

2025 Longwall & Underground Coal Mining Conference

Engineering Smarter

Real-world AI applications in an engineering company



About Waterline



Our footprint

We are a multi-discipline Engineering Consultancy with offices in Brisbane and Mackay



Where we work

We have been supporting clients in the Resources Industry **since 2011**



Client problems

We support clients across:

1. Advisory Projects
2. Capital Projects
3. Operational Engineering

Partnering with Australian Industry to provide safe and sustainable resources to the world

DRIVEN

“Approach with enthusiasm”

Striving to deliver quality results with enthusiasm

We honour our commitments

AUTHENTIC

“What you see is what you get”

We are true to ourselves and each other. I can be myself at Waterline

EMPATHETIC

“Put yourself in their boots”

We appreciate the realities of being on site

We care about our clients, colleagues and the communities we live and work in

SUPPORTIVE

“Got your back”

We share the load for our collective success. We are an extension to each others' teams. We support each other in our work and personal lives

Who we are

We understand mining operations and focus our support in three key areas:

WE CURRENTLY SUPPORT MINES IN QLD, AND ARE GROWING OUR NSW BASE:



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⚙️ Waterline
AI journey

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01 | WATERLINE AI ADOPTION JOURNEY

Waterline AI journey

2023

- JAN: ChatGPT push
- JUN: Data lake
- Nov: AI prompt guidance tips

2024

- AUG: AI specialist engagement
- AUG – CURRENT: AI maturity assessment model
- SEP – DEC: Lunch & Learns
- NOV – CURRENT: AI Champions
- DEC – CURRENT: weekly support

2025

- ONGOING: AI Champions
- ONGOING: AI maturity model
- ONGOING: weekly support





02 | USE CASES



Inconsistent &
manual process



Fast, accurate &
repeatable financial
scenarios

Outcomes

390 Hrs saved
per year

0 Dependency on
a single person

Efficiencies improve as the
proposal count increases



Idea generator:
Cory
Hodges-Neal



Manual & time
consuming
process



Reliable, accurate
& repeatable
analysis

Outcomes

50%

In efficiency
gains per
month



Dependency
on a single
person

Further improving lean
processes



Idea generator:
Amanda
McKenzie

Use case | Financial analysis

1.

ChatGPT prompt

2.

