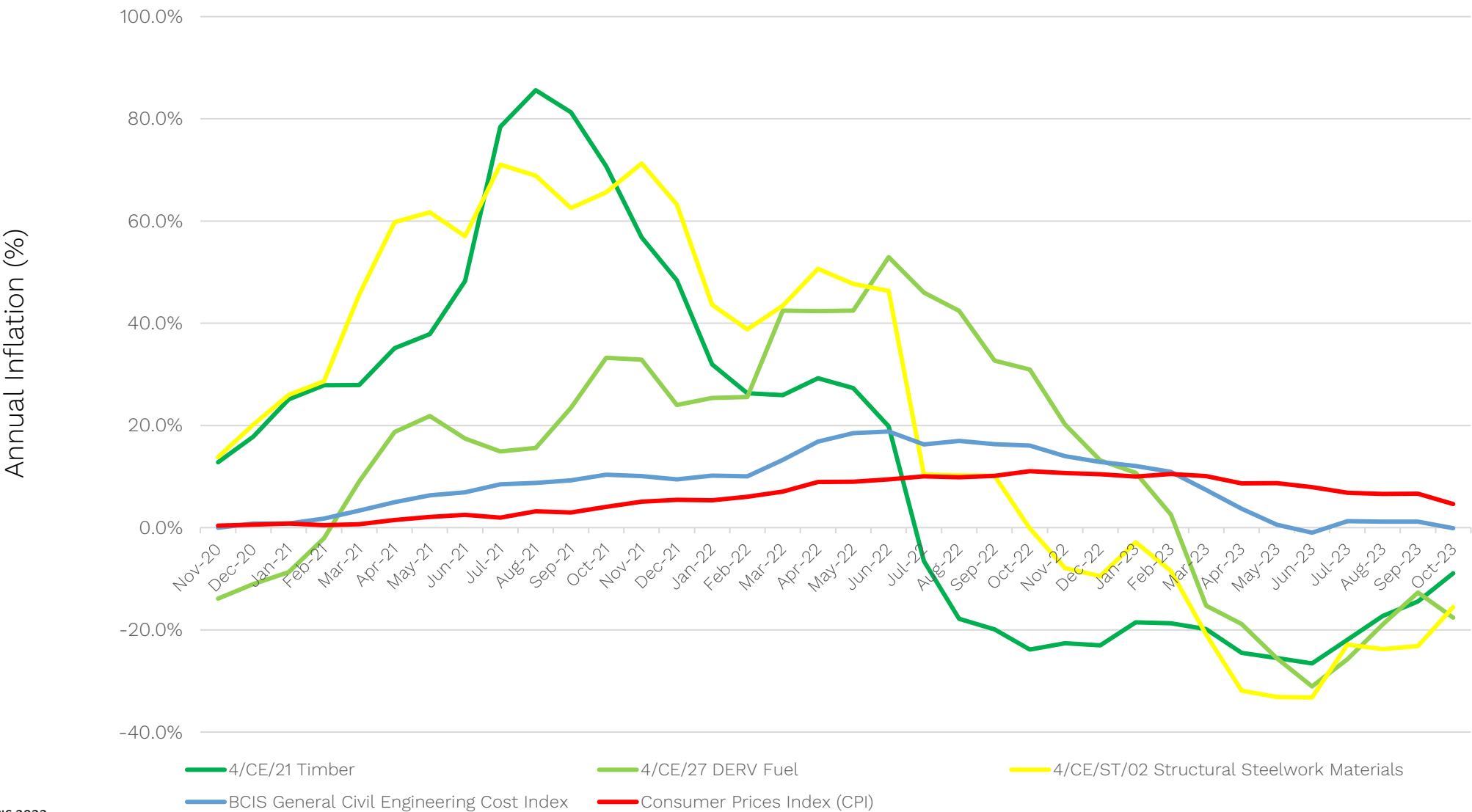
# CPI vs General Civil Engineering Costs



