

National Currency Printing and Secure Banknote Production Facility Project (NCPBF)

Detailed Activity Duration Estimation Register

Prepared for learning purpose only – aligned to Charter milestones and 60-month roadmap



Activity ID	WBS	Control Account	Work Package	Detailed Activity	Description	Deliverable / Output	Responsible Role	Phase / Timing Window	WP Start Month	WP Finish Month	Planned Start Month	Planned Finish Month	Duration (days)	Duration (weeks)	Duration Category	Predecessor Activity ID	Estimation Basis	Primary Duration Driver	Aligned Milestone	Schedule Alignment Note
A1	1.1.1	1.1	Project Charter Finalization	Identify project sponsors and approving authorities	Confirm project sponsor and governance authority responsible for project authorization	Sponsor confirmation	Project Manager	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.0	0.1	5.0	1.0	Short	—	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A2	1.1.1	1.1	Project Charter Finalization	Conduct project initiation workshops	Facilitate workshops with key stakeholders to define project vision and objectives	Workshop summary	PMO	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.1	0.2	10.0	2.0	Medium	A1	Expert judgment	Test scope, review depth, approval cycle	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A3	1.1.1	1.1	Project Charter Finalization	Define project objectives and success criteria	Establish SMART objectives aligned with national currency security requirements	Draft objectives document	Project Manager	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.2	0.2	5.0	1.0	Short	A2	Expert judgment	Documentation effort, stakeholder coordination	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A4	1.1.1	1.1	Project Charter Finalization	Define high-level scope and project boundaries	Identify the main deliverables and major exclusions	High-level scope statement	Project Manager	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.2	0.3	5.0	1.0	Short	A3	Expert judgment	Documentation effort, stakeholder coordination	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A5	1.1.1	1.1	Project Charter Finalization	Identify key stakeholders	Identify stakeholders across government, security, and operational institutions	Stakeholder identification list	PMO	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.3	0.3	5.0	1.0	Short	A4	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A6	1.1.1	1.1	Project Charter Finalization	Define project governance structure	Define steering committee, governance boards, and reporting relationships	Governance structure document	Governance Team	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.3	0.4	5.0	1.0	Short	A5	Expert judgment	Documentation effort, stakeholder coordination	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A7	1.1.1	1.1	Project Charter Finalization	Draft the project charter document	Compile objectives, scope, governance structure, and high-level milestones	Draft charter	Project Manager	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.4	0.5	10.0	2.0	Medium	A6	Expert judgment	Documentation effort, stakeholder coordination	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A8	1.1.1	1.1	Project Charter Finalization	Conduct internal charter review	Review draft charter with technical and governance teams	Review comments	PMO	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.5	0.6	7.0	1.4	Medium	A7	Expert judgment	Test scope, review depth, approval cycle	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A9	1.1.1	1.1	Project Charter Finalization	Conduct stakeholder validation workshop	Present charter to stakeholders for validation and feedback	Stakeholder validation record	Project Manager	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.6	0.6	7.0	1.4	Medium	A8	Expert judgment	Test scope, review depth, approval cycle	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A10	1.1.1	1.1	Project Charter Finalization	Finalize project charter	Update charter based on feedback and finalize document	Final charter document	PMO	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.6	0.7	5.0	1.0	Short	A9	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A11	1.1.1	1.1	Project Charter Finalization	Obtain sponsor approval and signature	Secure formal approval from project sponsor	Signed charter	Sponsor	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.7	0.7	5.0	1.0	Short	A10	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A12	1.1.1	1.1	Project Charter Finalization	Archive charter under configuration control	Store final charter in project document repository	Archived charter	Document Control	Phase 1: Project Authorization and Mobilization	0.0	0.8	0.7	0.8	5.0	1.0	Short	A11	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.0–0.8 months.
A13	1.1.2	1.1	Governance Framework Implementation	Establish project steering committee	Form the steering committee responsible for project oversight	Steering committee charter	Sponsor	Phase 1: Project Authorization and Mobilization	0.2	1.5	0.2	0.4	10.0	2.0	Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.2–1.5 months.
A14	1.1.2	1.1	Governance Framework Implementation	Define decision authority matrix	Establish authority levels for decision-making	Authority matrix	PMO	Phase 1: Project Authorization and Mobilization	0.2	1.5	0.4	0.5	5.0	1.0	Short	A13	Expert judgment	Documentation effort, stakeholder coordination	Project Charter Approval	Fits within roadmap window 0.2–1.5 months.
A15	1.1.2	1.1	Governance Framework Implementation	Develop RACI responsibility matrix	Define responsibilities across project roles	RACI matrix	PMO	Phase 1: Project Authorization and Mobilization	0.2	1.5	0.5	0.7	10.0	2.0	Medium	A14	Expert judgment	Documentation effort, stakeholder coordination	Project Charter Approval	Fits within roadmap window 0.2–1.5 months.
A16	1.1.2	1.1	Governance Framework Implementation	Define governance reporting structure	Establish reporting hierarchy and escalation procedures	Reporting framework	Governance Team	Phase 1: Project Authorization and Mobilization	0.2	1.5	0.7	0.8	5.0	1.0	Short	A15	Expert judgment	Documentation effort, stakeholder coordination	Project Charter Approval	Fits within roadmap window 0.2–1.5 months.
A17	1.1.2	1.1	Governance Framework Implementation	Establish project management office (PMO)	Create PMO structure and responsibilities	PMO organizational structure	Governance Team	Phase 1: Project Authorization and Mobilization	0.2	1.5	0.8	1.0	10.0	2.0	Medium	A16	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.2–1.5 months.
A18	1.1.2	1.1	Governance Framework Implementation	Develop governance policies and procedures	Define governance rules and decision protocols	Governance procedures	PMO	Phase 1: Project Authorization and Mobilization	0.2	1.5	1.0	1.2	10.0	2.0	Medium	A17	Expert judgment	Documentation effort, stakeholder coordination	Facility Design Approval	Fits within roadmap window 0.2–1.5 months.
A19	1.1.2	1.1	Governance Framework Implementation	Approve governance calendar	Schedule governance meetings and reviews	Governance calendar	Steering Committee	Phase 1: Project Authorization and Mobilization	0.2	1.5	1.2	1.3	5.0	1.0	Short	A18	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 0.2–1.5 months.