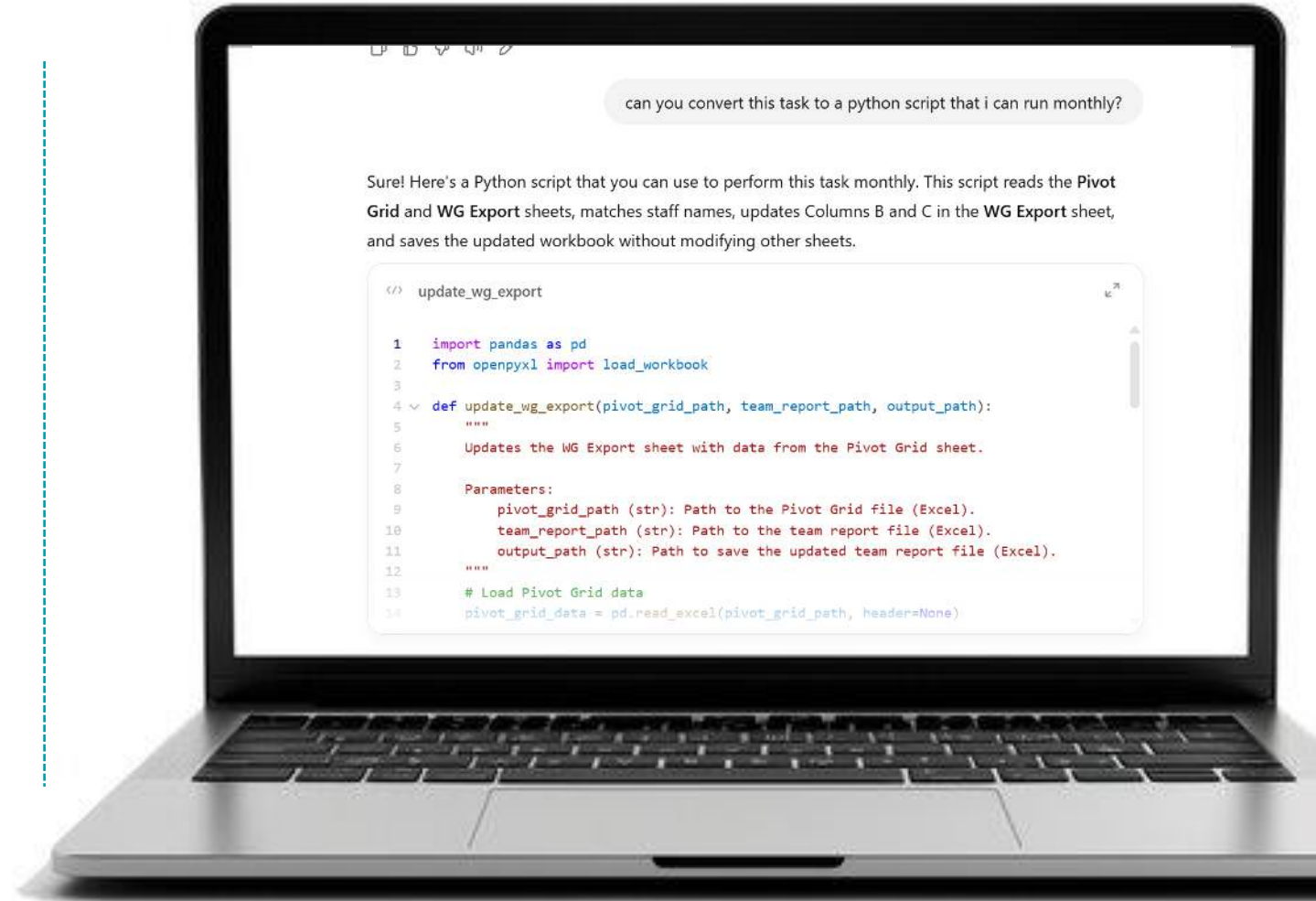
ChatGPT generates Python code

3.

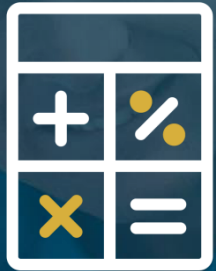
ChatGPT automates python code

4.

Validation via CFO



Use case | Site drawing meta data extraction



Labour & time
intensive process



Accurate, efficient
& scalable

* Data based on this client test / use case

WATERLINE

CIVIL + STRUCTURAL ⚙️ MECHANICAL ⚙️ ELECTRICAL ⚙️ DESIGN + DRAFTING ⚙️ CONTROL SYSTEMS ⚙️ OPERATIONAL SUPPORT

Outcomes*

80% Accuracy

7 Mths saved
in human
effort

Solution delivers accurate
engineering data, with a
quick turnaround

Idea generators:



