PROJECT REQUIREMENTS DOCUMENT

Product:BIDPACK UK – Tender Compliance Operating System

Positioning (must appear in UI & marketing):

"We stop construction contractors from getting disqualified before scoring."

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1. OBJECTIVE

Build a **web-based SaaS platform** that enables UK SMEs (initially construction Tier 2–4) to:

- Structure tenders correctly
- Enforce compliance discipline
- Generate audit-ready submission packs
- Use AI only as **metered assistance (ACU model)**

The platform is NOT:

- A bid-writing service
- A CRM
- A document storage system
- A consultancy replacement

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2. DELIVERY CONSTRAINTS

Constraint	Requirement
Time	**6 weeks maximum**
Budget	**≤ $500 build cost**
Tech	Low-cost stack (Firebase/Supabase + React/Next.js or equivalent)
Priority	Function > aesthetics

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3. USER ROLES

- **Owner (Org Admin)**
- **Admin**
- **Member**

Each user belongs to an Organisation.

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4. CORE MODULES (MUST BUILD)

4.1 Organisation & Subscription Management

- Stripe integration (Starter / Professional)
- Plan enforcement:
    - Starter = 1 user
    - Professional = multi-user
- ACU monthly allocation + expiry
- Plan downgrade/upgrade handling

4.2 Bid Management

Functions:

- Create/Edit/Delete Bid
- Client name, deadline, status
- Assign team members
- Version history (Professional only)

4.3 Compliance Matrix Engine (CORE WEAPON)

- Input: Tender requirements (manual paste / list)
- System auto-maps to:
    - Policies
    - Method Statements
    - CVs
    - Case Studies
    - Insurances

Output:

- Status per requirement:
    - ✅ Covered
    - ⚠ Missing
    - ❌ Non-compliant

Rule: Submission cannot be exported unless all critical items = Covered.

4.4 Policy Library (Construction Edition v1)

Editable templates for:

Mandatory:

- H&S (CDM)
- Quality
- Environmental
- Equality & Diversity
- Modern Slavery
- GDPR
- Anti-Bribery
- Safeguarding

Optional:

- Carbon Reduction (PPN 06/21)
- Social Value
- Supply Chain
- Ethical Procurement
- Business Continuity

Features:

- Version control
- Last-updated stamp
- Reuse across bids

4.5 Method Statement Builder

Trade presets (v1):

- Groundworks / Civils
- Electrical
- Mechanical
- Fit-Out
- Highways

Sections:

- Scope of works
- Resources
- Plant & Materials
- H&S Controls
- RAMS
- Environmental Controls
- QA
- Emergency Procedures

4.6 Social Value Engine (PPN 06/20)

Structured input → measurable outputs:

- Local employment
- Apprenticeships
- SME spend
- Carbon reduction
- Community engagement
- KPI summary table

4.7 Final Submission Pack Generator

- Auto-named documents
- Correct folder structure
- Single ZIP + Master PDF
- Timestamp + audit trail

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5. AI / ACU MODULE (COST CONTROL IS MANDATORY)

ACU Rules (Hard-Coded)

- 1 ACU = 1,000 tokens max
- No request > 4 ACUs
- No background AI
- No negative balances

Consumption

Action	ACUs
Generate paragraph	1
Refine section	2
Compliance gap explain	3
Social Value refine	4

Plans

- Starter: 40 ACUs/month
- Professional: 150 ACUs/month
- No rollover

Top-ups:

- 20 ACUs = £20
- 50 ACUs = £45

- 100 ACUs = £80

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6. DATABASE (MANDATORY TABLES)

- users
- orgs
- subscriptions
- bids
- bid_sections
- acu_ledger (immutable)
- ai_requests
- acu_limits

(Structure exactly as previously defined.)

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7. API ENFORCEMENT (MANDATORY)

Endpoints:

- GET /acu/balance
- GET /acu/ledger
- POST /ai/quote
- POST /ai/execute
- POST /billing/topup
- POST /system/monthly-grant

All AI calls must pass:

1. Auth
2. Plan active
3. ACU balance
4. Per-action cap
5. Org/global caps

Atomic debit before execution.

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8. UX SCREENS (MINIMUM)

1. **ACU Dashboard**
   - Balance
   - Monthly usage
   - Ledger
2. **AI Confirmation Modal**
   - ACUs required

- o   Remaining balance
- o   Confirm / Cancel
3. **Usage History**
4. **AI Paused Screen**

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9. ADMIN PANEL

- Global AI kill switch
- Daily/monthly caps
- Org override
- Ledger viewer
- Abuse detection flags

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10. SECURITY & AUDIT

- Role-based access
- Immutable ACU ledger
- AI usage logging
- Export audit trail

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11. NON-FUNCTIONAL REQUIREMENTS

- Response time < 2s (non-AI)
- AI response < 10s
- 99% uptime target
- GDPR-compliant storage

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12. DELIVERY PLAN (6 WEEKS)

Week	Deliverable
1	Auth, Orgs, Billing, ACU engine
2	Bid + Compliance Matrix
3	Policies + Method Builder
4	Social Value + Export Engine
5	Admin Panel + Hardening
6	Testing, Demo Pack, Launch

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13. ACCEPTANCE CRITERIA (GO/NO-GO)

The system must:

- Block non-compliant submissions
- Never allow AI without ACUs
- Never exceed token caps
- Produce audit-ready ZIP/PDF
- Enforce plan limits
- Log every AI and ACU event

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14. SUCCESS METRIC

Primary KPI:

Reduction in bid disqualification risk to near zero.