A20	1.1.2	1.1	Governance Framework Implementation	Implement governance monitoring tools	Deploy tools for reporting and monitoring project performance	Governance dashboards	PMO	Phase 1: Project Authorization and Mobilization	0.2	1.5	1.3	1.5	10.0	2.0	Medium	A19	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 0.2–1.5 months.
A21	1.1.3	1.1	Integrated Schedule Development	Review approved WBS structure	Validate WBS hierarchy and deliverables	WBS validation report	Planning Team	Phase 2: Planning and Baseline Development	1.0	3.0	1.0	1.1	5.0	1.0	Short	—	Expert judgment	Test scope, review depth, approval cycle	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A22	1.1.3	1.1	Integrated Schedule Development	Identify detailed project activities	Break down work packages into schedule activities	Activity list	Planning Team	Phase 2: Planning and Baseline Development	1.0	3.0	1.1	1.3	5.0	1.0	Short	A21	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A23	1.1.3	1.1	Integrated Schedule Development	Define activity sequencing	Determine logical dependencies between activities	Network logic diagram	Scheduling Engineer	Phase 2: Planning and Baseline Development	1.0	3.0	1.3	1.4	5.0	1.0	Short	A22	Expert judgment	Documentation effort, stakeholder coordination	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A24	1.1.3	1.1	Integrated Schedule Development	Estimate activity durations	Estimate time required for each activity	Duration estimates	Planning Team	Phase 2: Planning and Baseline Development	1.0	3.0	1.4	1.6	7.0	1.4	Medium	A23	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A25	1.1.3	1.1	Integrated Schedule Development	Develop integrated master schedule	Create project schedule including all work streams	Integrated schedule	Scheduling Engineer	Phase 2: Planning and Baseline Development	1.0	3.0	1.6	2.0	15.0	3.0	Long	A24	Expert judgment	Documentation effort, stakeholder coordination	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A26	1.1.3	1.1	Integrated Schedule Development	Identify critical path	Determine the longest sequence of dependent activities	Critical path analysis	Scheduling Engineer	Phase 2: Planning and Baseline Development	1.0	3.0	2.0	2.1	5.0	1.0	Short	A25	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A27	1.1.3	1.1	Integrated Schedule Development	Integrate stage-gate milestones	Include governance stage-gates into the schedule	Updated schedule	Planning Team	Phase 2: Planning and Baseline Development	1.0	3.0	2.1	2.5	15.0	3.0	Long	A26	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A28	1.1.3	1.1	Integrated Schedule Development	Review schedule with project team	Validate schedule assumptions and dependencies	Review feedback	PMO	Phase 2: Planning and Baseline Development	1.0	3.0	2.5	2.7	5.0	1.0	Short	A27	Expert judgment	Test scope, review depth, approval cycle	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A29	1.1.3	1.1	Integrated Schedule Development	Baseline project schedule	Obtain formal approval of the schedule baseline	Approved schedule baseline	Steering Committee	Phase 2: Planning and Baseline Development	1.0	3.0	2.7	2.9	7.0	1.4	Medium	A28	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A30	1.1.3	1.1	Integrated Schedule Development	Publish controlled schedule	Distribute approved schedule to stakeholders	Published schedule	PMO	Phase 2: Planning and Baseline Development	1.0	3.0	2.9	3.0	5.0	1.0	Short	A29	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.0–3.0 months.
A31	1.1.4	1.1	Cost Baseline Development	Develop cost breakdown structure	Align CBS with approved WBS	Cost breakdown structure	Finance Team	Phase 2: Planning and Baseline Development	1.5	3.5	1.5	1.8	10.0	2.0	Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Facility Design Approval	Fits within roadmap window 1.5–3.5 months.
A32	1.1.4	1.1	Cost Baseline Development	Estimate costs for work packages	Estimate cost of each work package	Cost estimates	Finance Team	Phase 2: Planning and Baseline Development	1.5	3.5	1.8	2.5	20.0	4.0	Long	A31	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.5–3.5 months.
A33	1.1.4	1.1	Cost Baseline Development	Identify contingency requirements	Determine contingency reserves for risks	Contingency plan	Risk Team	Phase 2: Planning and Baseline Development	1.5	3.5	2.5	2.7	5.0	1.0	Short	A32	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.5–3.5 months.
A34	1.1.4	1.1	Cost Baseline Development	Define cost control thresholds	Establish cost variance thresholds	Cost control rules	Finance Team	Phase 2: Planning and Baseline Development	1.5	3.5	2.7	2.8	5.0	1.0	Short	A33	Expert judgment	Documentation effort, stakeholder coordination	Facility Design Approval	Fits within roadmap window 1.5–3.5 months.
A35	1.1.4	1.1	Cost Baseline Development	Develop project cost baseline	Consolidate costs into project baseline	Cost baseline	Finance Team	Phase 2: Planning and Baseline Development	1.5	3.5	2.8	3.3	15.0	3.0	Long	A34	Expert judgment	Documentation effort, stakeholder coordination	Facility Design Approval	Fits within roadmap window 1.5–3.5 months.
A36	1.1.4	1.1	Cost Baseline Development	Obtain financial approval	Submit cost baseline for approval	Approved cost baseline	Steering Committee	Phase 2: Planning and Baseline Development	1.5	3.5	3.3	3.5	5.0	1.0	Short	A35	Three-point / expert judgment	Coordination effort and governance turnaround	Facility Design Approval	Fits within roadmap window 1.5–3.5 months.
A37	1.1.5	1.1	Risk & Change Control	Develop risk management framework	Establish project risk management procedures	Risk management plan	Risk Manager	Cross-Phase Governance, Risk and Change Control	1.0	60.0	1.0	8.7	10.0	2.0	Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 1.0–60.0 months.
A38	1.1.5	1.1	Risk & Change Control	Create risk register	Identify and record project risks	Risk register	Risk Manager	Cross-Phase Governance, Risk and Change Control	1.0	60.0	8.7	14.0	7.0	1.4	Medium	A37	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 1.0–60.0 months.
A39	1.1.5	1.1	Risk & Change Control	Develop issue management process	Establish issue identification and resolution process	Issue log	PMO	Cross-Phase Governance, Risk and Change Control	1.0	60.0	14.0	21.7	10.0	2.0	Medium	A38	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 1.0–60.0 months.
A40	1.1.5	1.1	Risk & Change Control	Establish change control board	Create governance body for change approval	CCB charter	Governance Team	Cross-Phase Governance, Risk and Change Control	1.0	60.0	21.7	29.4	10.0	2.0	Medium	A39	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 1.0–60.0 months.
