

WORK SAMPLE · BOOKKEEPING, AUTOMATION AND FIELD SYSTEMS

Hire billing clean-up and asset tracking

A Melbourne temporary fencing, scaffolding, make-safe and roofing business. One financial year of Xero sales (2,538 invoice lines), 153 contacts, a paper asset log typed in by the office (1,396 rows) and a yard stocktake. Re-coded, de-duplicated, reconciled and checked by 35 formula controls, with an Airtable, Glide and Make design so it stays clean. A work sample: the data is realistic and every figure is computed from the files.

98.2%

of 2,524 lines coded by a rule

\$60,259

hire under-billed across 60 site-assets

29

duplicate contacts merged (153 to 124)

35/35

controls pass

01 · EXECUTIVE SUMMARY

Income now says what it is, and the hire billing gap is measured

The problem. Every kind of income went to 200 Sales or 260 Other Revenue, and 200 defaulted to GST Free. Contacts were duplicated as different staff keyed them. Panels went out on paper dockets and the 4-weekly hire invoices were raised from the office's memory of what was on site.

What the build does. 13 rules code 2,478 of 2,524 lines (98.2%) to four income accounts plus a *Service line* tracking category; 46 lines go to a person. 83 lines are on the wrong tax rate (net GST to correct \$3,317.29). 29 duplicate contacts are merged, 6 look-alikes with different tax numbers are kept apart.

The asset log. 1,396 rows written 608 ways for 397 sites. After removing 21 duplicate dockets and fixing 12 returns written against the wrong site, no site is below zero and the fleet reconciles to the stocktake apart from 4 panels and 3 bases.

The billing check. Rebuilding each 4-week cycle from the log shows 60 site-assets under-billed by \$60,258.70 and 8 over-billed by \$2,578.50. 79 panels are still on the ledger at collected sites.

2,524

invoice lines re-coded or queued

\$3,317.29

net GST to correct, by BAS quarter

\$60,259

hire not invoiced (ex GST)

76

July drafts from the Make run, 0 on re-run

Recommended next steps

- Post the 12 recode journals and fix 200's default tax this week.
- Owner decides the 46 review lines; accountant advises on the BAS corrections.
- Raise catch-up invoices for the top under-billed sites after checking with the yard.
- Move dockets to the Glide app and let Make raise hire invoices as drafts.

Six exports in, one clean year and a system to keep it clean

Inputs, as exported

SOURCE	SIZE
Xero sales invoice lines FY26	2,538 lines on 1,853 invoices
Xero contacts	153 records
Xero chart of accounts and expense balances	49 accounts
Sites list (job register)	546 sites
Asset movement log (paper, transcribed)	1,396 rows from 1 Apr 2025
Fleet register 30 Jun 2025, purchases, yard stocktake 30 Jun 2026	5 asset classes

Rates: fence panel 4.50, barrier 3.20, scaffold tower 95.00 and tarp kit 35.00 per unit-week; lost panel 145.00. Hire is billed 4-weekly in arrears from the site's start date.

Approach

1. Profile the exports before touching anything (page 3).
2. Code each line by rule, send what a rule cannot decide to a person.
3. Match contacts by tax number, then name and email domain, never by name alone.
4. Clean the asset log: site and class spellings, duplicate dockets, wrong-site returns.
5. Rebuild each hire cycle from the log and compare with what was invoiced.
6. Design Airtable, Glide and Make so the same problems cannot come back.
7. Prove it: 35 controls in the workbook and an engine test against an answer key.

What the data looks like before any change

MEASURE	VALUE
Invoice lines (counted / voided)	2,524 / 14
Income on 200 Sales / 260 Other Revenue	\$1,655,273 / \$103,121
Lines on GST Free Income / BAS Excluded	45 / 30
Credit note lines	14
Contacts with no tax number	69 of 153
Ways a site was written in the log	608 for 397 sites
Ways an asset class was written	12 for 5 classes
Accounts in the chart	49, incl. 999 Suspense and two Subcontractor accounts

What this tells us

- The P&L cannot show hire, labour and materials separately: it all sits in two accounts.
- Because 200 defaults to GST Free, any line keyed without changing the rate goes out with no GST.
- Almost half the contacts have no tax number, so duplicates must be matched on name and email domain with care.
- The log has no list to pick from: "S0072", "72", "s72" and "Site 72 Point Cook" are the same site.
- No one has compared what was on site with what was billed.

