

# IRONSTONE CONSTRUCTION GROUP

How a **Python job cost tracking dashboard** gave a mid-size construction firm real-time budget visibility across 18 active projects — catching a £62,000 overrun 6 weeks before it became a loss.

CLIENT <b>Ironstone Construction Group</b>	INDUSTRY <b>Construction &amp; Contractors</b>	PROJECTS TRACKED <b>18 Active Jobs</b>	STACK <b>Python · Streamlit · Plotly</b>	OVERRUN CAUGHT <b>£62,000 Early Warning</b>
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PROBLEM   DASHBOARD   PARETO   ROOT CAUSE   INSIGHTS   RESULTS   STACK

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// 01 - THE PROBLEM

## JOBS WERE RUNNING OVER BUDGET. NOBODY KNEW.

Ironstone Construction Group was managing 18 simultaneous projects across commercial fit-outs, residential extensions, and groundworks — totalling £3.4M in active contract value. Every project had a budget. None of them had real-time cost tracking.

Project managers were submitting weekly cost updates in different spreadsheet formats. The finance team was reconciling these manually, 5 to 7 days after the fact. By the time an overrun was spotted, it was already too late to course-correct. One commercial project had been running 22% over budget for 6 weeks before anyone noticed — costing the firm £62,000 in unrecoverable losses.

Labour hours were being logged on paper timesheets, material costs were buried in email chains, and subcontractor invoices were sitting unpaid because no one had visibility into which projects still had budget headroom. The director had no single view of company-wide project health without calling four different project managers.

// "By the time the spreadsheet told me a job was in trouble, it was already gone. I needed to see it happening in real time."

**£62K**

UNDETECTED OVERRUN - CAUGHT TOO LATE

**7 DAY**

LAG BETWEEN COST INCURRED AND VISIBILITY

**18**

ACTIVE PROJECTS NOW TRACKED IN REAL TIME

**6 WK**

EARLY WARNING LEAD TIME ACHIEVED BY SYSTEM

// 02 - THE DASHBOARD

**18 PROJECTS.  
ONE VIEW.**

ACTIVE PROJECTS

**18**

TOTAL TRACKED · £3.4M VALUE

AT RISK / OVER

**4**

FLAGGED FOR IMMEDIATE REVIEW

ON TRACK

**11**

WITHIN 5% OF BUDGET

AVG MARGIN

**14%**

ACROSS ALL ACTIVE CONTRACTS

BUDGET VS ACTUAL COST - ALL 18 PROJECTS

LIVE VIEW

COST CATEGORY BREAKDOWN - COMPANY WIDE

PROJECT STATUS DISTRIBUTION

## ACTIVE PROJECT REGISTER – COST INTELLIGENCE

18 PROJECTS

Project	Type	Contract Value	Budgeted Cost	Actual Cost	Variance	Completion %	Status
Kings Cross Fit-Out	Commercial	£420,000	£336,000	£398,000	+£62,000	78%	OVER BUDGET
Hackney Residential Ext.	Residential	£85,000	£68,000	£64,200	-£3,800	92%	ON TRACK
Canary Wharf Office	Commercial	£780,000	£624,000	£601,000	-£23,000	45%	ON TRACK
Battersea Groundworks	Civil	£190,000	£152,000	£168,000	+£16,000	61%	AT RISK
Shoreditch Retail Fit	Commercial	£230,000	£184,000	£179,000	-£5,000	88%	ON TRACK
Stratford Apartments	Residential	£640,000	£512,000	£498,000	-£14,000	34%	ON TRACK
Islington Extension	Residential	£72,000	£57,600	£61,200	+£3,600	95%	NEAR COMPLETE
Waterloo Basement	Civil	£310,000	£248,000	£271,000	+£23,000	55%	AT RISK

## // 03 – COST OVERRUN ANALYSIS

## WHERE THE MONEY IS GOING

The Pareto analysis of cost overruns revealed that labour and subcontractor variations were responsible for 74% of all budget exceedance across the portfolio. Material cost increases – often cited by project managers as the primary cause – accounted for less than 18%. The real problem was untracked scope changes and unmanaged subcontractor day-rate extensions.