A41	1.1.5	1.1	Risk & Change Control	Develop change request templates	Define templates for change submission	Change request template	PMO	Cross-Phase Governance, Risk and Change Control	1.0	60.0	29.4	37.0	10.0	2.0	Medium	A40	Expert judgment	Documentation effort, stakeholder coordination	Machinery Installation Complete	Fits within roadmap window 1.0–60.0 months.
A42	1.1.5	1.1	Risk & Change Control	Conduct monthly risk review meetings	Evaluate risk status and mitigation actions	Risk review reports	Risk Manager	Cross-Phase Governance, Risk and Change Control	1.0	60.0	37.0	60.0	30.0	6.0	Extended	A41	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 1.0–60.0 months.
A43	1.1.6	1.1	Stage-Gate Reviews	Define stage-gate review criteria	Establish approval criteria for each phase	Stage-gate criteria	Governance Board	Cross-Phase Stage-Gate Reviews	5.5	60.0	5.5	16.4	5.0	1.0	Short	—	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 5.5–60.0 months.
A44	1.1.6	1.1	Stage-Gate Reviews	Prepare stage-gate documentation	Compile deliverables for review	Gate review package	PMO	Cross-Phase Stage-Gate Reviews	5.5	60.0	16.4	38.2	10.0	2.0	Medium	A43	Expert judgment	Documentation effort, stakeholder coordination	Machinery Installation Complete	Fits within roadmap window 5.5–60.0 months.
A45	1.1.6	1.1	Stage-Gate Reviews	Conduct governance review meeting	Review project readiness	Review minutes	Steering Committee	Cross-Phase Stage-Gate Reviews	5.5	60.0	38.2	49.1	5.0	1.0	Short	A44	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 5.5–60.0 months.

A46	1.1.6	1.1	Stage-Gate Reviews	Approve or reject stage transition	Authorize transition to next phase	Approval decision	Steering Committee	Cross-Phase Stage-Gate Reviews	5.5	60.0	49.1	60.0	5.0	1.0 Short	A45	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 5.5–60.0 months.
A47	1.1.7	1.1	Security Governance	Establish security governance board	Form security oversight authority	Security governance board	Security Authority	Cross-Phase Security Governance	1.0	60.0	1.0	15.8	10.0	2.0 Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 1.0–60.0 months.
A48	1.1.7	1.1	Security Governance	Define security classification levels	Establish classification rules for documents and systems	Classification framework	Security Authority	Cross-Phase Security Governance	1.0	60.0	15.8	23.1	5.0	1.0 Short	A47	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 1.0–60.0 months.
A49	1.1.7	1.1	Security Governance	Approve security architecture design	Validate security infrastructure design	Approved security architecture	Security Board	Cross-Phase Security Governance	1.0	60.0	23.1	30.5	5.0	1.0 Short	A48	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 1.0–60.0 months.
A50	1.1.7	1.1	Security Governance	Conduct security compliance reviews	Monitor security implementation	Security compliance report	Security Team	Cross-Phase Security Governance	1.0	60.0	30.5	60.0	20.0	4.0 Long	A49	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 1.0–60.0 months.
A51	1.1.8	1.1	Benefits Tracking	Identify expected project benefits	Define financial and strategic benefits	Benefits register	PMO	Cross-Phase Benefits Tracking	2.0	60.0	2.0	9.3	5.0	1.0 Short	—	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 2.0–60.0 months.
A52	1.1.8	1.1	Benefits Tracking	Define benefit KPIs	Establish measurable indicators	KPI framework	PMO	Cross-Phase Benefits Tracking	2.0	60.0	9.3	16.5	5.0	1.0 Short	A51	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 2.0–60.0 months.
A53	1.1.8	1.1	Benefits Tracking	Monitor benefits realization	Track performance against KPIs	Benefits report	PMO	Cross-Phase Benefits Tracking	2.0	60.0	16.5	60.0	30.0	6.0 Extended	A52	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 2.0–60.0 months.
A54	1.1.9	1.1	Configuration Control	Establish document repository	Implement document management system	Document repository	IT Team	Cross-Phase Configuration Control	0.5	60.0	0.5	19.1	10.0	2.0 Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	Project Charter Approval	Fits within roadmap window 0.5–60.0 months.
A55	1.1.9	1.1	Configuration Control	Define document classification rules	Establish document security levels	Document classification guide	Security Team	Cross-Phase Configuration Control	0.5	60.0	19.1	28.4	5.0	1.0 Short	A54	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 0.5–60.0 months.
A56	1.1.9	1.1	Configuration Control	Implement version control procedures	Manage document revisions	Version control system	Document Control	Cross-Phase Configuration Control	0.5	60.0	28.4	47.0	10.0	2.0 Medium	A55	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 0.5–60.0 months.
A57	1.1.9	1.1	Configuration Control	Control document distribution	Manage document access permissions	Access log	PMO	Cross-Phase Configuration Control	0.5	60.0	47.0	60.0	7.0	1.4 Medium	A56	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 0.5–60.0 months.