Nine findings, each quantified from the files

FINDING	SIZE	WHY IT MATTERS
Income coded to two accounts	2,524 lines	P&L by service line is impossible
Wrong tax rate	83 lines	Net GST \$3,317.29 to correct
Deposits booked as income	\$19,000	Refundable deposits are a liability
Duplicate contacts	29 records	Split statements and wrong ageing
Duplicate dockets in the log	21	Units double counted
Returns written against the wrong site	12	One site below zero, another never empties
Units still on collected sites	79 panels	Not charged as lost, not in the yard
Hire under-billed	\$60,258.70	60 site-assets
Hire over-billed	\$2,578.50	8 site-assets: credit notes due

05 · OPTIONS APPRAISAL

How to make income say what it is

OPTION	REPORTING BY SERVICE (30%)	EFFORT TO KEEP CLEAN (25%)	FITS XERO REPORTS (25%)	CHANGE FOR STAFF (20%)	WEIGHTED /100
A. More income accounts only (one per service and type)	4	2	4	3	66
B. Tracking categories only, keep 200	3	3	3	4	64
C. Income accounts by type + Service line tracking (recommended)	5	4	5	4	91
D. Leave Xero, report from a spreadsheet	3	1	1	3	40

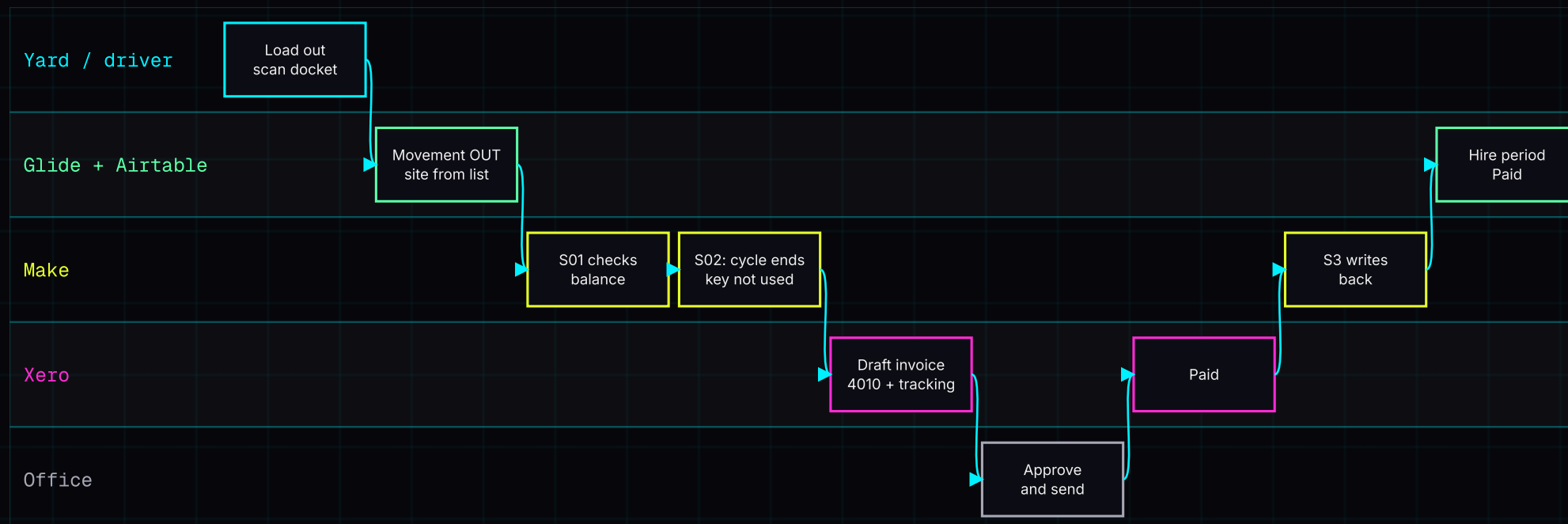
Why C

Four income accounts by *type* (hire, labour, materials, lost equipment) keep the chart short. One tracking category, *Service line*, gives fencing, scaffolding, make-safe and roofing on any Xero report, and Make can set both on every draft invoice.