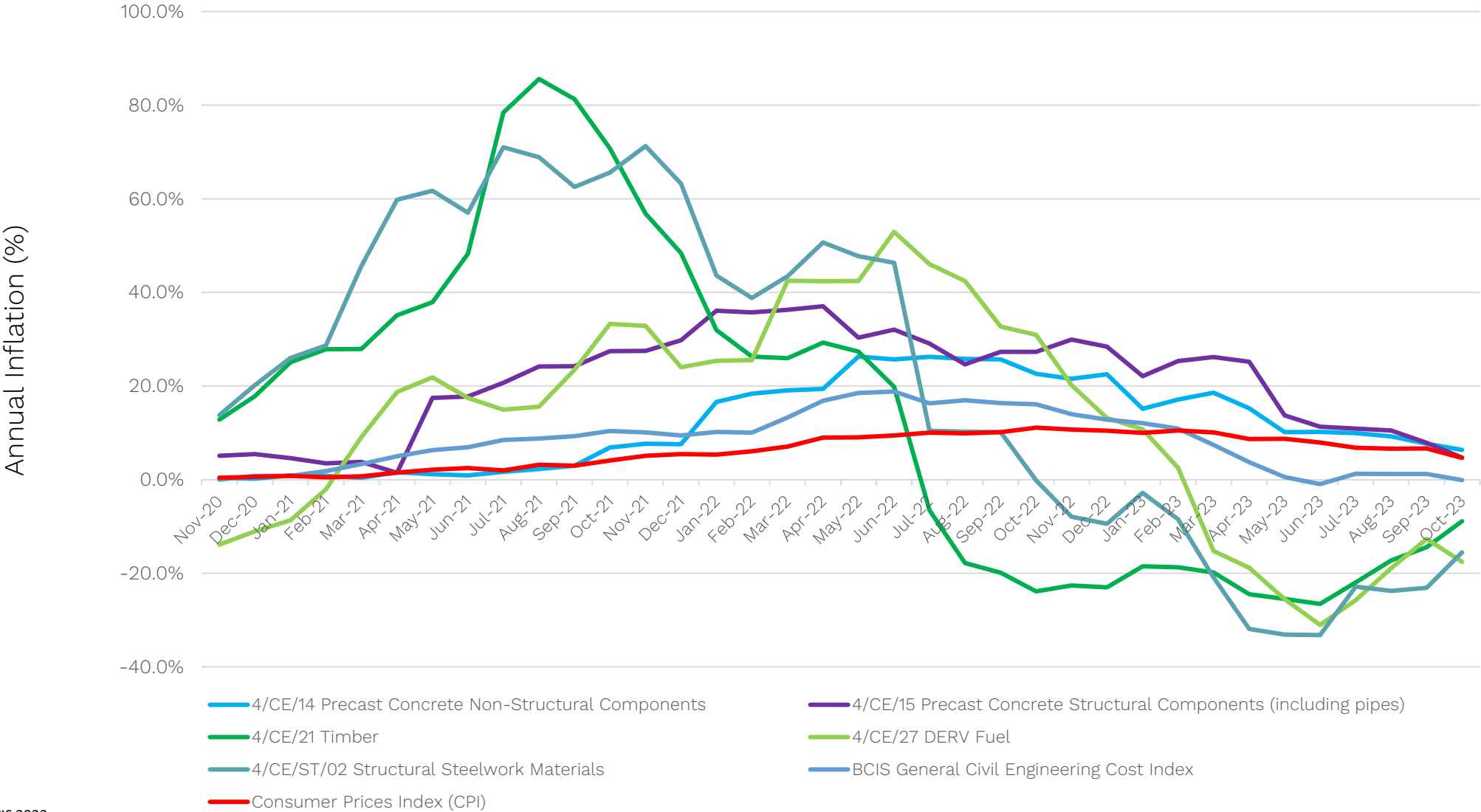
# CPI vs Structural Steel Materials



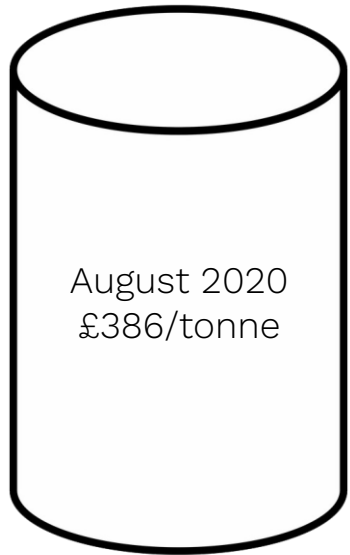
# CPI vs Timber and Fuel



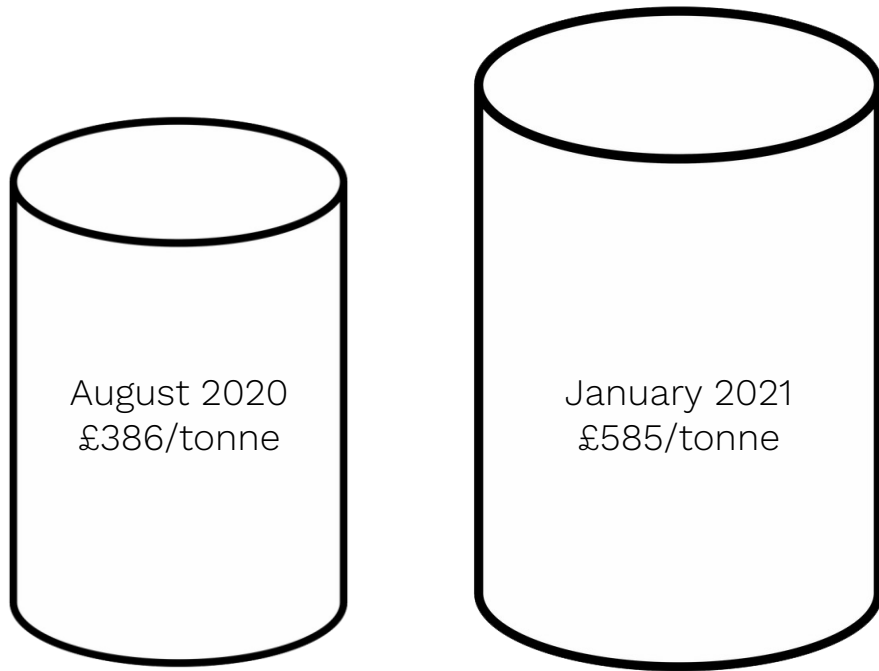
Comparison: Precast concrete - structural components vs non-structural components