A58	1.2.1	1.2	Secure Site Preparation	Conduct site boundary survey	Survey and confirm exact project boundaries	Survey report	Civil Engineering Team	Phase 3–4: Site Preparation and Early Works	6.0	9.0	6.0	6.1	7.0	1.4 Medium	—	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A59	1.2.1	1.2	Secure Site Preparation	Obtain land clearance approvals	Secure permits and approvals for site preparation	Land clearance permits	Legal / Government Liaison	Phase 3–4: Site Preparation and Early Works	6.0	9.0	6.1	6.5	20.0	4.0 Long	A58	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A60	1.2.1	1.2	Secure Site Preparation	Perform geotechnical soil investigation	Conduct soil sampling and structural analysis	Geotechnical report	Geotechnical Engineer	Phase 3–4: Site Preparation and Early Works	6.0	9.0	6.5	6.7	15.0	3.0 Long	A59	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A61	1.2.1	1.2	Secure Site Preparation	Analyze soil bearing capacity	Validate soil strength for structural foundations	Soil analysis report	Structural Engineer	Phase 3–4: Site Preparation and Early Works	6.0	9.0	6.7	6.8	7.0	1.4 Medium	A60	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A62	1.2.1	1.2	Secure Site Preparation	Perform environmental impact review	Evaluate environmental compliance requirements	Environmental assessment	Environmental Specialist	Phase 3–4: Site Preparation and Early Works	6.0	9.0	6.8	7.1	15.0	3.0 Long	A61	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A63	1.2.1	1.2	Secure Site Preparation	Clear vegetation and obstacles	Remove trees, debris, and unwanted structures	Cleared site	Construction Contractor	Phase 3–4: Site Preparation and Early Works	6.0	9.0	7.1	7.5	20.0	4.0 Long	A62	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A64	1.2.1	1.2	Secure Site Preparation	Conduct initial land grading	Prepare site surface for construction works	Grading completion report	Civil Contractor	Phase 3–4: Site Preparation and Early Works	6.0	9.0	7.5	7.8	20.0	4.0 Long	A63	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A65	1.2.1	1.2	Secure Site Preparation	Perform excavation activities	Excavate foundation areas and service trenches	Excavation completion	Civil Contractor	Phase 3–4: Site Preparation and Early Works	6.0	9.0	7.8	8.2	20.0	4.0 Long	A64	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A66	1.2.1	1.2	Secure Site Preparation	Install temporary drainage systems	Prevent flooding during construction	Temporary drainage system	Civil Engineering Team	Phase 3–4: Site Preparation and Early Works	6.0	9.0	8.2	8.4	12.0	2.4 Long	A65	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A67	1.2.1	1.2	Secure Site Preparation	Install temporary security fencing	Secure the construction site perimeter	Temporary fence installation	Security Team	Phase 3–4: Site Preparation and Early Works	6.0	9.0	8.4	8.5	10.0	2.0 Medium	A66	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A68	1.2.1	1.2	Secure Site Preparation	Establish guard posts	Set up security checkpoints and guard shelters	Guard stations operational	Security Contractor	Phase 3–4: Site Preparation and Early Works	6.0	9.0	8.5	8.7	10.0	2.0 Medium	A67	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A69	1.2.1	1.2	Secure Site Preparation	Implement controlled site entry	Establish access control for construction workers	Access control system	Security Team	Phase 3–4: Site Preparation and Early Works	6.0	9.0	8.7	8.9	10.0	2.0 Medium	A68	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A70	1.2.1	1.2	Secure Site Preparation	Conduct HSE kickoff meeting	Introduce safety protocols and compliance standards	HSE kickoff report	HSE Manager	Phase 3–4: Site Preparation and Early Works	6.0	9.0	8.9	9.0	7.0	1.4 Medium	A69	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 6.0–9.0 months.
A71	1.2.2	1.2	Architectural & Engineering Design	Conduct user needs assessment	Identify operational requirements of currency facility	User requirements report	Design Team	Phase 3: Secure Facility Design	6.0	12.0	6.0	6.3	7.0	1.4 Medium	—	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A72	1.2.2	1.2	Architectural & Engineering Design	Develop conceptual facility design	Prepare initial layout and architectural concept	Concept design package	Architect	Phase 3: Secure Facility Design	6.0	12.0	6.3	7.0	20.0	4.0 Long	A71	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A73	1.2.2	1.2	Architectural & Engineering Design	Define security zoning layout	Establish high-security and restricted zones	Security zoning plan	Security Architect	Phase 3: Secure Facility Design	6.0	12.0	7.0	7.2	5.0	1.0 Short	A72	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A74	1.2.2	1.2	Architectural & Engineering Design	Prepare architectural design drawings	Develop architectural blueprints	Architectural drawings	Architect	Phase 3: Secure Facility Design	6.0	12.0	7.2	8.1	25.0	5.0 Extended	A73	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A75	1.2.2	1.2	Architectural & Engineering Design	Develop structural engineering design	Design building structural components	Structural design report	Structural Engineer	Phase 3: Secure Facility Design	6.0	12.0	8.1	8.8	20.0	4.0 Long	A74	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A76	1.2.2	1.2	Architectural & Engineering Design	Develop mechanical engineering design	Design HVAC and ventilation systems	Mechanical design documents	Mechanical Engineer	Phase 3: Secure Facility Design	6.0	12.0	8.8	9.5	18.0	3.6 Long	A75	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A77	1.2.2	1.2	Architectural & Engineering Design	Develop electrical system design	Design electrical power distribution systems	Electrical design drawings	Electrical Engineer	Phase 3: Secure Facility Design	6.0	12.0	9.5	10.1	18.0	3.6 Long	A76	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A78	1.2.2	1.2	Architectural & Engineering Design	Design vault infrastructure	Develop vault structural and security design	Vault design package	Security Engineer	Phase 3: Secure Facility Design	6.0	12.0	10.1	10.7	15.0	3.0 Long	A77	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A79	1.2.2	1.2	Architectural & Engineering Design	Design fire and life safety systems	Develop fire protection and emergency systems	Fire safety design	Safety Engineer	Phase 3: Secure Facility Design	6.0	12.0	10.7	11.2	15.0	3.0 Long	A78	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A80	1.2.2	1.2	Architectural & Engineering Design	Conduct independent design validation	Independent verification of design compliance	Design validation report	Independent Consultant	Phase 3: Secure Facility Design	6.0	12.0	11.2	11.6	10.0	2.0 Medium	A79	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A81	1.2.2	1.2	Architectural & Engineering Design	Conduct security architecture review	Validate facility security features	Security design review	Security Authority	Phase 3: Secure Facility Design	6.0	12.0	11.6	11.8	7.0	1.4 Medium	A80	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A82	1.2.2	1.2	Architectural & Engineering Design	Obtain design baseline approval	Approve final engineering designs	Approved design baseline	Steering Committee	Phase 3: Secure Facility Design	6.0	12.0	11.8	12.0	5.0	1.0 Short	A81	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 6.0–12.0 months.