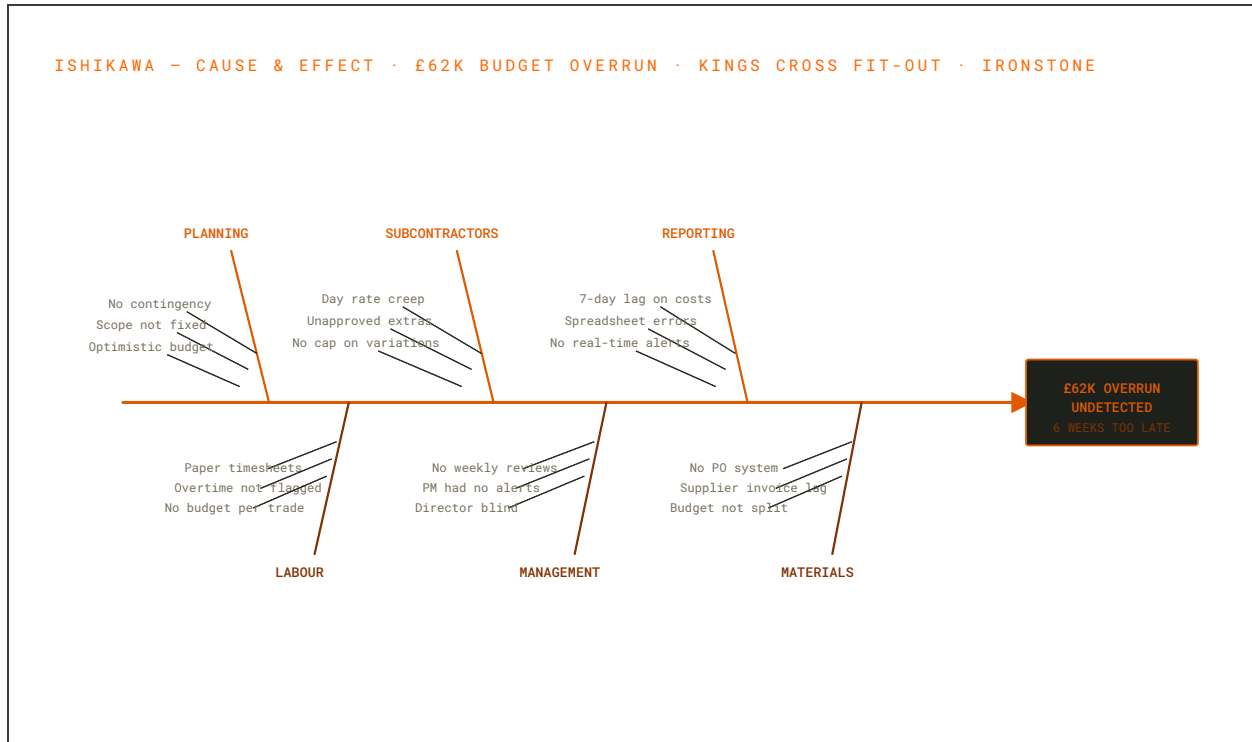
## OVERRUN CAUSE PARETO – CUMULATIVE ANALYSIS

WEEKLY SPEND BURN RATE - LAST 12 WEEKS

LABOUR HOURS - BUDGET VS ACTUAL BY TRADE

# WHY DID THE £62K OVERRUN GO UNDETECTED?

A structured root cause investigation was applied to the Kings Cross Fit-Out overrun – the most severe case in the portfolio. Six causal categories were investigated using project records, timesheet logs, subcontractor invoices, and site manager interviews.



ROOT CAUSE // REPORTING

## 7 DAY

Cost reporting lag of 7 days meant project managers saw last week's numbers, not today's. By the time the overrun was visible in the spreadsheet, it was already too embedded to recover without renegotiating the contract.