What it changes for staff

Almost nothing when invoices come from Make. For manual invoices, items in Xero carry the account and tracking, so staff pick an item instead of an account.

From docket to paid invoice without retyping



One record per movement

Glide writes a Movement with the site picked from a list and a photo of the docket. A repeated docket is blocked.

Billing from the ledger

S02 bills the weekly peak on site for each 4-week cycle, so a part return mid-cycle is billed correctly.

Xero stays the ledger

Airtable never creates customers: S3 syncs them from Xero, so contacts cannot split again.

98.2% of lines coded by 13 rules

RULE	CATEGORY	ACCT	SERVICE	LINES	VALUE
R00	MIXED			9	18,799.88
R01	DEP	835	Fencing	40	19,000.00
R02	LOSS	4040	Fencing	20	10,875.00
R03	HIRE-FP	4010	Fencing	566	797,095.89
R04	HIRE-BR	4010	Fencing	156	26,838.40
R05	HIRE-ST	4010	Scaffolding	136	94,335.00
R06	HIRE-TK	4010	Make-safe	128	25,970.00
R07	DEL-FP	4020	Fencing	561	96,890.20
R08	LAB-ST	4020	Scaffolding	117	110,880.00
R09	MS	4020	Make-safe	273	124,150.00
R10	LAB-RF	4020	Roofing	145	150,332.00
R11	MAT-RF	4030	Roofing	336	203,086.55
R12	CONTEXT			16	37,352.69

After: by account

ACCOUNT	NAME	FY26
4010	Hire income	944,239.29
4020	Labour and call-outs	482,252.20
4030	Materials and waste	203,086.55
4040	Lost and damaged equipment	10,875.00
835	Customer deposits held	19,000.00

By service line

SERVICE LINE	FY26
Fencing	972,884.79
Make-safe	166,134.93
Roofing	366,166.13
Scaffolding	209,492.48

Posted as 12 monthly journals (362 lines). The 46 review lines stay in 200 until decided.

153 contacts become 124 customers

RULE	EVIDENCE	MERGED
M1	Same tax number	11
M2	Same name once suffixes and punctuation are removed, and same email domain or one tax number blank	16
M3	Fuzzy name 0.90+, same email domain, no conflicting tax number	2
N1	Similar name, different tax numbers: kept separate	0 (6 kept)
V1	Possible match, not enough evidence: to a person	0 (3 queued)

How the merge is done

- The earliest record is the master; invoices move to it with Xero's merge, which keeps history.
- Tax numbers on look-alike names are never ignored: three pairs of different businesses with near-identical names stay apart.
- After merging, S04 keeps Airtable's customer list in step with Xero, so no new duplicates are created by the app.

Engine test: 29/29 duplicates found, 0 false merges.

83 lines on the wrong rate, \$3,317.29 net GST

BAS QUARTER	LINES	GST TO CORRECT
FY26 Q1	14	439.68
FY26 Q2	28	1,202.19
FY26 Q3	21	736.93
FY26 Q4	20	938.49
Total	83	3,317.29

Two kinds of error

- **59 taxable sales with no GST**, mostly because 200 defaults to GST Free. Fixed at the source by changing the default.
- **24 deposit lines with GST**. A refundable deposit is not a supply until it is kept, so it belongs in 835 Customer deposits held, BAS Excluded.

How and when to correct earlier BAS periods is the accountant's call; the Tax Review tab gives them every line by quarter.

Every panel accounted for, apart from 4

ISSUE	COUNT	CLASS	REGISTER	LOST PRE-FY	BOUGHT	LOST FY	SHOULD OWN	YARD	ON HIRE	NOT RET.	VAR.
DUPLICATE	21	FP	4,970	12	120	75	5,003	1,171	3,749	79	4
WRONG SITE	12	FB	5,380	0	150	0	5,530	1,421	4,112	0	-3
NOT RETURNED	14	BR	330	0	0	0	330	105	225	0	0
REGISTER NOT UPDATED	1	ST	37	0	4	0	41	35	6	0	0
STOCKTAKE VARIANCE	2	TK	37	0	0	0	37	16	21	0	0

Variance is raised as an exception for a recount, never written off automatically. 12 panels billed as lost before July were still on the register.

