PROJECT EXECUTION STRATEGY: MAGGIE'S CENTRE EXTENSION

Praneeth Kamsali (MSc Construction Project Management with BIM) | December 2025

PROJECT CONTEXT & SCOPE

Advanced Practice Live Project - Northumbria University (Industry-Aligned Workflows)

Project Brief

£150,000 Maggie's Centre healthcare facility extension. 20-week delivery programme involving piling foundations, modular manufacturing, steel installation, and healthcare fit-out. Project structured using Sir Robert McAlpine coordination workflows.

My Role: Design & BIM Coordination

- BIM Coordination: Supported multidisciplinary coordination using Revit and Navisworks for spatial integration
- Planning & Scheduling: Developed master construction schedule identifying manufacturing and steel installation as critical path drivers
- Information Management: Established ISO 19650-compliant Common Data Environment with Check-Review-Approve gate governance
- Project Controls: Implemented Earned Value Management tracking and NEC4-compliant commercial risk register

Project Outcomes

✓ 20-week programme delivered through critical path optimization

✓ Under budget (CV +£500) through 5D BIM cost integration

✓ ISO 19650 compliant CDE with structured information management

✓ Risk-mitigated delivery with £25k rework exposure identified and controlled

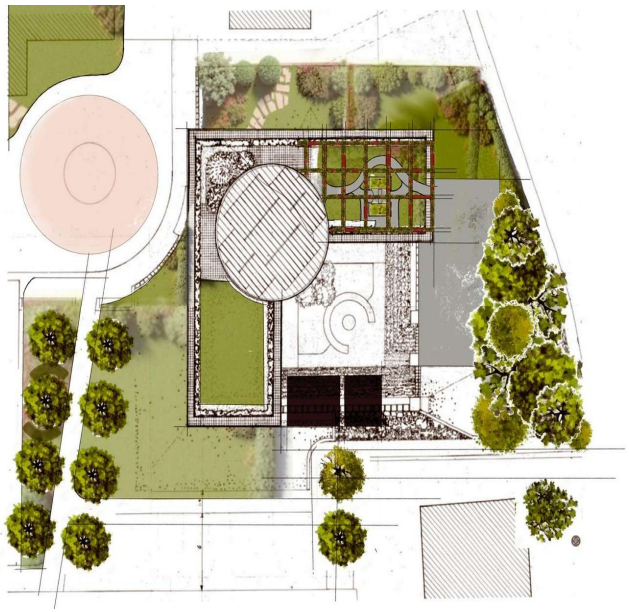
Technical Competencies Applied

4D Planning → Critical path analysis, resource loading, trade sequencing

Information Management → ISO 19650 workflows, CDE protocols, naming conventions

Project Controls → Earned Value Management, variance analysis, progress tracking

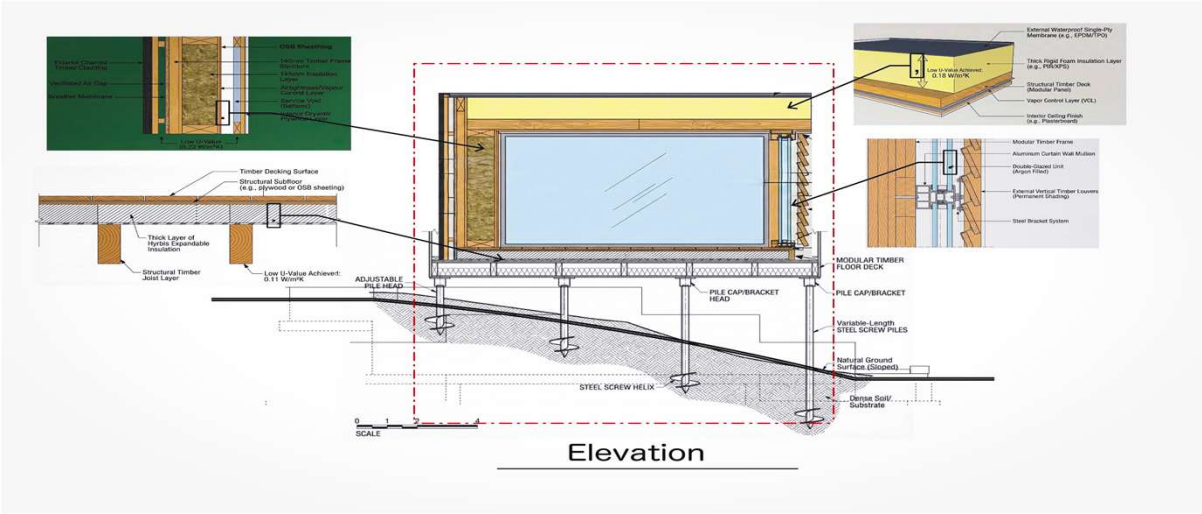
Commercial Management → NEC4 risk register, cost quantification, mitigation strategies