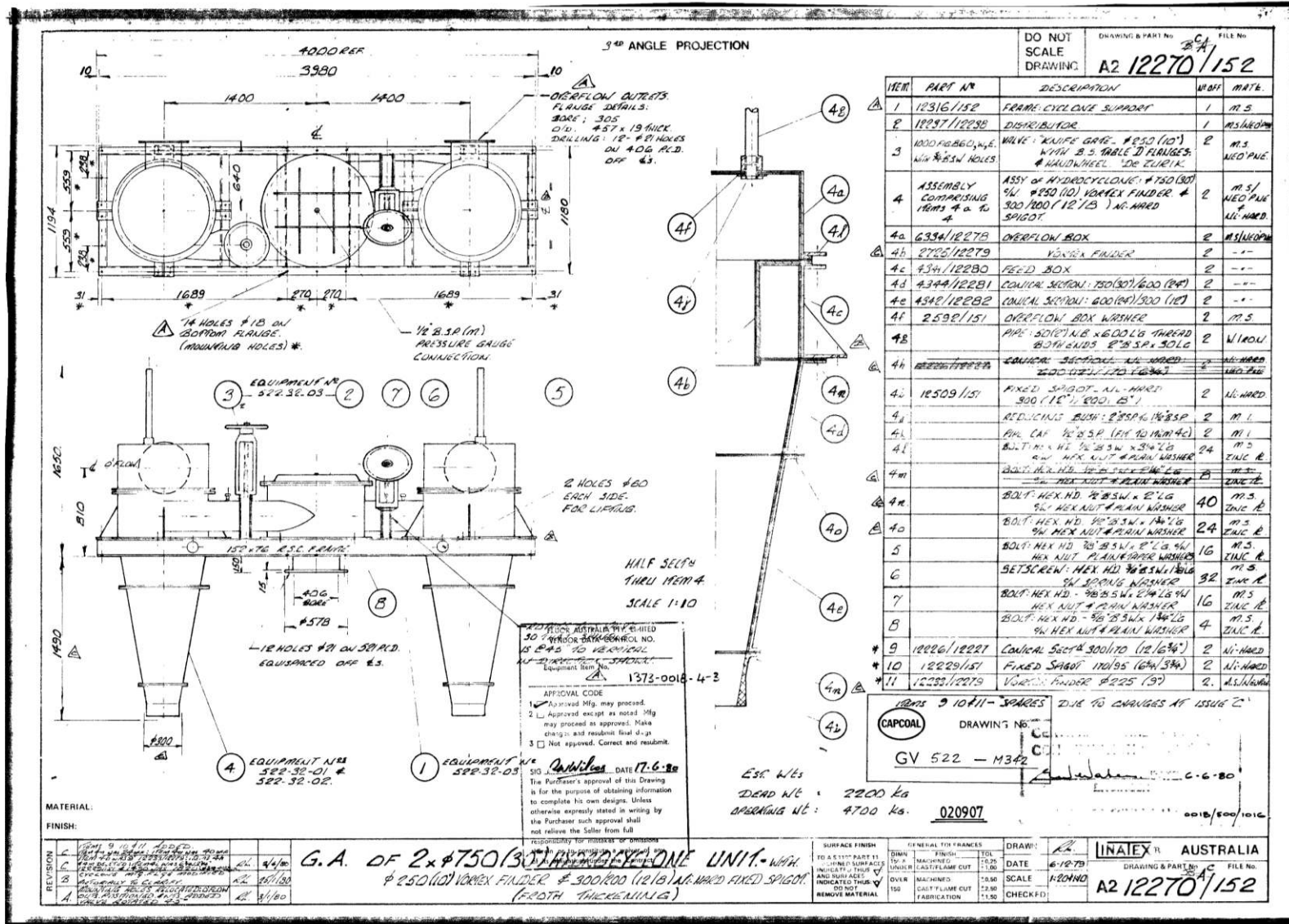
Randall
Makin



Justin
Hennessy

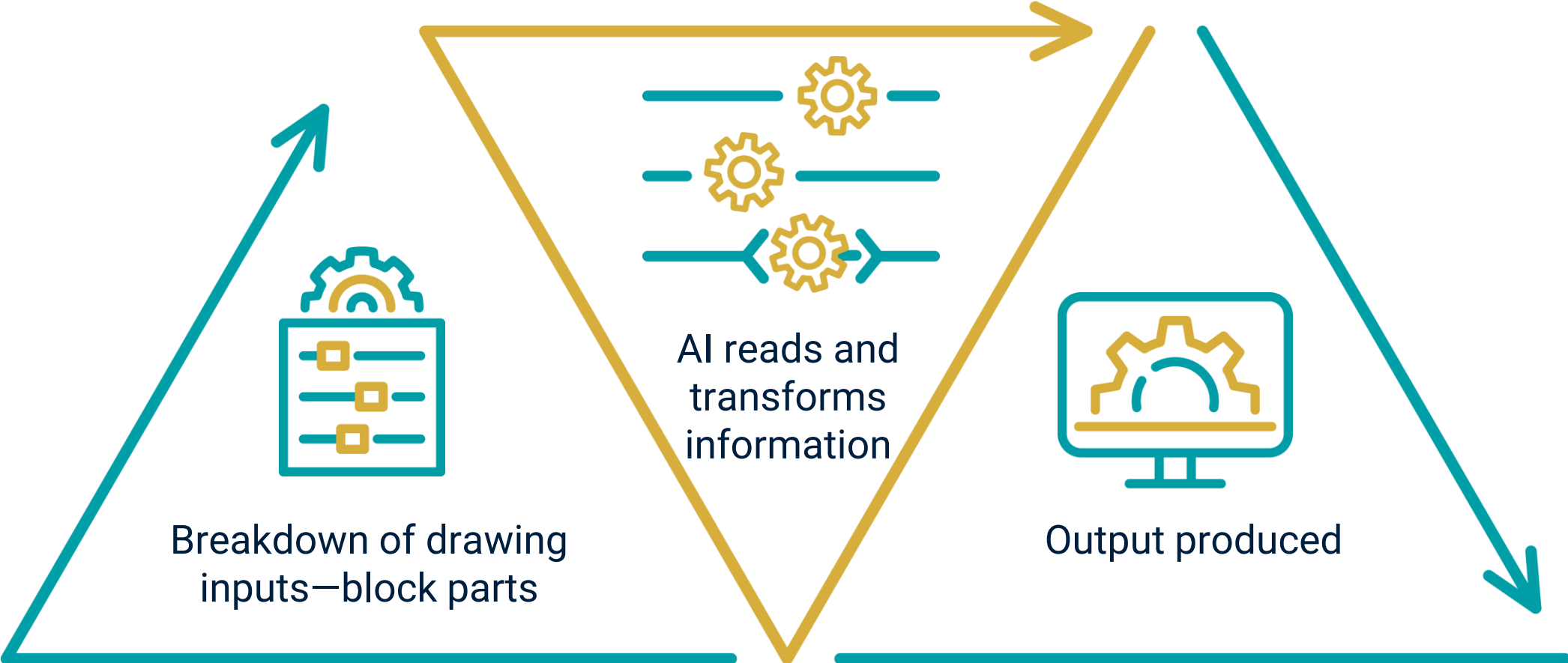
COMMERCIAL-IN-CONFIDENCE