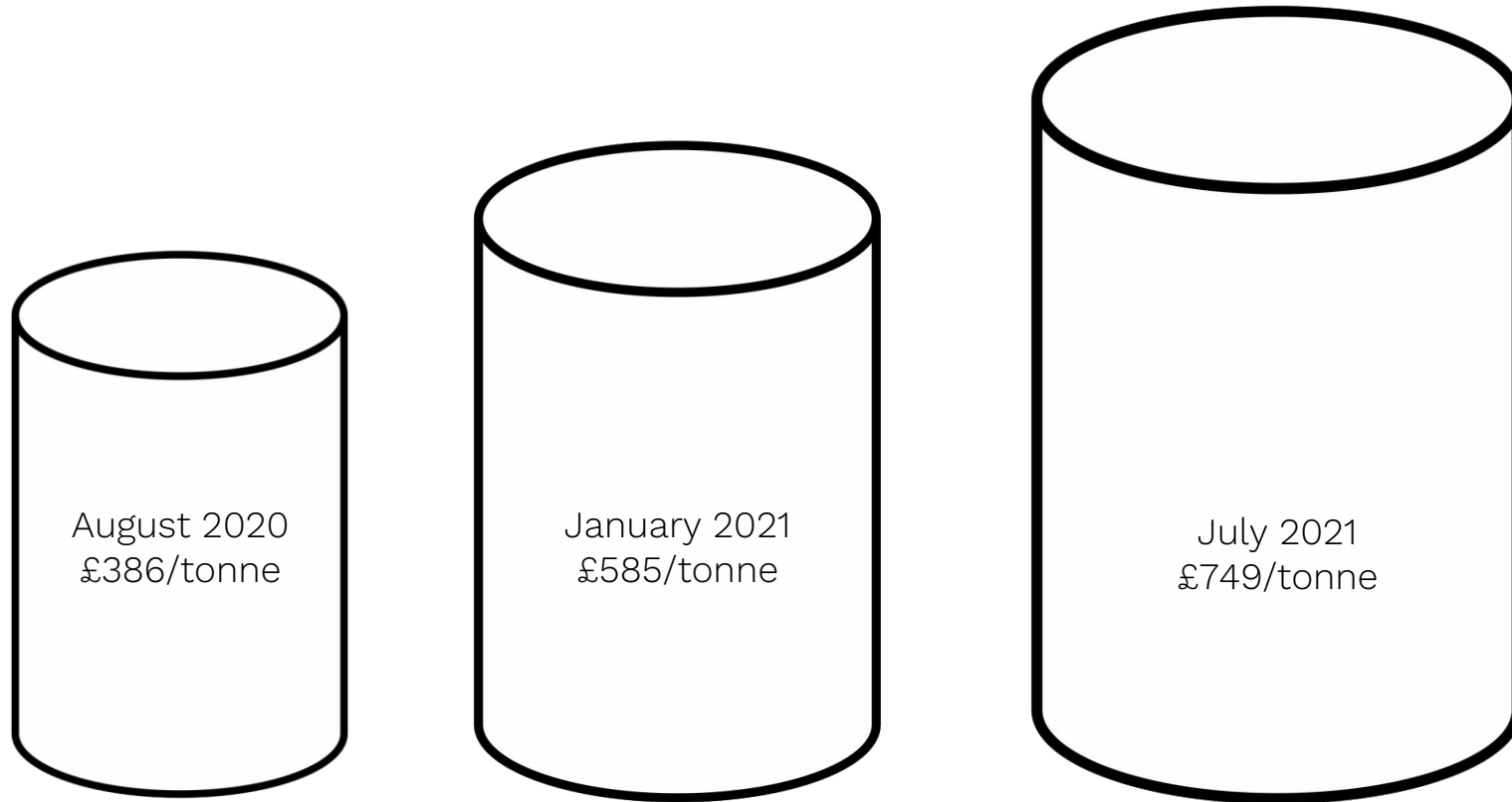
# Rising cost of steel rebar



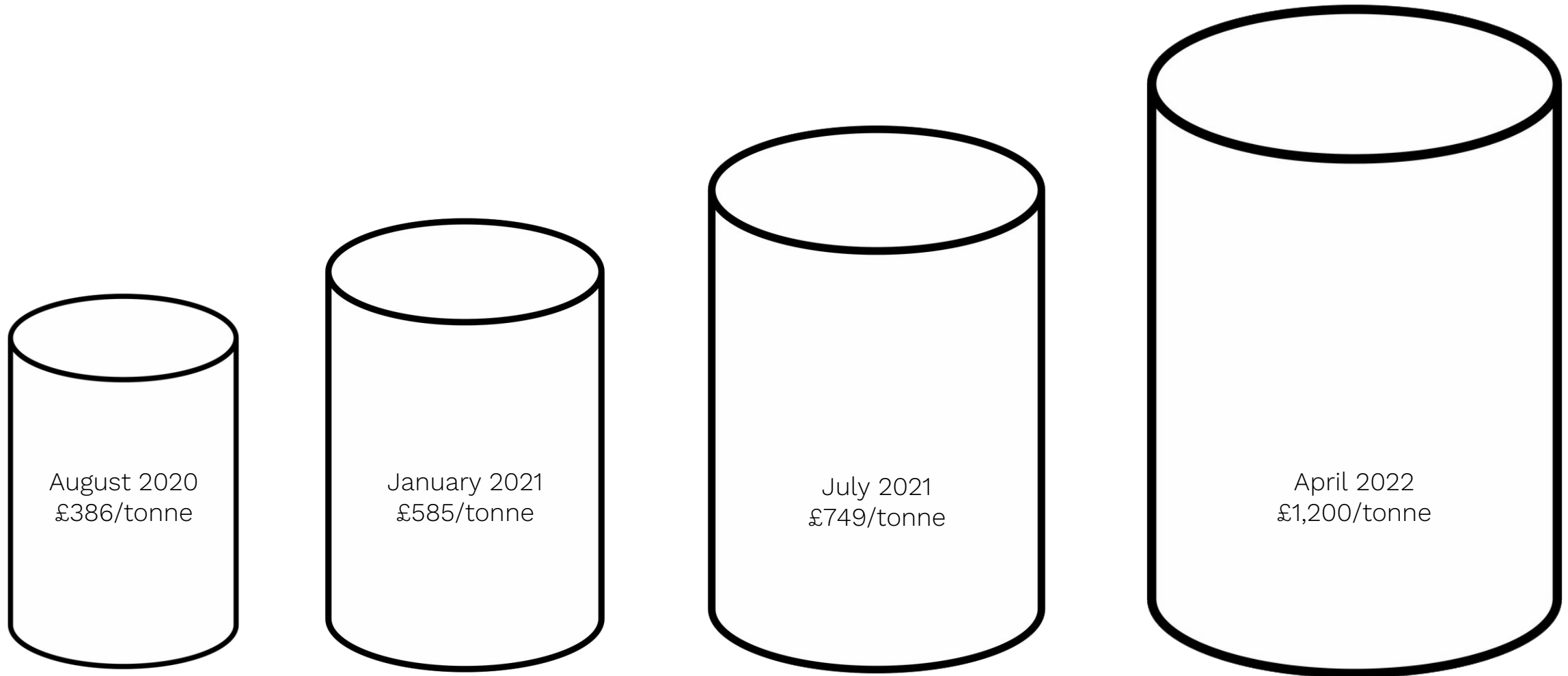
# Rising cost of steel rebar



# Rising cost of steel rebar



# Rising cost of steel rebar



## What does it mean?

- ▶ Does the project pass the affordability test?
- ▶ Can we access the appropriate level of funding?
- ▶ Indeed, to bid or not to bid?
- ▶ Are there grounds for negotiation?
- ▶ Does the project length or start date of the construction phase make a difference?
- ▶ Tendering now for years to come – where will we be by then?
- ▶ Will the work be split into smaller work packages?
- ▶ Is it prudent to enter into a fixed price contract?
- ▶ Will provisional sums be used?
- ▶ What risk sharing mechanisms will be in place?
- ▶ Are we putting ourselves at financial risk? Worst case scenario, real financial distress?

## Forecasting with hindsight

- ▶ Using our experience of current and past projects
- ▶ Seeing how market has responded previously to economic shocks
- ▶ Using historic data to help predict future trends