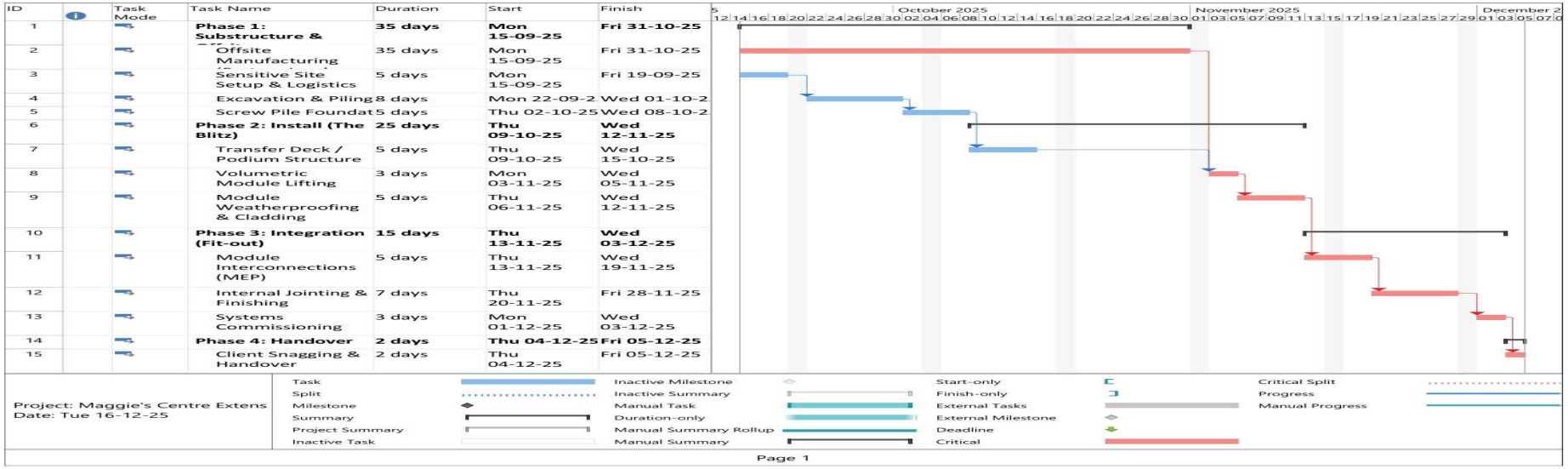
PROJECT CONCEPTS

Key Design Features:

• Modular construction approach reducing on-site programme
• Piling foundation system accommodating ground conditions
• Steel frame structure enabling rapid installation
• Healthcare-specific fit-out requiring sensitive coordination