- Wrong-site returns are found three ways: a return dated before the site started, a collected site left with exactly the returned quantity, and a site below zero whose number differs by two swapped digits from a site with that many left over.
- Every fix is listed with its reason in Log Issues; nothing is netted off silently.

\$60,258.70 of hire was not invoiced

198,231

billable unit-weeks

187,870

invoiced unit-weeks

378

site-assets agree

68

need a catch-up or credit

The office billed each cycle on the last quantity it knew about. Part returns were often billed late, extra deliveries were missed, and some cycles were not billed at all. Over-billing (\$2,578.50) is smaller but matters more for trust: those customers get credit notes first.

Largest under-billed site-assets

SITE	CUSTOMER	ASSET	UNITS	VALUE
S0134	Northgate Building Group	FP	936	4,212.00
S0036	Summit Builders Pty Ltd	FP	632	2,844.00
S0053	Parkview Projects Pty Ltd	FP	572	2,574.00
S0100	Metro Projects Pty Ltd	FP	564	2,538.00
S0061	Cobalt Constructions Pty Ltd	FP	508	2,286.00
S0270	Sam Murphy	ST	24	2,280.00
S0293	Leo Jones	ST	24	2,280.00
S0231	Lakeside Constructions Pty Ltd	FP	500	2,250.00

Seven tables, eight screens

Airtable base

TABLE	KEY FIELDS
Sites	Site ID (matches Xero Reference), customer, job type, hire start, status, units on site
Customers	Xero ContactID, name, email: synced from Xero only
Assets	Class, rate per unit-week, lost charge
Movements	Docket (unique), date, site, asset, direction, qty, signed qty, photo, entered by
Hire Periods	Site Asset Cycle start key, units, Xero invoice ID, status
Billing Runs	Run date, drafts created, keys skipped
Exceptions	Type, owner, status

Glide app

SCREEN	WHAT IT DOES
Yard: Load out / Return / Lost	Site picked from a list, docket photo, blocks a repeat docket
Driver: Today's runs	Deliveries and collections, units on site
Office: Exceptions	Owner and a resolve button
Office: Hire periods	Approve or hold before S2 runs
Office: Stocktake	Count by class against the ledger

Ten scenarios, one idempotency key, no silent failures

	SCENARIO	RUNS	ERROR HANDLING
S01	Movement in	Every 15 min	Break: 3 retries, 15 min apart; balance below zero goes to Exceptions, not an error
S02	Hire billing run	Daily 06:00	Key check before any write; Break with 3 retries on Xero calls; incomplete executions stored, never a second draft
S03	Payments back from Xero	Every 15 min	Resume: invoice with no Hire Period goes to Exceptions; Break on Airtable errors
S04	Contacts from Xero	Hourly	Ignore on unchanged records; Break on Airtable errors; never creates a customer in Airtable
S05	Nightly checks	Daily 22:00	Break: 3 retries; a failed run is flagged by S10 the next morning
S06	Docket photo to Drive	Instant	Break: 3 retries; Drive quota or file errors go to Exceptions with the Movement ID
S07	Lost or damaged charge	Every 15 min	Rollback: no draft if the lost charge or customer is missing; Exception for the office
S08	Site collected, final cycle	Every 15 min	Same key check as S02, so the final cycle is billed once
S09	Weekly backup	Sunday 00:00	Break: 3 retries; a missed backup is flagged by S10
S10	Error monitor	Daily 07:00	Lists incomplete executions and any scenario that has not run on schedule

July 2026 billing run, simulated

76 draft invoices, \$75,582.00 ex GST. Running S02 again created **0** new drafts: every key was already in Hire Periods.

Errors

Every Xero, Airtable and Drive call has an error route: Break with three retries for outages and rate limits, Rollback where a half-written record would mislead, and an Exception for anything a person must decide. Nothing sends an invoice: the office approves every draft.