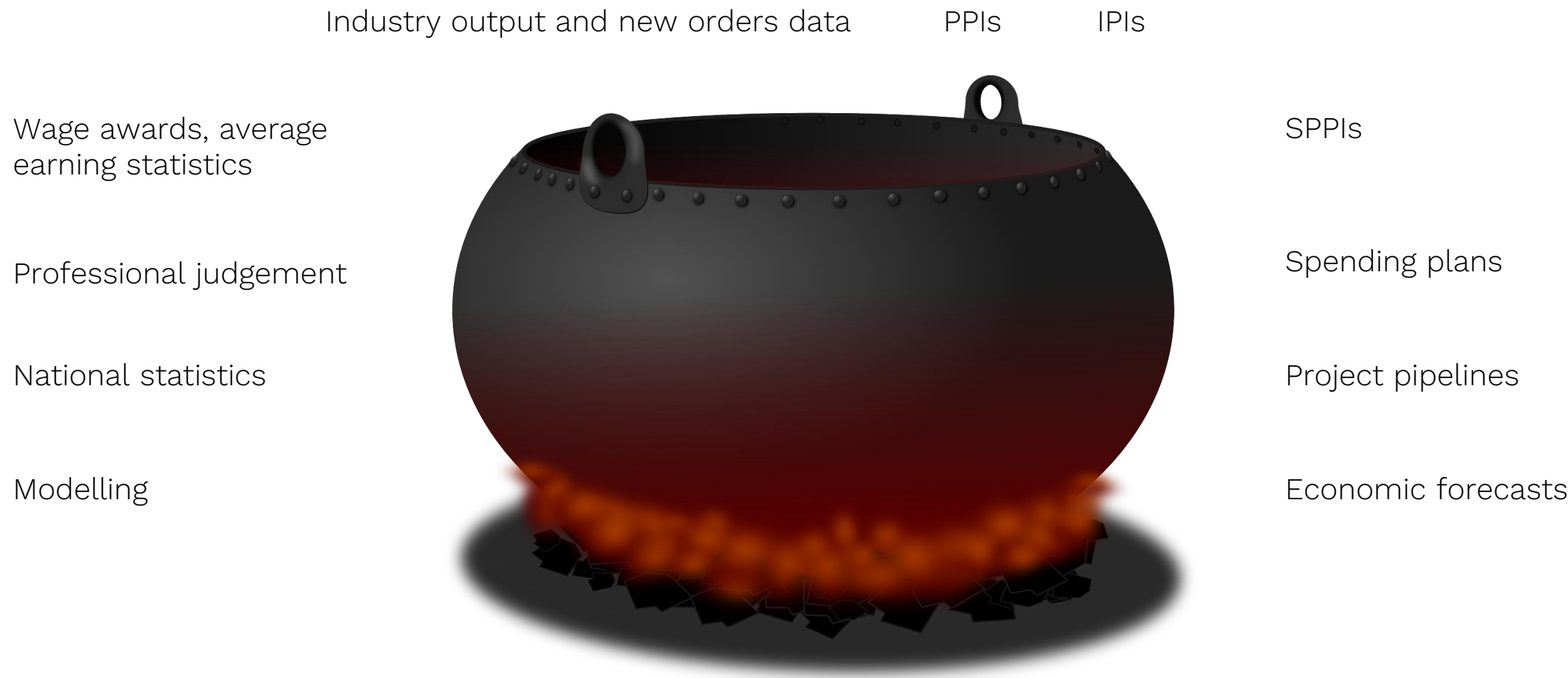
# Forecasting with insight

- ▶ Ideal scenario: knowledgeable supply chain, wealth of historical project data and transparency
- ▶ Using experience of cyclical nature of the industry
- ▶ Taking insights from wider economic forecasts and what they tell us about overarching trends in the market
- ▶ Interest rates
- ▶ Commodity price indexes
- ▶ Utilising relationships with merchants and manufacturers
- ▶ Making sense of world events
- ▶ Government announcements, policies and regulations
- ▶ Trade bodies and wage awards

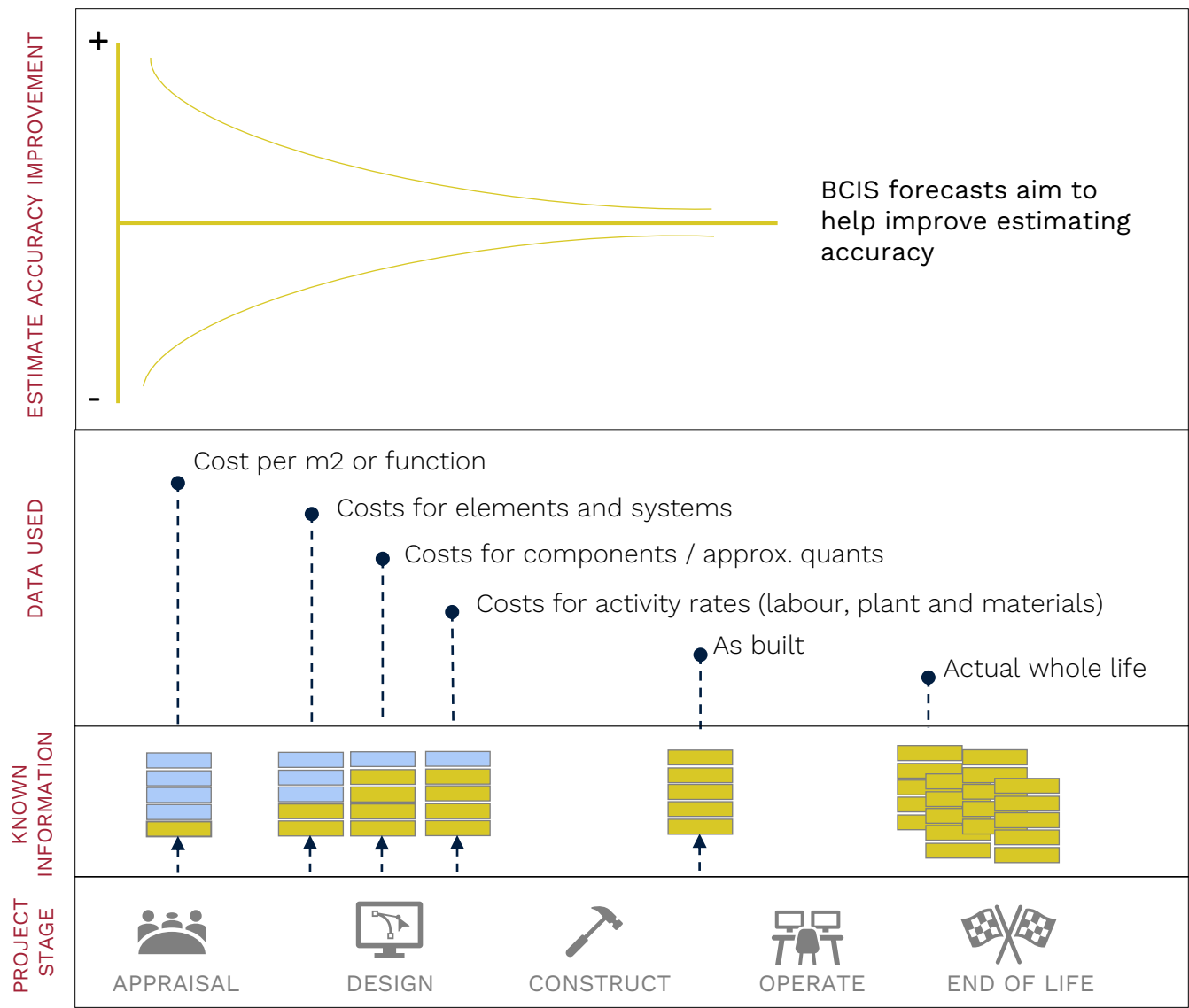
# Forecasting with foresight

- ▶ Foresight = all of our hindsight and insights added to team's expertise, using 60+ years' data
- ▶ Access to panels of experts, e.g. for TPI, Scottish tender price assessment panel and house builders
- ▶ Taking changes and making sense of them with our construction economist hats on
- ▶ Producer price indices that aren't available publicly
- ▶ Thousands of cost analyses
- ▶ Forecasts based on set of assumptions and monitored in line with risk matrix,
  - ▶ E.g industrial unrest, insolvencies in the supply chain, RAAC crisis, energy supply, shifting goalposts on net zero targets, building for more extreme weather events