Commercial KPI:

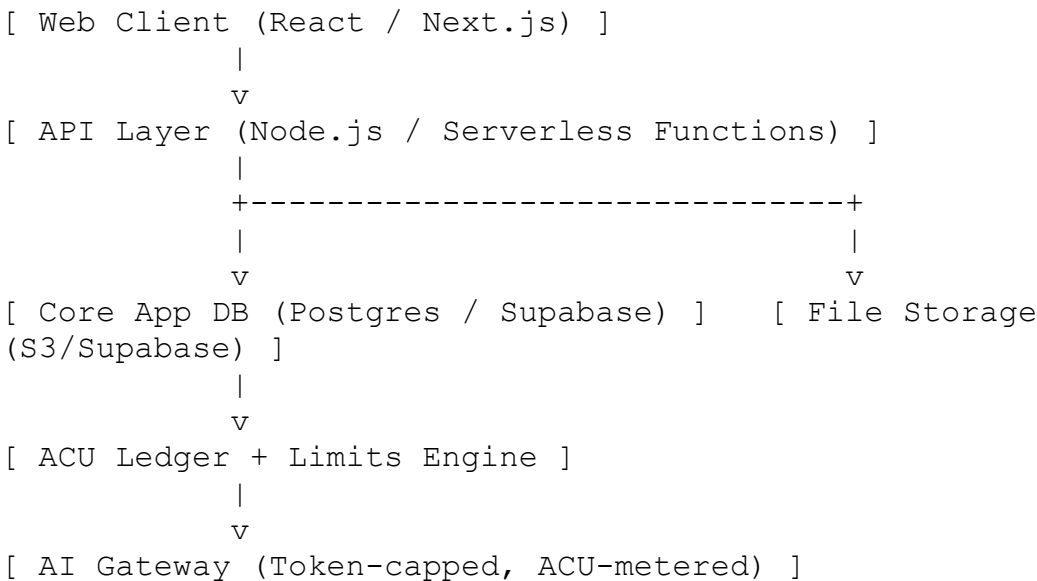**Gross margin ≥ 80% under AI usage.**

Below is the **Technical Architecture Specification** for **BidPack UK**, written so a full-stack developer can implement it immediately under the **6-week / $500 constraint**.

This is lean, scalable, and ACU-safe by design.

BIDPACK UK — TECHNICAL ARCHITECTURE

1. High-Level System Layout

```
[ Web Client (React / Next.js) ]
           |
           v
[ API Layer (Node.js / Serverless Functions) ]
           |
           +------------------------------+
           |                              |
           v                              v
[ Core App DB (Postgres / Supabase) ]   [ File Storage
(S3/Supabase) ]
           |
           v
[ ACU Ledger + Limits Engine ]
           |
           v
[ AI Gateway (Token-capped, ACU-metered) ]
```

```
              |
              v
[ LLM Provider ]
```

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2. Frontend (Client)

Responsibilities

- Authentication & role management
- Bid workspace UI
- Compliance Matrix editor
- Policy & Method Statement editors
- Social Value builder
- Export & download interface
- ACU balance & usage screens
- Admin console (restricted)

Key Screens

- Dashboard (Bids + Status)
- Bid Detail (Sections + Compliance)
- ACU Overview
- AI Confirmation Modal
- Admin Panel

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3. API / Backend Layer

Core Services

- Auth & Org enforcement
- Subscription & Plan enforcement
- Bid & Section CRUD
- Compliance mapping logic
- Export generation service
- ACU accounting service
- AI execution gateway
- Admin controls service

All business logic lives here.
Frontend is never trusted.

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4. Data Layer

Primary Store

- Supabase / Postgres
  (Tables exactly as defined: users, orgs, bids, bid_sections, acu_ledger, ai_requests, acu_limits, etc.)

Storage

- Supabase Storage / S3 for:
    - Generated documents
    - Export ZIPs
    - Master PDFs