A83	1.2.3	1.2	Security Perimeter Construction	Construct perimeter wall foundation	Build base structures for security perimeter	Wall foundation completed	Civil Contractor	Phase 4: Security Perimeter Construction	12.0	18.0	12.0	13.1	25.0	5.0 Extended	—	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A84	1.2.3	1.2	Security Perimeter Construction	Install perimeter fencing systems	Install reinforced security fencing	Installed fencing	Security Contractor	Phase 4: Security Perimeter Construction	12.0	18.0	13.1	13.9	20.0	4.0 Long	A83	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A85	1.2.3	1.2	Security Perimeter Construction	Install anti-climb security features	Deploy anti-climb barriers	Anti-climb system installed	Security Contractor	Phase 4: Security Perimeter Construction	12.0	18.0	13.9	14.4	10.0	2.0 Medium	A84	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A86	1.2.3	1.2	Security Perimeter Construction	Install perimeter lighting systems	Install high-security lighting infrastructure	Security lighting system	Electrical Contractor	Phase 4: Security Perimeter Construction	12.0	18.0	14.4	14.8	10.0	2.0 Medium	A85	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A87	1.2.3	1.2	Security Perimeter Construction	Construct guard towers	Build security observation towers	Guard towers completed	Construction Contractor	Phase 4: Security Perimeter Construction	12.0	18.0	14.8	15.9	25.0	5.0 Extended	A86	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A88	1.2.3	1.2	Security Perimeter Construction	Construct gatehouses	Establish secured entry buildings	Gatehouses constructed	Civil Contractor	Phase 4: Security Perimeter Construction	12.0	18.0	15.9	16.7	20.0	4.0 Long	A87	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A89	1.2.3	1.2	Security Perimeter Construction	Install IDS conduit infrastructure	Prepare cabling infrastructure for intrusion detection	IDS infrastructure	IT Security Team	Phase 4: Security Perimeter Construction	12.0	18.0	16.7	17.4	15.0	3.0 Long	A88	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A90	1.2.3	1.2	Security Perimeter Construction	Conduct blind spot testing	Evaluate security coverage gaps	Security coverage report	Security Team	Phase 4: Security Perimeter Construction	12.0	18.0	17.4	17.7	7.0	1.4 Medium	A89	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A91	1.2.3	1.2	Security Perimeter Construction	Conduct perimeter security inspection	Validate perimeter security installation	Security inspection report	Security Authority	Phase 4: Security Perimeter Construction	12.0	18.0	17.7	18.0	7.0	1.4 Medium	A90	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 12.0–18.0 months.
A92	1.2.4	1.2	Structural Construction	Construct building foundations	Install reinforced concrete foundations	Foundation structure	Civil Contractor	Phase 4: Structural Construction	12.0	26.0	12.0	13.8	40.0	8.0 Extended	—	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A93	1.2.4	1.2	Structural Construction	Build reinforced structural framework	Construct building superstructure	Structural framework	Structural Contractor	Phase 4: Structural Construction	12.0	26.0	13.8	17.9	90.0	18.0 Extended	A92	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A94	1.2.4	1.2	Structural Construction	Construct production halls	Build main printing production areas	Production hall structure	Construction Contractor	Phase 4: Structural Construction	12.0	26.0	17.9	21.2	75.0	15.0 Extended	A93	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A95	1.2.4	1.2	Structural Construction	Install internal partitions	Construct internal operational areas	Partition installation	Civil Contractor	Phase 4: Structural Construction	12.0	26.0	21.2	22.6	30.0	6.0 Extended	A94	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A96	1.2.4	1.2	Structural Construction	Construct machine foundations	Build reinforced platforms for printing machines	Machine foundation structures	Structural Contractor	Phase 4: Structural Construction	12.0	26.0	22.6	24.4	40.0	8.0 Extended	A95	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–26.0 months.

A97	1.2.4	1.2	Structural Construction	Install vibration isolation systems	Reduce machine vibration impacts	Isolation systems installed	Engineering Contractor	Phase 4: Structural Construction	12.0	26.0	24.4	25.1	15.0	3.0 Long	A96	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A98	1.2.4	1.2	Structural Construction	Conduct structural QA inspections	Verify structural integrity	QA inspection report	Quality Assurance Team	Phase 4: Structural Construction	12.0	26.0	25.1	25.4	7.0	1.4 Medium	A97	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A99	1.2.4	1.2	Structural Construction	Verify construction material certifications	Ensure compliance with design specifications	Material certification records	QA Team	Phase 4: Structural Construction	12.0	26.0	25.4	25.7	7.0	1.4 Medium	A98	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A100	1.2.4	1.2	Structural Construction	Conduct structural stage gate review	Verify readiness for next construction stage	Stage-gate approval	Steering Committee	Phase 4: Structural Construction	12.0	26.0	25.7	26.0	7.0	1.4 Medium	A99	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 12.0–26.0 months.
A101	1.2.6	1.2	Vault Construction	Construct reinforced vault structures	Build secure vault chambers	Vault structures completed	Security Contractor	Phase 4: Vault Construction	20.0	28.0	20.0	23.6	45.0	9.0 Extended	—	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 20.0–28.0 months.
A102	1.2.6	1.2	Vault Construction	Install certified vault locking systems	Install high-security locking mechanisms	Vault locks installed	Security Contractor	Phase 4: Vault Construction	20.0	28.0	23.6	24.8	15.0	3.0 Long	A101	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 20.0–28.0 months.
A103	1.2.6	1.2	Vault Construction	Implement environmental stabilization	Ensure vault climate stability	Environmental system installed	Facility Engineering	Phase 4: Vault Construction	20.0	28.0	24.8	25.7	10.0	2.0 Medium	A102	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 20.0–28.0 months.
A104	1.2.6	1.2	Vault Construction	Install CCTV and IDS interfaces	Integrate surveillance systems into vault	Security system integration	Security Team	Phase 4: Vault Construction	20.0	28.0	25.7	26.9	15.0	3.0 Long	A103	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 20.0–28.0 months.
A105	1.2.6	1.2	Vault Construction	Conduct penetration resistance testing	Test vault security strength	Penetration test report	Security Authority	Phase 4: Vault Construction	20.0	28.0	26.9	27.4	7.0	1.4 Medium	A104	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 20.0–28.0 months.
A106	1.2.6	1.2	Vault Construction	Obtain security certification	Certify vault security compliance	Security certification	Regulatory Authority	Phase 4: Vault Construction	20.0	28.0	27.4	28.0	7.0	1.4 Medium	A105	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 20.0–28.0 months.