# How do we forecast at BCIS?



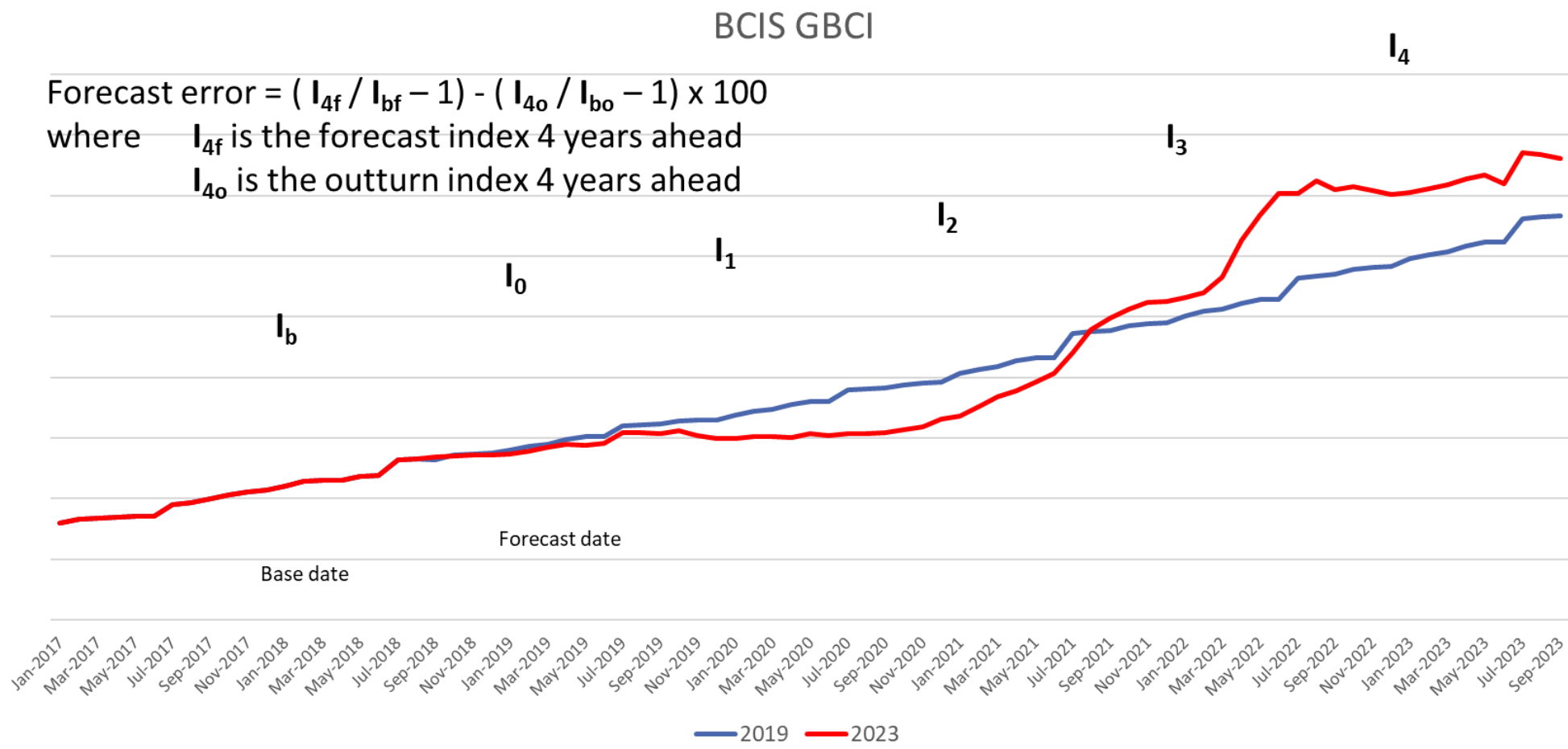
# Using the most appropriate index forecast to improve estimating accuracy



# Using the most appropriate index forecast to improve estimating accuracy **BCIS<sup>®</sup>**



# Forecast performance



# Forecast performance



## What forecasts are currently available?

Available forecasts are in the main for 'typical' or 'average' buildings or types of work.

In using them, there is an assumption that the cost movement is the averages of trades and resources throughout the project period.

In practice, every project has a different mix and weightings of trades, and we spend money on different trades at different times.

## What forecasts are currently available?

- ▶ Cost indices
- ▶ Price indices

These measure the general movement in costs and prices

## What are they used for?

- ▶ Forecasting project prices
- ▶ Forecasting programme prices
- ▶ Forecasting cost estimates
- ▶ Forecasting impact of inflation on cash flow