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5. ACU & AI Flow (Critical Path)

```
User clicks AI Action
        |
        v
POST /ai/quote  ---> returns ACU cost + token cap
        |
(User confirms)
        |
        v
POST /ai/execute
        |
        +--> Validate plan & ACU balance
        +--> Atomic ACU debit (ledger)
        +--> Apply token hard limit
        +--> Call LLM
        +--> Log tokens + status
        |
        v
Return output to client
```
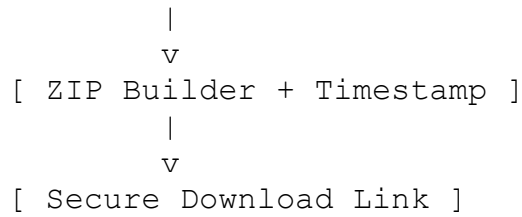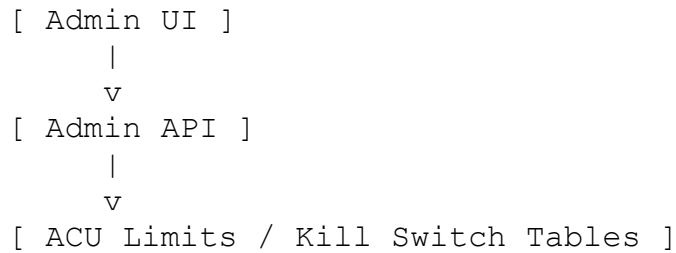
No execution is possible without ACU debit first.

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6. Export Engine

```
[ Bid Sections ]
        |
        v
[ Document Composer Service ]
        |
        v
[ DOCX/PDF Generator ]
        |
        v
[ Folder Structurer ]
```

```
        |
        v
[ ZIP Builder + Timestamp ]
        |
        v
[ Secure Download Link ]
```

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7. Admin Control Plane

```
[ Admin UI ]
     |
     v
[ Admin API ]
     |
     v
[ ACU Limits / Kill Switch Tables ]
```

Admin actions are instant and override user-level behaviour.

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8. Security & Governance

- JWT-based auth
- RBAC (Owner/Admin/Member)
- Immutable ACU ledger
- Audit logs on:
  - AI calls
  - Exports
  - Admin overrides

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9. Cost-Control Safeguards

Layer	Protection
UI	Explicit ACU confirmation
API	Token & ACU hard caps
DB	Immutable ledger
AI Gateway	Kill switches
Admin	Spend monitoring

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10. Why This Architecture Works

- Scales users without scaling AI cost
- Keeps compliance logic deterministic
- Allows multi-vertical expansion by content packs only

- Investor-safe margins

This is not a "clever app."
It is a **procurement compliance engine.**

BIDPACK UK — SPRINT BACKLOG

SPRINT 0 — FOUNDATION (Environment & Core Setup)

Ticket 0.1 — Project Setup

- Repo init (Frontend + Backend)
- Env configuration (.env handling)
- CI basic pipeline
- Dev / Staging environments

Acceptance

- App boots locally
- Secrets managed
- Lint + build pass

Ticket 0.2 — Database Schema

- Create all core tables:
  - users, orgs, subscriptions, bids, bid_sections
  - acu_ledger, ai_requests, acu_limits, acu_usage_rollups
- Indexes on org_id, created_at, status

Acceptance

- Migration scripts committed
- CRUD test passes

SPRINT 1 — AUTH, ORGS, BILLING, ACU ENGINE

1.1 Auth & RBAC

- JWT auth
- Roles: Owner/Admin/Member
- Org isolation

Acceptance

- Cross-org access blocked

1.2 Subscription & Plan Enforcement

- Stripe integration
- Starter vs Professional rules
- Monthly ACU grant cron

Acceptance

- Plan limits enforced

1.3 ACU Ledger Service

- Atomic debit/credit
- Immutable ledger
- Balance computation

Acceptance

- No negative balances possible

SPRINT 2 — BID CORE & COMPLIANCE ENGINE

2.1 Bid CRUD

- Create/Edit/Delete
- Status workflow

2.2 Compliance Matrix Engine

- Requirement input
- Auto-map to sections
- Status flags (Covered / Missing / Non-Compliant)

Acceptance

- Export blocked if critical gaps exist

SPRINT 3 — CONTENT BUILDERS

3.1 Policy Library

- Editable templates
- Versioning
- Reuse across bids

3.2 Method Statement Builder

- Trade presets
- Sectioned editor

3.3 Social Value Engine

- KPI-driven builder
- PPN 06/20 alignment

Acceptance

- Content reusable + versioned

SPRINT 4 — AI GATEWAY (ACU-METERED)

4.1 AI Quote Endpoint

- ACU estimation
- Token cap calc

4.2 AI Execute Endpoint

- All 6 enforcement rules
- Kill switches

Acceptance

- AI blocked without ACUs
- Token hard limits respected

SPRINT 5 — EXPORT & ADMIN

5.1 Submission Pack Generator

- DOCX/PDF generation
- Folder structure
- ZIP + timestamp

5.2 Admin Dashboard

- Global AI toggle

- Org overrides
- ACU analytics

Acceptance

- Audit trail visible
- Kill switch works

SPRINT 6 — UX HARDENING & LAUNCH

6.1 ACU UX

- Balance screen
- Confirmation modal
- Usage history
- "AI Paused" screen

6.2 Security & Testing

- RBAC tests
- ACU abuse tests
- Export integrity tests

6.3 Demo Pack + Launch

- Preloaded demo bid
- Landing copy
- Smoke test

Acceptance

- End-to-end tender created and exported
- ACU cost always controlled

DELIVERY KPI

- AI cost never exceeds ACU caps
- Non-compliant bids cannot be exported
- System usable by SMEs without training