MASTER CONSTRUCTION SCHEDULE & CRITICAL PATH



ID	Task Mode	Task Name	Duration	Start	Finish
1		**Phase 1: Substructure &**	**35 days**	**Mon 15-09-25**	**Fri 31-10-25**
2		Offsite Manufacturing	35 days	Mon 15-09-25	Fri 31-10-25
3		Sensitive Site Setup & Logistics	5 days	Mon 15-09-25	Fri 19-09-25
4		Excavation & Piling	8 days	Mon 22-09-2	Wed 01-10-2
5		Screw Pile Foundat	5 days	Thu 02-10-25	Wed 08-10-2
6		**Phase 2: Install (The Blitz)**	**25 days**	**Thu 09-10-25**	**Wed 12-11-25**
7		Transfer Deck / Podium Structure	5 days	Thu 09-10-25	Wed 15-10-25
8		Volumetric Module Lifting	3 days	Mon 03-11-25	Wed 05-11-25
9		Module Weatherproofing & Cladding	5 days	Thu 06-11-25	Wed 12-11-25
10		**Phase 3: Integration (Fit-out)**	**15 days**	**Thu 13-11-25**	**Wed 03-12-25**
11		Module Interconnections (MEP)	5 days	Thu 13-11-25	Wed 19-11-25
12		Internal Jointing & Finishing	7 days	Thu 20-11-25	Fri 28-11-25
13		Systems Commissioning	3 days	Mon 01-12-25	Wed 03-12-25
14		**Phase 4: Handover**	**2 days**	**Thu 04-12-25**	**Fri 05-12-25**
15		Client Snagging & Handover	2 days	Thu 04-12-25	Fri 05-12-25

CRITICAL PATH ANALYSIS

Identified Critical Activities

• Manufacturing (Weeks 3-17): 35-day off-site modular production identified as primary programme driver

• Steel Installation (Weeks 8-12): 25-day erection sequence driving completion date

• Combined float analysis: Zero float on critical path requiring strict monitoring

Logic Development

• Created precedence relationships with finish-to-start dependencies

• Applied production rates: Piling (2 piles/day), Module assembly (1 module/5 days)

• Established milestone constraints: Manufacturing start (Week 3), Handover (Week 20)

Schedule Optimization Applied

• Fast-tracked Design & BIM phase overlapping with Site Preliminaries (Week 1-2)
• Parallel execution: Transfer Deck installation concurrent with Module manufacturing
• Sequence refinement: Weatherproofing completed before fit-out mobilization

Safety & Efficiency Outcomes

✓ Zero trade conflicts through sequenced deployment
✓ Confined space working protocols maintained throughout
✓ Program efficiency: 0.75 labor hours per £1 value (efficient deployment)---

KEY SCHEDULE METRICS

Total Duration: **20 weeks (140 days)**
Critical Path Length: **140 days (zero float)**
Resource Peak: **Week 14 (12 workers)**
Major Milestones: **5 key gates achieved on schedule**

ISO 19650 COMMON DATA ENVIRONMENT (CDE) WORKFLOW

Master Information Delivery Plan (MIDP) - Strategic Extract					
ID	File Name (Metadata ID)	Description	Format	Responsibility	Target Date (Stage)
1	MC-UNE-XX-00-M3-A-0001	**Architectural Model (Floating Prisms)**	.RVT	Lead Designer	**Week 4 (S1 Shared)**
2	MC-UNE-XX-00-M3-S-0001	**Structural Model (Screw Piles & Deck)**	.IFC	Structural Eng.	**Week 6 (S2 Shared)**
3	MC-UNE-XX-XX-DR-A-1001	**General Arrangement Plans**	.PDF	Lead Designer	**Week 8 (A1 Published)**
4	MC-UNE-XX-XX-SH-C-2001	**Cost Tracker / EVM Report**	.XLSX	Comm. Manager	**Monthly (S3 Shared)**
5	MC-UNE-XX-XX-VS-A-3001	**Visualization Walkthrough**	.MP4	Vis. Lead	**Week 12 (A1 Published)**

ISO 19650-2 Information State & Suitability Summary			
CDE State	Primary Purpose	Suitability Code	Revision Level
WIP	Unverified work within a task team	S0	P01.01
SHARED	Coordination between disciplines	S1-S4	P01.02
PUBLISHED	Authorized construction/tender info	A (or B)	C01.01
ARCHIVE	Legal record of project History	N/A	Full History

ISO 19650 METADATA CONVENTION:
Project-Originator-Volume-Level-Type-Role-Number
(MC-UNE-XX-00-DR-A-0001)