A107	1.2.8	1.2	Utilities Installation	Install main electrical distribution system	Deploy primary electrical infrastructure	Electrical system installed	Electrical Contractor	Phase 4: Utilities Installation	18.0	30.0	18.0	21.3	40.0	8.0 Extended	—	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A108	1.2.8	1.2	Utilities Installation	Install backup generators	Deploy emergency power generators	Generator system installed	Electrical Contractor	Phase 4: Utilities Installation	18.0	30.0	21.3	23.3	25.0	5.0 Extended	A107	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A109	1.2.8	1.2	Utilities Installation	Install UPS systems	Provide uninterrupted power supply	UPS system installed	Electrical Engineer	Phase 4: Utilities Installation	18.0	30.0	23.3	24.6	15.0	3.0 Long	A108	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A110	1.2.8	1.2	Utilities Installation	Install water supply systems	Install facility water infrastructure	Water system operational	Plumbing Contractor	Phase 4: Utilities Installation	18.0	30.0	24.6	26.2	20.0	4.0 Long	A109	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A111	1.2.8	1.2	Utilities Installation	Install fire suppression systems	Install fire safety infrastructure	Fire suppression system	Safety Engineer	Phase 4: Utilities Installation	18.0	30.0	26.2	28.3	25.0	5.0 Extended	A110	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A112	1.2.8	1.2	Utilities Installation	Conduct load testing for utilities	Validate system capacity	Load test report	Engineering Team	Phase 4: Utilities Installation	18.0	30.0	28.3	28.8	7.0	1.4 Medium	A111	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A113	1.2.8	1.2	Utilities Installation	Conduct failover simulations	Verify backup power switching	Failover test report	Electrical Engineer	Phase 4: Utilities Installation	18.0	30.0	28.8	29.4	7.0	1.4 Medium	A112	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A114	1.2.8	1.2	Utilities Installation	Obtain safety certification	Approve utility safety compliance	Safety certification	Safety Authority	Phase 4: Utilities Installation	18.0	30.0	29.4	30.0	7.0	1.4 Medium	A113	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 18.0–30.0 months.
A115	1.3.1	1.3	Procurement of Printing Presses	Define technical specifications for printing presses	Establish detailed technical, production, and security requirements for banknote printing presses	Technical specification document	Procurement & Engineering Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	24.0	24.6	15.0	3.0 Long	—	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A116	1.3.1	1.3	Procurement of Printing Presses	Conduct market analysis of potential suppliers	Identify global suppliers capable of delivering secure banknote printing technology	Vendor market analysis report	Procurement Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	24.6	25.1	15.0	3.0 Long	A115	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A117	1.3.1	1.3	Procurement of Printing Presses	Prepare vendor prequalification criteria	Establish technical, financial, and security evaluation criteria	Vendor prequalification document	Procurement Committee	Phase 5: Printing Press Procurement and Installation	24.0	40.0	25.1	25.5	10.0	2.0 Medium	A116	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A118	1.3.1	1.3	Procurement of Printing Presses	Issue prequalification request	Invite qualified vendors to submit capability submissions	Vendor prequalification submissions	Procurement Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	25.5	25.7	5.0	1.0 Short	A117	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A119	1.3.1	1.3	Procurement of Printing Presses	Evaluate vendor qualifications	Assess vendor capability, experience, and compliance	Vendor shortlist	Evaluation Committee	Phase 5: Printing Press Procurement and Installation	24.0	40.0	25.7	26.3	15.0	3.0 Long	A118	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A120	1.3.1	1.3	Procurement of Printing Presses	Prepare procurement tender documents	Develop detailed request for proposal (RFP) package	Tender documentation	Procurement Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	26.3	26.8	15.0	3.0 Long	A119	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A121	1.3.1	1.3	Procurement of Printing Presses	Publish international tender	Invite bids from qualified suppliers	Published tender notice	Procurement Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	26.8	27.0	5.0	1.0 Short	A120	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A122	1.3.1	1.3	Procurement of Printing Presses	Conduct bidder conference	Clarify tender requirements and technical specifications	Bidder conference minutes	Procurement Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	27.0	27.2	5.0	1.0 Short	A121	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A123	1.3.1	1.3	Procurement of Printing Presses	Receive vendor proposals	Collect vendor technical and commercial proposals	Vendor proposals	Procurement Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	27.2	28.0	20.0	4.0 Long	A122	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A124	1.3.1	1.3	Procurement of Printing Presses	Perform technical proposal evaluation	Evaluate compliance with engineering specifications	Technical evaluation report	Technical Committee	Phase 5: Printing Press Procurement and Installation	24.0	40.0	28.0	28.9	25.0	5.0 Extended	A123	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A125	1.3.1	1.3	Procurement of Printing Presses	Perform commercial proposal evaluation	Evaluate cost and contractual conditions	Commercial evaluation report	Procurement Committee	Phase 5: Printing Press Procurement and Installation	24.0	40.0	28.9	29.5	15.0	3.0 Long	A124	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 24.0–40.0 months.
A126	1.3.1	1.3	Procurement of Printing Presses	Conduct security and compliance review	Assess vendor compliance with security requirements	Security review report	Security Authority	Phase 5: Printing Press Procurement and Installation	24.0	40.0	29.5	30.0	15.0	3.0 Long	A125	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A127	1.3.1	1.3	Procurement of Printing Presses	Finalize vendor selection	Select the most qualified supplier	Vendor selection decision	Steering Committee	Phase 5: Printing Press Procurement and Installation	24.0	40.0	30.0	30.3	7.0	1.4 Medium	A126	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A128	1.3.1	1.3	Procurement of Printing Presses	Negotiate contract terms	Finalize pricing, delivery, training, and warranty terms	Negotiated contract	Procurement Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	30.3	31.0	20.0	4.0 Long	A127	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A129	1.3.1	1.3	Procurement of Printing Presses	Obtain governance approval for contract	Secure approval from governance board	Approved contract	Steering Committee	Phase 5: Printing Press Procurement and Installation	24.0	40.0	31.0	31.2	5.0	1.0 Short	A128	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A130	1.3.1	1.3	Procurement of Printing Presses	Sign procurement contract	Execute formal contract with vendor	Signed contract	Project Sponsor	Phase 5: Printing Press Procurement and Installation	24.0	40.0	31.2	31.3	3.0	0.6 Short	A129	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A131	1.3.1	1.3	Procurement of Printing Presses	Monitor manufacturing process	Supervise equipment manufacturing at vendor facility	Manufacturing oversight reports	Engineering Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	31.3	35.9	120.0	24.0 Extended	A130	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A132	1.3.1	1.3	Procurement of Printing Presses	Verify manufacturing progress milestones	Monitor vendor progress against schedule	Manufacturing milestone report	Vendor Oversight Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	35.9	39.2	90.0	18.0 Extended	A131	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A133	1.3.1	1.3	Procurement of Printing Presses	Define spare parts and maintenance requirements	Establish spare parts inventory and maintenance plans	Spare parts plan	Engineering Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	39.2	39.6	10.0	2.0 Medium	A132	Expert judgment	Documentation effort, stakeholder coordination	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A134	1.3.1	1.3	Procurement of Printing Presses	Define training program for operators	Develop operator training program with vendor	Training plan	Operations Team	Phase 5: Printing Press Procurement and Installation	24.0	40.0	39.6	40.0	10.0	2.0 Medium	A133	Expert judgment	Documentation effort, stakeholder coordination	Machinery Installation Complete	Fits within roadmap window 24.0–40.0 months.