# Weightings from BCIS Roads Cost Index

## BCIS Roads Cost Index:

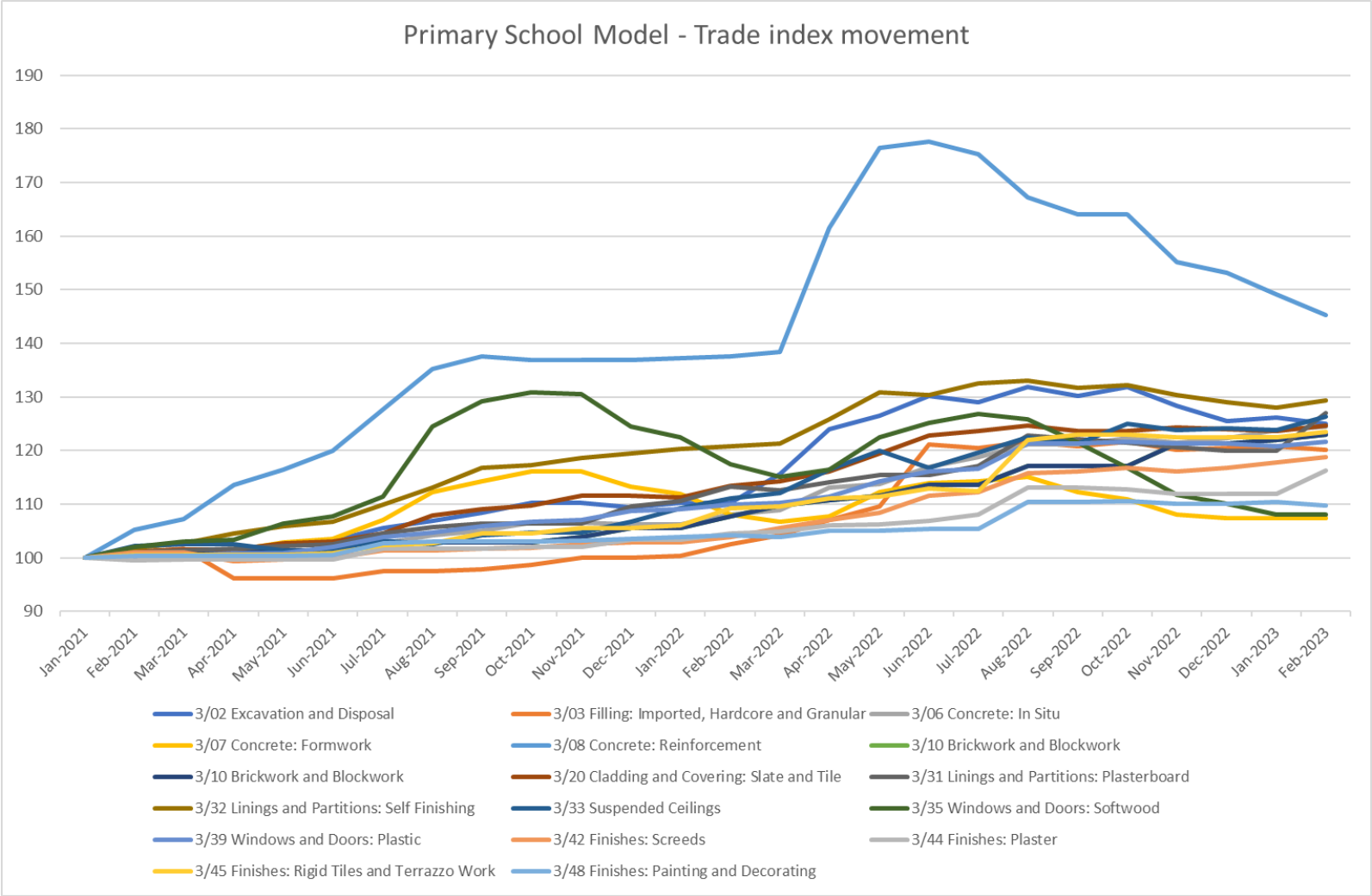
The roads cost index is based on the ROCOS Resource Cost Index of Road Construction: Combined (formerly BIS) rebased to 2005 mean. The weights are as follows:

Reference	Index	Weights	
		Average 2005	January 2014
90/1	Labour and supervision	26.0%	21.3%
90/2	Plant and road vehicles	12.1%	9.7%
90/3	Aggregates	2.2%	1.7%
90/4	Bricks and clay products	0.2%	0.2%
90/5	Cements	1.8%	1.7%
90/6	Ready mixed concrete	4.2%	3.4%
90/7	Cast and spun iron products	0.2%	0.2%
90/8	Plastics	0.7%	0.7%
90/9	Coated macadam and bituminous products	36.9%	46.3%
90/10	DERV fuel	3.8%	3.6%
90/11	Gas oil (Diesel in Construction), prior to April 2022 Gas oil fuel	1.0%	1.4%
90/12	Timber	0.4%	0.4%
90/13	Reinforcing steel	4.3%	4.3%
90/14	Metal sections	2.9%	2.2%
90/15	Sheet steel piling	0.1%	0.1%
3/S1	Steel labour	1.2%	1.1%
3/S3	Steel materials	1.2%	1.0%
3/L4	Electrical labour	0.5%	0.5%
3/L3	Electrical materials	0.3%	0.2%
	Total	100.0%	100.0%

# Example programme

Single storey Primary School - illustrative programme Jan 21 to Feb 23																											
Date		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Excavation and Disposal	£186,441																										
Filling: Imported, Hardcore and Granular	£279,661																										
Concrete: In Situ	£838,983																										
Concrete: Formwork	£279,661																										
Concrete: Reinforcement	£559,322																										
Brickwork and Blockwork - external walls	£2,050,847																										
Brickwork and Blockwork - internal walls	£559,322																										
Cladding and Covering: Slate and Tile	£1,584,746																										
Linings and Partitions: Plasterboard	£93,220																										
Linings and Partitions: Self Finishing	£932,203																										
Suspended Ceilings	£279,661																										
Windows and Doors: Softwood - internal	£559,322																										
Windows and Doors: Plastic -external	£1,584,746																										
Finishes: Screeds	£279,661																										
Finishes: Plaster	£279,661																										
Finishes: Rigid Tiles and Terrazzo Work	£372,881																										
Finishes: Painting and Decorating	£186,441																										