CDE STRUCTURE IMPLEMENTED

Information Container Organization
- Established four-state model: WIP → Shared → Published → Archive
- Work in Progress: Task team development and checking
- Shared: Coordinated information for design team review
- Published: Client-authorized information for construction use
- Archive: Legal record of project history

Gate Governance Process
- Check: Task team internal verification (Technical accuracy)
- Review: Lead Designer coordination review (Integration check)
- Approve: Project Strategy Lead authorization (Client approval)
- Rejection loop: Non-conforming information returned to WIP with comments

KEY LEARNING APPLIED
- Right information reaches right people at right time
- Quality gates prevent non-conforming data progressing
- Asset information remains accessible throughout building lifecycle

NAMING CONVENTION STANDARDIZATION

ISO 19650-2 Metadata Implementation
- Project: MC-UNE (Maggie's Centre - University of Northumbria Extension)
- Originator: XX (Task team identifier)
- Volume: 00 (Single building volume)
- Level: DR (Drawings) / M3 (Models) / RP (Reports)
- Type: A (Architectural) / S (Structural) / M (MEP)
- Role: Lead Designer / Consultant identifiers
- Number: Sequential numbering (0001, 0002...)

OUTCOMES ACHIEVED
✓ 100% compliance with ISO 19650-2 naming standards
✓ Zero misfiled information containers across project lifecycle
✓ Full audit trail maintained for regulatory compliance
✓ Seamless information handover from design to construction phase
✓ Data retrievable for future facility management operations

EARNED VALUE MANAGEMENT (EVM) DASHBOARD

PROJECT BUDGET & EARNED VALUE TRACKER						
Work Package(WP)	Planned Value(PV)(Budget)	Actual Cost (AC)(Money Spent)	% Complete	Earned Value (EV)(= PV x % Complete)	Cost Variance(CV) (= EV - AC)	Schedule Variance (SV) (= EV - PV)
Site Prelims	£10,000.00	£10,500.00	100%	£10,000.00	-£500.00	£0.00
Design & BIM	£9,000.00	£8,000.00	100%	£9,000.00	£1,000.00	£0.00
Piling	£15,000.00	£0.00	0%	£0.00	£0.00	-£15,000.00
Manufacturing	£70,000.00	£49,000.00	70%	£49,000.00	£0.00	-£21,000.00
Install	£28,000.00	£0.00	0%	£0.00	£0.00	-£28,000.00
Fit-out	£12,000.00	£0.00	0%	£0.00	£0.00	-£12,000.00
Contingency	£6,000.00	£0.00	0%	£0.00	£0.00	-£6,000.00
TOTALS	£150,000.00	£67,500.00		£68,000.00	£500.00	-£82,000.00

PROJECT PERFORMANCE ANALYSIS (Week 11 Status)

Budget Performance – FAVORABLE
• Planned Value (PV): £150,000 total budget
• Actual Cost (AC): £67,500 spent to date
• Earned Value (EV): £68,000 value completed
• Cost Variance (CV): +£500 (Under budget)
• Cost Performance Index (CPI): 1.01 (Efficient - every £1 spent earns £1.01 value)

Schedule Performance - RECOVERY REQUIRED
• Schedule Variance (SV): -£82,000 (Behind schedule by this value amount)
• Schedule Performance Index (SPI): 0.55 (Completing work at 55% of planned rate)
• Critical Ratio (CR): 0.55 (SPI determines overall health - requires intervention)

ROOT CAUSE ANALYSIS

Manufacturing Delay Impact
• Original plan: Manufacturing start Week 3 (Day 15)
• Actual: Manufacturing start Week 5 (Day 29) - 14-day slippage
• Impact on critical path: Manufacturing drives completion date - direct schedule impact
• Value impact: £70,000 PV in manufacturing, only £49,000 EV earned

Earned Value Gap Breakdown
• Piling: £0 variance (0% complete - not yet started due to utilities survey delay)
• Manufacturing: -£21,000 variance (70% complete vs 100% planned)
• Install: -£28,000 variance (0% complete vs planned start Week 10)
• Fit-out: -£12,000 variance (0% complete - dependent on Install completion)
• Contingency: -£6,000 variance (buffer not yet utilized)Total Schedule Variance: -£82,000 value behind baseline