A135	1.3.2	1.3	Finishing Equipment Procurement	Define technical specifications for finishing equipment	Specify requirements for cutting, numbering, bundling equipment	Technical specification document	Engineering Team	Phase 5: Finishing Equipment Procurement	26.0	38.0	26.0	27.6	10.0	2.0 Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Construction Completion	Fits within roadmap window 26.0–38.0 months.
A136	1.3.2	1.3	Finishing Equipment Procurement	Conduct vendor market research	Identify global suppliers for finishing equipment	Market research report	Procurement Team	Phase 5: Finishing Equipment Procurement	26.0	38.0	27.6	29.2	10.0	2.0 Medium	A135	Expert judgment	Test scope, review depth, approval cycle	Construction Completion	Fits within roadmap window 26.0–38.0 months.
A137	1.3.2	1.3	Finishing Equipment Procurement	Issue tender for finishing equipment	Publish procurement tender	Tender notice	Procurement Team	Phase 5: Finishing Equipment Procurement	26.0	38.0	29.2	30.0	5.0	1.0 Short	A136	Three-point / expert judgment	Coordination effort and governance turnaround	Construction Completion	Fits within roadmap window 26.0–38.0 months.
A138	1.3.2	1.3	Finishing Equipment Procurement	Evaluate vendor proposals	Assess vendor compliance with specifications	Evaluation report	Technical Committee	Phase 5: Finishing Equipment Procurement	26.0	38.0	30.0	32.4	15.0	3.0 Long	A137	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 26.0–38.0 months.
A139	1.3.2	1.3	Finishing Equipment Procurement	Conduct interoperability verification	Ensure compatibility with printing presses	Compatibility report	Engineering Team	Phase 5: Finishing Equipment Procurement	26.0	38.0	32.4	34.0	10.0	2.0 Medium	A138	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 26.0–38.0 months.
A140	1.3.2	1.3	Finishing Equipment Procurement	Award procurement contract	Select vendor and execute contract	Signed vendor contract	Procurement Authority	Phase 5: Finishing Equipment Procurement	26.0	38.0	34.0	34.8	5.0	1.0 Short	A139	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 26.0–38.0 months.
A141	1.3.2	1.3	Finishing Equipment Procurement	Plan factory acceptance testing (FAT)	Define FAT testing procedures	FAT test plan	Engineering Team	Phase 5: Finishing Equipment Procurement	26.0	38.0	34.8	36.4	10.0	2.0 Medium	A140	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 26.0–38.0 months.
A142	1.3.2	1.3	Finishing Equipment Procurement	Confirm delivery readiness	Verify equipment readiness for shipment	Delivery readiness report	Vendor Oversight Team	Phase 5: Finishing Equipment Procurement	26.0	38.0	36.4	38.0	10.0	2.0 Medium	A141	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 26.0–38.0 months.
A143	1.3.3	1.3	Secure Logistics	Develop secure transportation plan	Establish secure transportation procedures	Logistics plan	Security Logistics Team	Phase 5: Secure Logistics	38.0	42.0	38.0	38.6	10.0	2.0 Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Machinery Installation Complete	Fits within roadmap window 38.0–42.0 months.
A144	1.3.3	1.3	Secure Logistics	Obtain shipment insurance	Secure insurance coverage for equipment transport	Insurance certificate	Procurement Team	Phase 5: Secure Logistics	38.0	42.0	38.6	39.0	5.0	1.0 Short	A143	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 38.0–42.0 months.
A145	1.3.3	1.3	Secure Logistics	Coordinate transport escorts	Arrange security escorts for transport	Escort deployment plan	Security Authority	Phase 5: Secure Logistics	38.0	42.0	39.0	39.4	7.0	1.4 Medium	A144	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 38.0–42.0 months.
A146	1.3.3	1.3	Secure Logistics	Implement chain-of-custody tracking	Track equipment movement during transit	Chain-of-custody records	Logistics Team	Phase 5: Secure Logistics	38.0	42.0	39.4	40.4	15.0	3.0 Long	A145	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 38.0–42.0 months.
A147	1.3.3	1.3	Secure Logistics	Manage customs clearance	Process customs documentation if required	Customs clearance documents	Logistics Team	Phase 5: Secure Logistics	38.0	42.0	40.4	41.0	10.0	2.0 Medium	A146	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Machinery Installation Complete	Fits within roadmap window 38.0–42.0 months.

A148	1.3.3	1.3	Secure Logistics	Conduct secure unloading operations	Safely unload equipment at facility	Unloading completion report	Installation Team	Phase 5: Secure Logistics	38.0	42.0	41.0	41.4	5.0	1.0 Short	A147	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 38.0-42.0 months.
A149	1.3.3	1.3	Secure Logistics	Transfer equipment to secure storage	Store equipment under controlled conditions	Storage records	Security Team	Phase 5: Secure Logistics	38.0	42.0	41.4	41.7	5.0	1.0 Short	A148	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 38.0-42.0 months.
A150	1.3.3	1.3	Secure Logistics	Conduct delivery inspection	Verify equipment condition upon arrival	Delivery inspection report	Engineering Team	Phase 5: Secure Logistics	38.0	42.0	41.7	42.0	5.0	1.0 Short	A149	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 38.0-42.0 months.