14 · MAKE RUN LOG · JULY 2026

13,416 executions, 12 errors, 0 unresolved

13,416

executions in July

1,964

records processed

21,907

operations used

12

errors: 4 retried, 4 resumed, 4 raised

DATE	SCENARIO	ERROR	OUTCOME	RESOLVED BY
2026-07-03	S06	Google Drive: 503 Service unavailable	Completed after retry	Automatic
2026-07-06	S01	Airtable: 429 Too many requests	Completed after retry	Automatic
2026-07-08	S07	Lost charge missing on asset class SC-B	Exception, resolved	Office set the charge; S07 re-ran
2026-07-13	S03	Xero invoice INV-11872 paid, no Hire Period (cash sale)	Exception, resolved	Office marked it not hire
2026-07-14	S02	Xero: 401 token expired	Incomplete, resolved	Office reconnected Xero at 08:40; stored execution resumed
2026-07-14	S03	Xero: 401 token expired	Incomplete, resolved	Resumed after the reconnect
2026-07-14	S04	Xero: 401 token expired	Incomplete, resolved	Resumed after the reconnect
2026-07-17	S01	Movement for site S0412, status Collected	Exception, resolved	Yard corrected the site to S0421
2026-07-19	S02	Xero: 429 Too many requests	Completed after retry	Automatic
2026-07-22	S06	Glide: photo URL expired	Incomplete, resolved	Yard re-uploaded the photo
2026-07-26	S09	Google Drive: 503 Service unavailable	Completed after retry	Automatic
2026-07-28	S08	Xero: 400 contact archived	Exception, resolved	Office restored the contact; S08 re-ran

On 14 July the Xero connection expired: S02, S03 and S04 stopped with stored incomplete executions, S10 flagged them at 07:00, and they resumed after the reconnect. The idempotency key meant the resumed billing run created each draft once.

15 · CONTROLS

35 of 35 controls pass

CONTROL	ACTUAL	CONTROL	ACTUAL
Lines counted + voided = lines in the export	2,538 PASS	Asset Position total = net units in the log to 30 June	8,192 PASS
Income by rule (Category Rules) = income in the export	1,758,394.15 PASS	Fleet: should own - yard - on hire - not returned - variance	0 PASS
Lines by rule = counted lines	2,524 PASS	Stocktake variance = STOCKTAKE VARIANCE issues	1 PASS
Revenue by Service total = income in the export	1,758,394.15 PASS	Billable unit-weeks: Billing Check = Hire Cycles in FY26	198,231 PASS
Before (200 + 260) = after (Revenue by Service)	1,758,394.15 PASS	Invoiced hire unit-weeks: Billing Check = Invoice Lines	187,870 PASS
Recode journals: debits = credits	1,659,453.04 PASS	Hire credits: Billing Check = Invoice Lines	-2,770.11 PASS
Recode journals: months out of balance	0 PASS	Make run log: errors = incidents listed	12 PASS
Recode journals: net credit to 4010-4040 and 835 = rule-coded income	1,659,453.04 PASS	Make run log: every error retried, resumed or raised	12 PASS
Rule-coded lines with no account	0 PASS	Make run log: unresolved errors	0 PASS
Review queue = counted lines needing a person	46 PASS	Make run log: S02 drafts = Make July Run	76 PASS
Tax Review lines = counted lines with the wrong tax rate	83 PASS	Make run log: S02 ran every day in July	31 PASS
GST effect: Tax Review = Invoice Lines	3,317.29 PASS	Make run log: every scenario has run history	10 PASS
Contacts whose master is missing or merged again	0 PASS	Make July run: repeated idempotency keys	0 PASS
Contacts kept separate (similar name, different tax number) that were merged	0 PASS	Make July run: amount = unit-weeks x rate	75,582 PASS
Invoice lines by contact = lines in the export	2,538 PASS	Exceptions: billing rows = pairs not agreeing	68 PASS
Duplicate dockets left in the clean log	0 PASS	Exceptions: open asset issues	16 PASS
Duplicate dockets removed = DUPLICATE issues	21 PASS	Engine regression: line coding disagreements	0 PASS
Sites below zero at 30 June	0 PASS		