Drawing meta data | Original site drawings



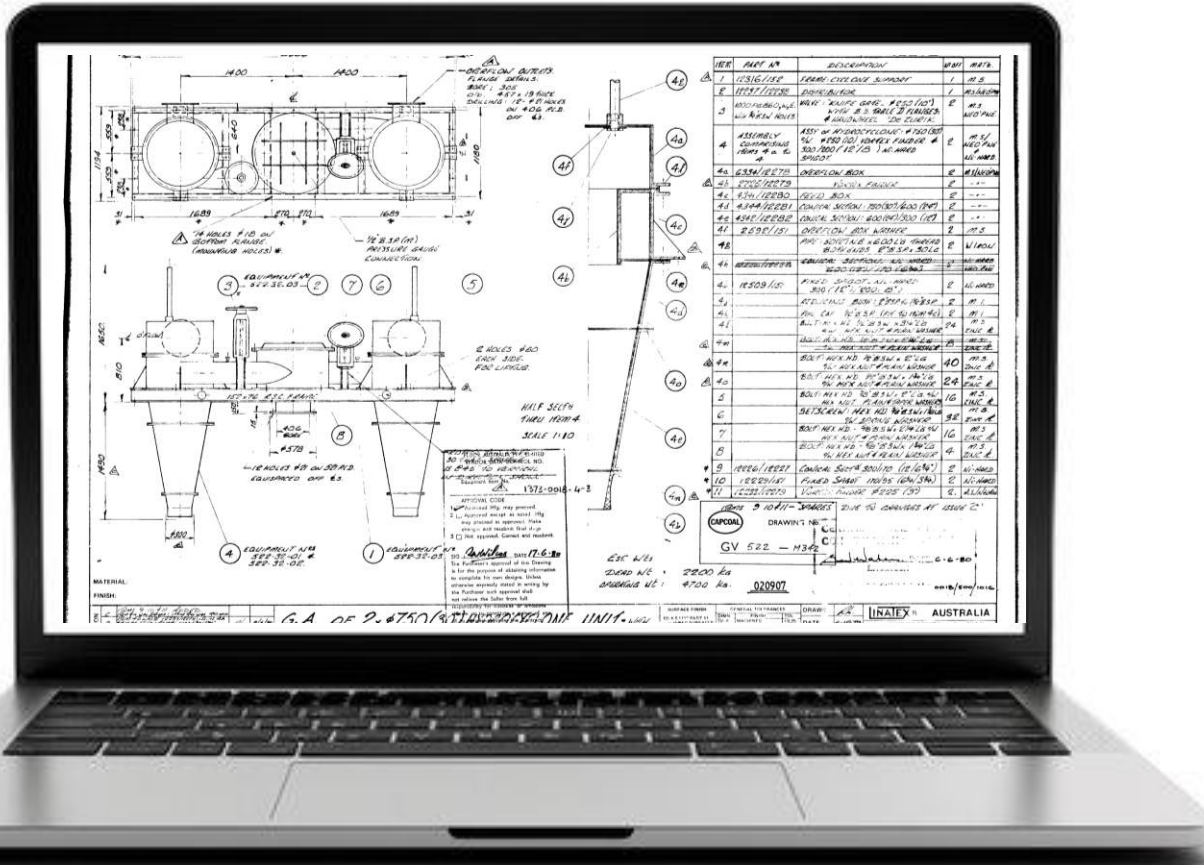
Sample of a site drawing used for this use case