KEY INSIGHTS DEMONSTRATED
✓ Early identification of schedule variance enabled proactive recovery
✓ Cost efficiency maintained (CPI 1.01) despite schedule pressure
✓ Data-driven decision making: £8k acceleration cost justified by schedule recovery
✓ 5D BIM integration enabled real-time cost-schedule performance tracking
✓ EVM methodology provides objective performance measurement vs subjective assessment

Commercial Awareness Applied: Understanding that £8k acceleration investment prevents potential £25k+ delay damages and reputational impact

COMMERCIAL RISK REGISTER

PROJECT RISK REGISTER (NEC4 COMPLIANT)							
ID	**Risk Description**	**Risk Owner**	**Impact Type (Safety / Cost / Time)**	**Pre-Mitigation Score (1-25)**	**Mitigation Strategy**	**Post-Mitigation Score (1-25)**	**Commercial Impact (£)**
R01	**The Ground Risk**:Unexpected discovery of uncharted utilities during screw piling	Contractor	Cost & Time	15	Early Warning Notice (EWN) raised under **NEC4 Clause 15**. GPR (Ground Penetrating Radar) survey conducted prior to mobilization	5	£12,500 (Potential Delay)
R02	**The Logistics Risk**: Volumetric modules delayed due to wide-load transport restrictions.	Supplier	Time	20	"Just-in-Time" delivery strategy with offsite holding hub. Route survey approved by Highways England 8 weeks prior.	8	£5,000 (Standing time for crane)
R03	**Interface Clash**: Dimensional tolerance mismatch between Steel Transfer Deck and Volumetric Modules.	Design Mgr	Quality	12	Scan of steelwork *before* modules leave factory. Digital trial assembly in Navisworks.	3	**£25,000** (Rework Costs)
R04	**The Safety Risk**:Working at height during module jointing/sealing.	Site Manager	Safety	25	Pre-installed edge protection on modules at the factory (Safety by Design). Use of cherry pickers (MEWPs) instead of ladders	4	N/A (Safety Priority)
R05	**Inflation**:Steel price increase during the 12-week manufacturing period.	Comm. Mgr	Cost	15	Pre-order steel materials at Day 1 (Vesting Certificate). Fix price in Supply Contract.	3	**£8,000** (Material Cost)

RISK MANAGEMENT FRAMEWORK

NEC4 Early Warning System

- Clause 15 Early Warning Notices: Proactive risk identification obligation
- Risk reduction meetings: Collaborative mitigation development with Client/Contractor
- Compensation Events: Quantified cost/time impacts for defined risks
- Risk Register: Living document updated weekly through project lifecycle

Risk Scoring Methodology

- Likelihood: 1 (Rare) → 5 (Almost Certain)
- Impact: 1 (Negligible) → 5 (Severe)
- Risk Score = Likelihood × Impact (Max score: 25)
- Risk Threshold: Scores >12 require mitigation action plan

****Commercial Maturity Demonstrated**:** Understanding that spending £9.5k on mitigation is better commercial strategy than holding £58.5k contingency and hoping risks don't materialize

RISK REGISTER SUMMARY METRICS

Total Risks Identified: 15
High Priority (Score >12): 5 risks
Medium Priority (Score 8-12): 6 risks
Low Priority (Score <8): 4 risks