12 of 12 tests pass

TEST	METHOD	TESTED	EXPECTED	ACTUAL	
Line coding vs answer key	engine.py categorises every line; compared with truth_lines (account, service line, tax)	2,538	2538	2,538	PASS
Duplicate contacts found	Clusters compared with the answer key	29	29	29	PASS
False contact merges	Distinct businesses merged by mistake	29	0	0	PASS
Tax errors found	Lines on the wrong rate in the answer key	83	83	83	PASS
Tax false flags	Lines flagged that were right	83	0	0	PASS
Seeded asset log errors caught	Duplicate dockets and wrong-site returns planted in the log	33	33	33	PASS
Billable unit-weeks vs answer key	Site-asset pairs with no open asset exception (14 pairs with an open exception are reported, not scored)	408	408	408	PASS
Fleet variance vs answer key	Stocktake variance and units owned per class	5	5	5	PASS
Make S2 re-run creates nothing	Run S2 twice for July; second run checks keys first	76	0	0	PASS
Package lines go to a person	Lines matching R00 coded by rule	9	0	0	PASS
Deposits are never income	Deposit lines with an income account	40	0	0	PASS
Voided invoices excluded	Value of VOIDED lines in Revenue by Service	14	0	0	PASS

The answer key comes from the data generator. Site-assets with an open asset exception are reported in the billing check but not scored, because the right answer depends on the yard's recount.

17 · CUTOVER AND ROLES

Eight weeks to invoices from the ledger

WHEN	WHAT	TASK	BOOKKEEPER	OWNER	OFFICE	YARD
Week 1	Post recode journals, change 200 default tax, create 4010-4040, 835 and Service line tracking, merge contacts	Post journals, COA changes	R	A	C	I
Week 2	Owner clears the review queue; accountant advises on BAS; credit notes for over-billing	Review queue decisions	C	R/A	I	I
		BAS corrections	R	A	C (accountant)	I
Week 3	Yard recount; catch-up invoices for confirmed under-billing; Airtable base loaded from the clean ledger	Yard recount and log	I	A	I	R
Week 4	Glide app live for the yard; S01, S05 and S06 on; S02 in draft-only mode beside the office for one cycle	Approve S02 drafts	C	A	R	I
Week 8	S2 trusted: office approves drafts instead of keying	Change a rule or scenario	R	A	C	I

What could go wrong, and the routine that catches it

RISK	LIKELIHOOD	HOW THE BUILD HANDLES IT	WHEN	STEP
Yard skips the app on busy days	Med	Docket photo required; S05 flags sites with no movement for a week	Daily	Check the S05 and S10 emails; clear exceptions with an owner
Wrong site picked in Glide	Low	List filtered to active sites for that driver; balance check in S01	Each cycle	Approve S02 drafts in Xero; hold any with an open exception
Make creates a duplicate invoice	Low	Idempotency key checked before every create; drafts only	Month end	Review queue to zero; run the Controls tab; lock the period
Xero API outage	Low	Retries, then an Exception; run resumes next day	Quarter	Yard stocktake in Glide; fleet reconciliation; BAS from coded lines
Rule mis-codes a new item	Med	New descriptions with no rule go to review; monthly rule review		
Contacts split again	Low	Customers created in Xero only		

19 · HOW THIS APPLIES, AND THE FILES

Using this on your own Xero

If your income sits in one or two accounts, or hire and equipment are billed from memory, the same steps apply:

- I'd profile your exports first, then write the rules around your own invoice wording.
- The log clean-up works from whatever you have: dockets, a spreadsheet or a whiteboard photo typed up.
- The Airtable, Glide and Make design is sized to your fleet and billing cycle.

This is a work sample with realistic data. It shows the method and the output; every figure comes from the sample files.

Files in the download

FILE	WHAT IT IS
Xero-Hire-Billing-Cleanup-FY26.xlsx	28 tabs, 26,445 formulas, 35 controls, 12 tests
engine.py	Coding rules, contact matching, log clean-up, billing check, Make run simulation, regression test
gen.py	Builds the sample data set
book.py / metrics.py / report.py	Build the workbook, the figures and this report
data/*.csv	Inputs as exported
results/*.csv	Engine output, loaded into the workbook