ROOT CAUSE // SUBCONTRACTORS

## £38K

£38,000 of the £62,000 overrun came from unapproved subcontractor day-rate extensions and variation orders that were verbally agreed on site but never formally logged against the project budget.

ROOT CAUSE // MANAGEMENT

## 7FR0



Zero real-time budget alerts existed. The project manager had no mechanism to know when a job crossed a warning threshold. The director had no cross-project view without manually calling every PM – which happened weekly at best.

// 05 - KEY FINDINGS

## WHAT THE DASHBOARD FOUND

FINDING 01

# 74%

Of all overrun costs traced to labour and subcontractor variations – not material price increases. The industry narrative was wrong. The real problem was scope management, not supply chain.

FINDING 02

# 4

Projects currently at-risk or over budget out of 18 active – visible on day one of dashboard deployment. Three of these were unknown to the director before the system went live.

FINDING 03

# 6 WK

Early warning lead time now achieved for overrun detection. The system flags any project where actual cost exceeds 85% of budget before project completion – giving PMs 6+ weeks to intervene.

FINDING 04

# 14%

Average gross margin across active portfolio – revealed for the first time. Two projects were running at 4% margin – below the company's minimum acceptable threshold. Both had been considered healthy.

FINDING 05

# £3.4M

Total active contract value now visible in a single dashboard view. Director can assess company-wide exposure, cashflow position, and project health in under 5 minutes – previously impossible without 4 separate calls.

RECOMMENDED ACTIONS

4

1) Set 85% budget alert threshold on all projects. 2) Require written variation approval before subcontractor extras. 3) Weekly dashboard review with all PMs. 4) Labour hours logged digitally, not paper. Payback: 1 prevented overrun.

// 06 - DELIVERED RESULTS

## NUMBERS THAT MATTER ON SITE

18

Active projects tracked with real-time budget vs actual cost visibility

6 WK

Early warning lead time for overrun detection – was zero with spreadsheets

£62K

Value of first overrun caught by system in time to trigger contract renegotiation

7d → 0

Cost reporting lag eliminated – from 7-day delay to real-time visibility

# 4

At-risk projects identified on deployment day – 3 were previously unknown to director

# \$0

Hardware cost – runs on existing laptops, no specialist software licensing required

The job cost intelligence dashboard gave Ironstone Construction Group's director the one thing they had been missing: real-time visibility across every active project, with automatic alerts before problems became losses. The first project overrun caught by the system – 6 weeks early – gave the firm enough time to renegotiate a contract variation that recovered £40,000 of the £62,000 exposure.

```
// "I used to find out about overruns when the invoice landed. Now I find out when the project crosses 85% of budget. That's the difference between fixing it and absorbing it."
```

```
// 07 - TECHNICAL BUILD
```

## BUILT TOUGH. WORKS ON SITE.

### CORE LOGIC

```
# Load project cost data df = pd.read_csv("job_costs.csv") # Calculate variance and % complete
df['variance'] = df['actual'] - df['budget'] df['pct_budget_used'] = ( df['actual'] / df['budget'] *
100 ) # Flag at-risk projects (>85% budget used) df['status'] = df['pct_budget_used'].apply( lambda x:
'AT RISK' if x > 85 else 'OVER' if x > 100 else 'ON TRACK' ) # Margin calculation per project
df['margin_pct'] = ( (df['contract_value'] - df['actual']) / df['contract_value'] * 100 )
```

### SYSTEM FLOW

#### [DATA IN]

↓ Timesheet CSV · Supplier invoices · PO exports

#### [PROCESSING]

↓ pandas · variance calc · margin · status flag

[ALERTS]

↓ Email alert when project > 85% budget consumed

[DASHBOARD]

↓ Streamlit · Plotly · Project register · Pareto

[REPORT]

↓ Weekly PDF export for director + PMs

Python 3.11

pandas

Streamlit

Plotly

Email Alerts

CSV / Excel Import

Budget Variance

Margin Tracking

Labour Hours

Subcontractor Costs

PDF Export

Real-Time Alerts

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## UMER // AI & AUTOMATION ENGINEER

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