Drawing meta data extraction | AI transformation process

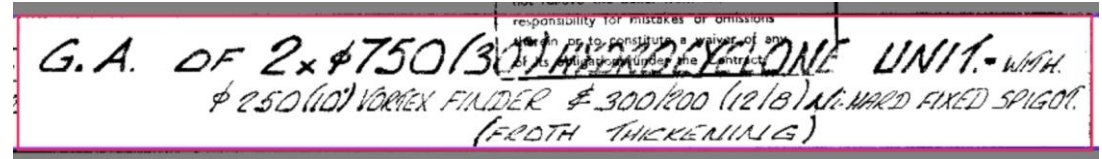


CURRENT PROCESS

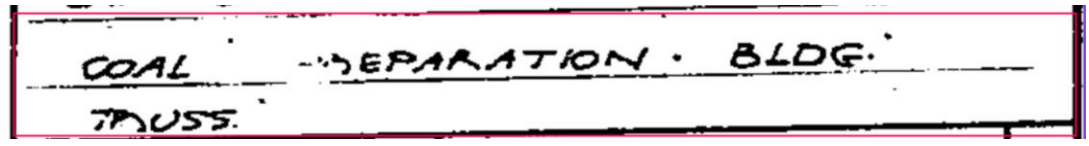
Manual process



WITH AI SOLUTION

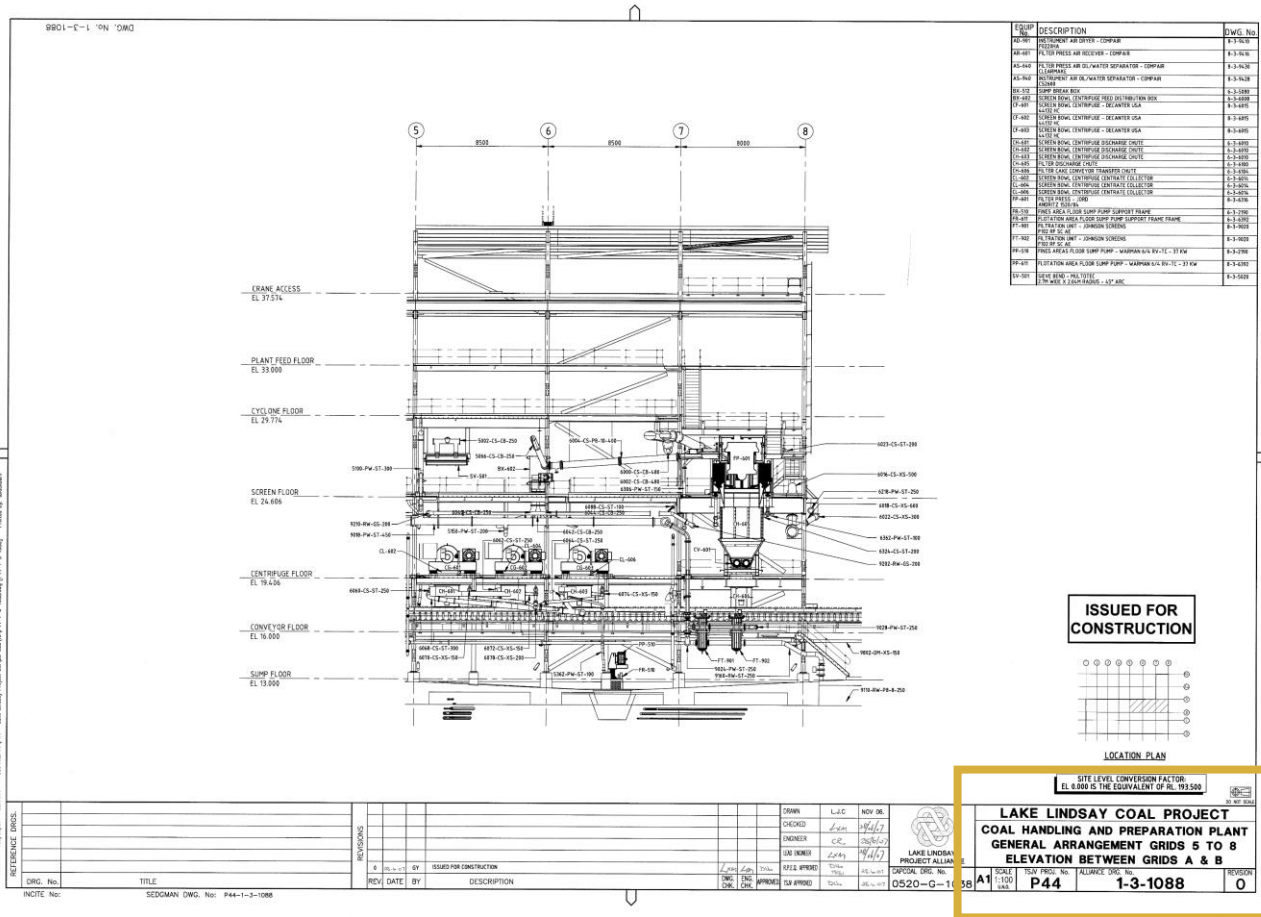


The Large Language Model extracted:
 G.A. OF 2 × Ø750/(30) AEROFLOTATION UNIT WITH
 Ø250/(10") VORTEX FINDER & Ø300/200 (12/8") M.WARD