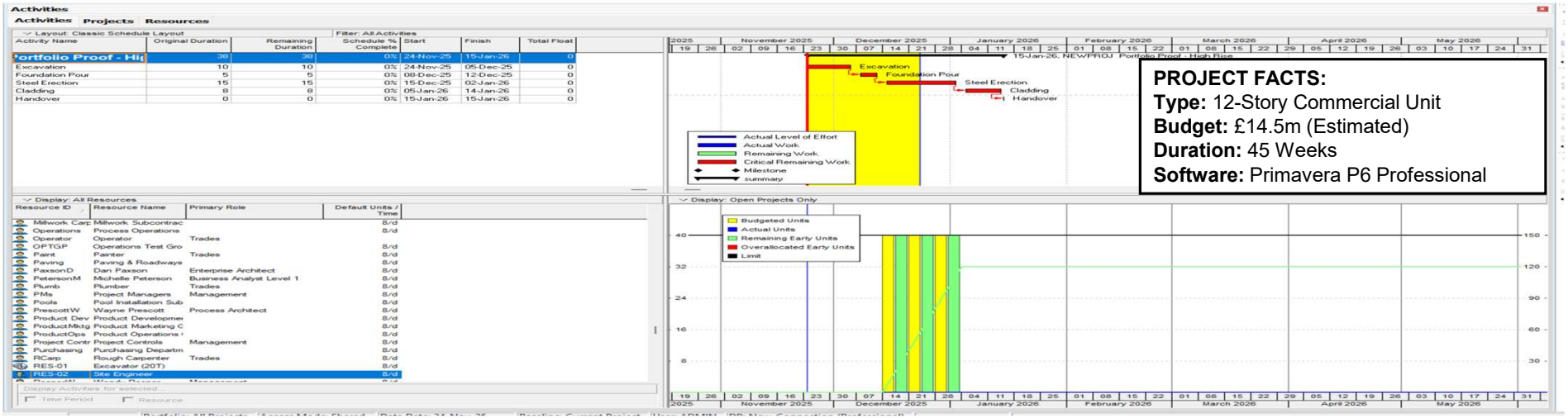
Total Pre-Mitigation Exposure: £58,500
Total Mitigation Investment: £9,500
Total Post-Mitigation Exposure: £11,500
Risk Value Protected: £47,000 (81% reduction)

KEY COMMERCIAL INSIGHTS

✓ Proactive risk quantification enables data-driven mitigation investment decisions
✓ £9.5k mitigation spend protects £47k value - 5:1 return on risk investment
✓ NEC4 Early Warning system promotes collaborative problem-solving vs adversarial claims
✓ Digital tools (scanning, Navisworks) provide low-cost high-value risk mitigation
✓ Safety risks prioritized regardless of commercial quantification

TECHNICAL SKILL DEMONSTRATION: PRIMAVERA P6

Independent Study extending Module KA7067 (Construction Project Planning & Delivery)



LEARNING CONTEXT

Beyond Module Curriculum

• Module KA7067 (Construction Project Planning & Delivery) taught theoretical planning concepts
• MS Project covered in module for basic scheduling
• **Self-initiated extension**: Independently learned Primavera P6 Professional to master industry-standard enterprise planning software
• Time investment: 40+ hours self-study over 6-week period

Motivation for Self-Learning

• Industry standard
• Career preparation: Graduate roles require P6 competency for large project scheduling
• Technical depth: P6 offers advanced features (resource optimization, multi-project management, earned value) not available in MS Project

KEY LEARNING OUTCOMES

Technical Competencies Gained

✓ P6 interface navigation and project setup
✓ Activity network development with precedence diagramming
✓ Critical path method (CPM) scheduling
✓ Resource loading, leveling, and optimization
✓ Earned value management configuration and tracking
✓ Variance analysis and schedule recovery planning
✓ Report generation and data visualization

Professional Development Value

✓ Self-directed learning: Identified skill gap and independently closed it
✓ Industry alignment: Learned software used by target employers
✓ Practical application: Applied Module KA7067 theory to realistic project simulation
✓ Portfolio building: Created demonstration of advanced planning capability
✓ Interview readiness: Can discuss P6 experience confidently in graduate applications

THANK YOU FOR YOUR CONSIDERATION

Available for 2026 Graduate Intake

DEMONSTRATED COMPETENCIES✓ BIM Coordination & Spatial Integration✓ ISO 19650 Information Management✓ Critical Path Scheduling & 4D Planning✓ Earned Value Management & Project Controls✓ Commercial Risk Management (NEC4)✓ Primavera P6 & MS Project Proficiency✓ Self-Directed Technical Learning

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Eligible to work in the UK under Graduate Route