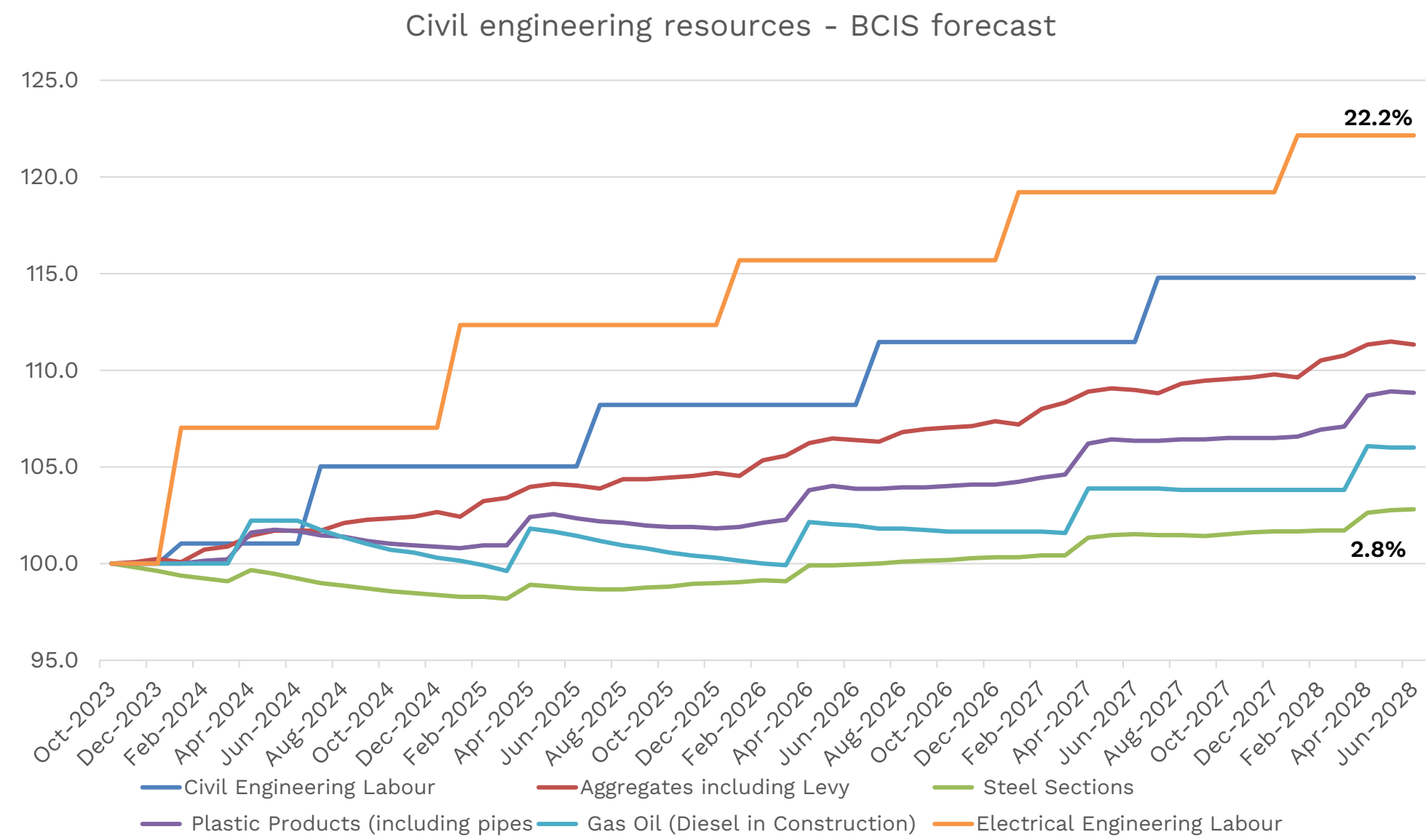
# Trade index movement over the contract period



# Applying different indices to programme

	Increased costs	Percentage
Applying work category indices to costs in the programme	£1,292,034	-
Applying mix weighted index to half the programme period	£1,176,200	-9%
Applying General Building Cost Index to half the programme period	£2,183,733	+40%

# Civil engineering selected forecast indices



## Work category forecasts

- ▶ Construction-specific forecasts are great.
- ▶ When looking at specific project costs, more detailed forecasts that can align with the actual work mix are even better.

# Work category forecasts

Title	Work categories	Resource costs
BCIS Forecast of Price Adjustment Formulae Indices (Building) Series 3	60	5
BCIS Forecast of Price Adjustment Formulae Indices Series 4 – Civil Engineering and related specialist	-	42
BCIS Forecast of Price Adjustment Formulae Indices Series 4 – Highways Maintenance	9	23
BCIS Forecast of Price Adjustment Formulae Indices (Specialist Engineering) Series 3	-	17

- ▶ Work categories
- ▶ Resource costs
- ▶ Using Price Adjustment Formulae Indices categories
- ▶ Item of work / mix of work

# Benefits of granular level forecasting

- ▶ Cash flow planning and budgeting
- ▶ Better-informed decisions
- ▶ Time-saving
- ▶ Inform design and planning choices / decisions
- ▶ Bargaining power

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