 FIXED SPIGOT (FROTH THICKENING) **90% accurate**



The Large Language Model extracted:
 COAL SEPARATION BLDG. TRUSS

ORIGINAL DRAWING



WITH AI SOLUTION

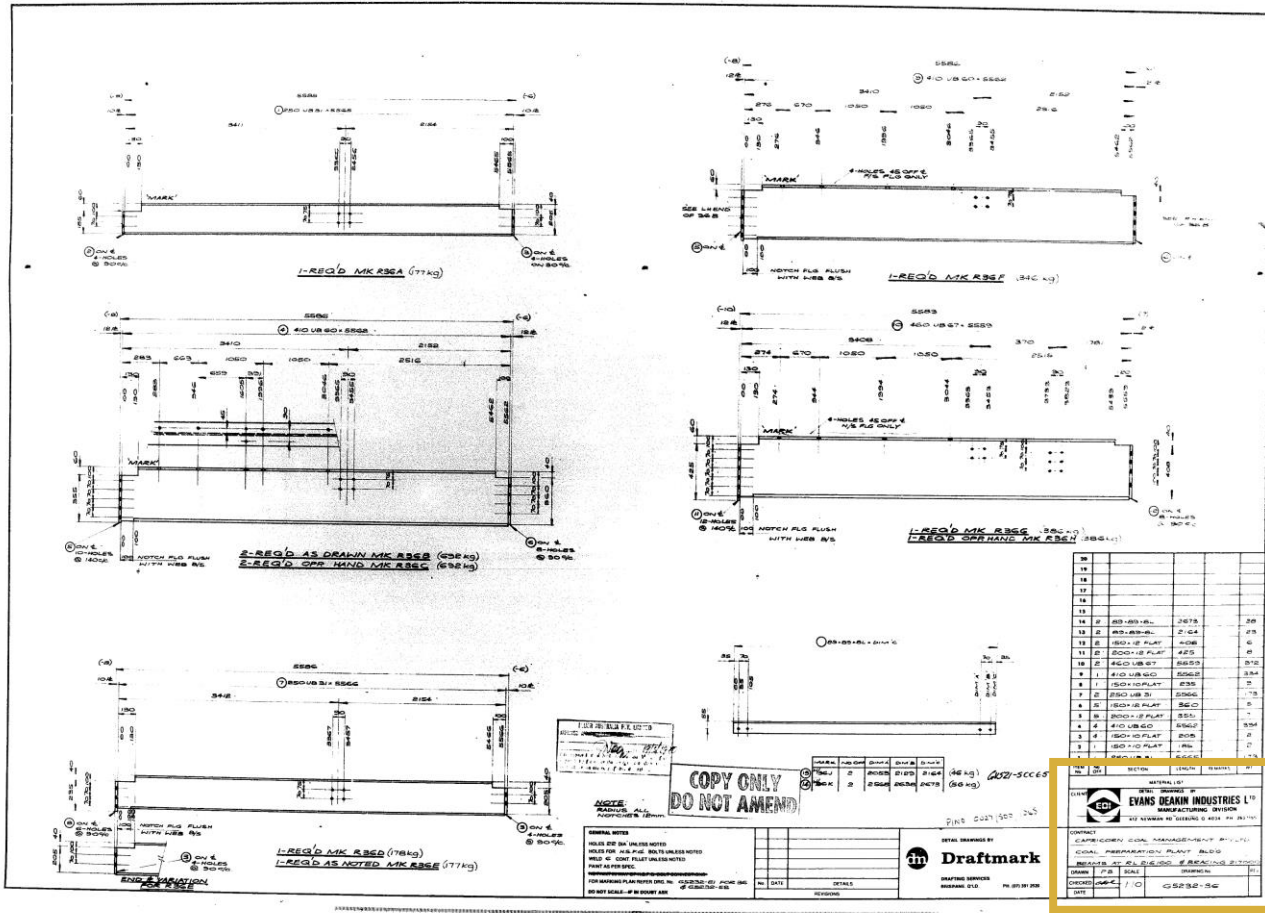
LAKE LINDSAY COAL PROJECT			
COAL HANDLING AND PREPARATION PLANT			
GENERAL ARRANGEMENT GRIDS 5 TO 8			
ELEVATION BETWEEN GRIDS A & B			
A1	SCALE	TSJV PROJ. No.	ALLIANCE DRG. No.
	1:100 U.N.O.	P44	1-3-1088
			REVISION
			0

The Large Language Model extracted:

COAL HANDLING AND PREPARATION PLANT GENERAL ARRANGEMENT GRIDS 5 TO 8 ELEVATION BETWEEN GRIDS A & B

Drawing meta data extraction | Output @80% accuracy

ORIGINAL DRAWING



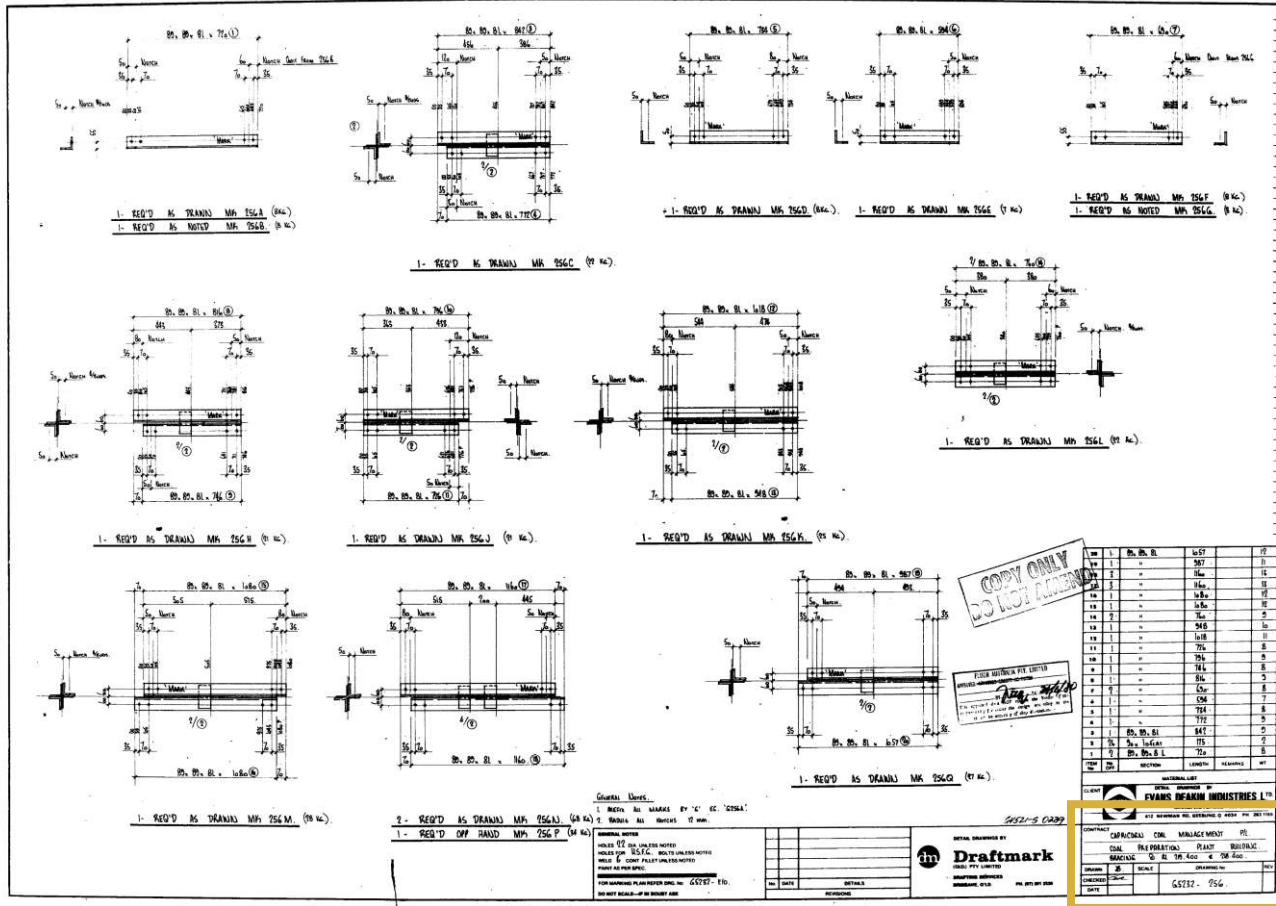
WITH AI SOLUTION

CONTRACT				
CAPRICORN COAL MANAGEMENT PTY LTD				
COAL PREPARATION PLANT BLD'G				
BEAMS AT RL 216100 & BRACING 217000				
DRAWN	PB	SCALE	DRAWING No	REV
CHECKED	<i>CPB</i>	1/10	G5232-36	
DATE				

The Large Language Model extracted:

COAL PREPARATION PLANT BLD'G

ORIGINAL DRAWING



WITH AI SOLUTION

CONTRACT				
CAPRICORN COAL MANAGEMENT P/L.				
COAL PREPARATION PLANT BUILDING.				
BRACING @ RL 219.400 & 218.400.				
DRAWN	B.	SCALE	DRAWING No	REV
CHECKED	<i>[Signature]</i>		65232- 256.	
DATE				

The Large Language Model extracted:

CAPRICORN COAL MANAGEMENT
PTY. COAL PREPARATION PLANT
BUILDINGS GRATING @ RL 179.400
& RL 180.400

AI maturity model*

CATEGORY	LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
AI Literacy and adoption	Basic awareness	Limited education	Early experimentation	AI integrated in workflows	Standardised AI use	AI mastery & augmentation
Leadership cultivation	Isolated efforts	Emerging champions	Defined AI leaders	Structured skill-building	AI advocacy & mentorship	AI leadership culture
Strategic innovation enablement	No focus on AI	Lack of mechanisms	Early pilots	Structured experimentation	AI-first strategy	Continuous AI-driven innovation
Workforce evolution and adoption	AI fear & resistance	Isolated AI use	AI tools introduced	AI embedded in work	AI-first processes	Fully AI-augmented workforce
Ethical and pragmatic implementation	Zero awareness	Basic ethical concerns	Early guidelines	AI ethics integrated	Proactive governance	Ethical AI industry leadership

Starting point

Working towards

Current stage

*Model developed by [Intalgo](https://www.intalgo.ai)  **intalgo.ai**

Champions



Brian Kyaw



Will Kraak



Tim Clarke



Derek Nicol

**Our Waterline AI
Champions, help us
continue to drive curiosity
and innovation at
WATERLINE**



Questions?



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**CASE STUDY
BOOK DOWNLOAD**



**WATERLINE
WEBSITE**



Written report—200+ pages
Podcast—68 mins



Written report—500+ pages
Podcast—14 mins

**QLD COAL
MINING BOARD
OF INQUIRY**