A151	1.3.4	1.3	Machinery Installation	Verify site readiness for installation	Confirm facility infrastructure readiness	Site readiness report	Engineering Team	Phase 5: Machinery Installation	39.0	42.0	39.0	39.2	5.0	1.0 Short	—	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A152	1.3.4	1.3	Machinery Installation	Prepare installation equipment and tools	Ensure required installation equipment available	Installation readiness checklist	Installation Team	Phase 5: Machinery Installation	39.0	42.0	39.2	39.3	5.0	1.0 Short	A151	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A153	1.3.4	1.3	Machinery Installation	Perform machinery rigging operations	Move heavy machinery into position	Rigging completion report	Mechanical Contractor	Phase 5: Machinery Installation	39.0	42.0	39.3	39.8	15.0	3.0 Long	A152	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A154	1.3.4	1.3	Machinery Installation	Position machinery on foundations	Place machinery on prepared platforms	Machinery placement report	Installation Team	Phase 5: Machinery Installation	39.0	42.0	39.8	40.3	15.0	3.0 Long	A153	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A155	1.3.4	1.3	Machinery Installation	Anchor machinery to foundation	Secure equipment to foundation mounts	Anchoring verification	Mechanical Engineer	Phase 5: Machinery Installation	39.0	42.0	40.3	40.7	10.0	2.0 Medium	A154	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A156	1.3.4	1.3	Machinery Installation	Perform mechanical alignment	Align equipment components for operation	Alignment verification report	Engineering Team	Phase 5: Machinery Installation	39.0	42.0	40.7	41.2	15.0	3.0 Long	A155	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A157	1.3.4	1.3	Machinery Installation	Conduct vibration calibration	Ensure vibration control compliance	Calibration report	Engineering Team	Phase 5: Machinery Installation	39.0	42.0	41.2	41.5	10.0	2.0 Medium	A156	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A158	1.3.4	1.3	Machinery Installation	Connect utility systems	Connect electrical, water, and air systems	Utility connection verification	Engineering Team	Phase 5: Machinery Installation	39.0	42.0	41.5	41.8	10.0	2.0 Medium	A157	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A159	1.3.4	1.3	Machinery Installation	Conduct installation QA inspection	Verify installation compliance	QA inspection report	Quality Assurance Team	Phase 5: Machinery Installation	39.0	42.0	41.8	42.0	5.0	1.0 Short	A158	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Machinery Installation Complete	Fits within roadmap window 39.0-42.0 months.
A160	1.3.5	1.3	System Integration	Integrate machinery with facility power systems	Connect machines to electrical infrastructure	Power integration report	Electrical Engineer	Phase 5-6: System Integration	41.0	44.0	41.0	41.4	7.0	1.4 Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 41.0-44.0 months.
A161	1.3.5	1.3	System Integration	Integrate HVAC environmental systems	Connect machines to environmental controls	HVAC integration report	Mechanical Engineer	Phase 5-6: System Integration	41.0	44.0	41.4	41.7	7.0	1.4 Medium	A160	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 41.0-44.0 months.
A162	1.3.5	1.3	System Integration	Configure OT/IT system interfaces	Connect machines with production IT systems	System interface configuration	IT Engineer	Phase 5-6: System Integration	41.0	44.0	41.7	42.2	10.0	2.0 Medium	A161	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 41.0-44.0 months.
A163	1.3.5	1.3	System Integration	Establish secure data communication channels	Implement secure data exchange between systems	Secure communication setup	Cybersecurity Team	Phase 5-6: System Integration	41.0	44.0	42.2	42.7	10.0	2.0 Medium	A162	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 41.0-44.0 months.
A164	1.3.5	1.3	System Integration	Conduct interoperability testing	Verify interaction between all systems	Interoperability test report	Systems Integration Team	Phase 5-6: System Integration	41.0	44.0	42.7	43.2	10.0	2.0 Medium	A163	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 41.0-44.0 months.
A165	1.3.5	1.3	System Integration	Conduct integrated system testing	Validate operational readiness	System testing report	Engineering Team	Phase 5-6: System Integration	41.0	44.0	43.2	44.0	15.0	3.0 Long	A164	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 41.0-44.0 months.
A166	1.3.7	1.3	Calibration & Validation	Perform equipment calibration	Adjust equipment settings to meet specifications	Calibration report	Engineering Team	Phase 5-6: Calibration and Validation	43.0	48.0	43.0	44.0	10.0	2.0 Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 43.0-48.0 months.
A167	1.3.7	1.3	Calibration & Validation	Conduct initial machine trial runs	Operate equipment under controlled conditions	Trial run report	Production Team	Phase 5-6: Calibration and Validation	43.0	48.0	44.0	45.0	10.0	2.0 Medium	A166	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 43.0-48.0 months.
A168	1.3.7	1.3	Calibration & Validation	Conduct precision measurement tests	Verify printing precision accuracy	Precision test results	Quality Team	Phase 5-6: Calibration and Validation	43.0	48.0	45.0	45.8	7.0	1.4 Medium	A167	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 43.0-48.0 months.
A169	1.3.7	1.3	Calibration & Validation	Measure defect rates and throughput	Evaluate production performance	Performance measurement report	Operations Team	Phase 5-6: Calibration and Validation	43.0	48.0	45.8	46.8	10.0	2.0 Medium	A168	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 43.0-48.0 months.
A170	1.3.7	1.3	Calibration & Validation	Prepare technical validation report	Document validation findings	Technical validation report	Engineering Team	Phase 5-6: Calibration and Validation	43.0	48.0	46.8	47.5	7.0	1.4 Medium	A169	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-48.0 months.
A171	1.3.7	1.3	Calibration & Validation	Obtain commissioning readiness approval	Confirm readiness for operational commissioning	Commissioning approval	Steering Committee	Phase 5-6: Calibration and Validation	43.0	48.0	47.5	48.0	5.0	1.0 Short	A170	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 43.0-48.0 months.
A172	1.4.1	1.4	Production Management System Implementation	Define production system architecture	Design the architecture for the production management system controlling banknote operations	Architecture design document	IT Architecture Team	Phase 6: Production Management System	42.0	46.0	42.0	42.2	5.0	1.0 Short	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A173	1.4.1	1.4	Production Management System Implementation	Identify functional system requirements	Define system requirements for production monitoring and control	System requirements specification	IT Engineering Team	Phase 6: Production Management System	42.0	46.0	42.2	42.5	5.0	1.0 Short	A172	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A174	1.4.1	1.4	Production Management System Implementation	Configure Production Management System (PMS)	Install and configure the PMS platform	PMS configuration report	IT Implementation Team	Phase 6: Production Management System	42.0	46.0	42.5	43.5	20.0	4.0 Long	A173	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A175	1.4.1	1.4	Production Management System Implementation	Integrate PMS with printing machines	Establish communication between PMS and printing equipment	Integration configuration	Systems Integration Team	Phase 6: Production Management System	42.0	46.0	43.5	44.0	10.0	2.0 Medium	A174	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A176	1.4.1	1.4	Production Management System Implementation	Implement immutable logging system	Enable tamper-proof production activity logs	Secure logging system	Cybersecurity Team	Phase 6: Production Management System	42.0	46.0	44.0	44.4	10.0	2.0 Medium	A175	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A177	1.4.1	1.4	Production Management System Implementation	Configure role-based access control mapping	Assign system access roles and permissions	RBAC configuration	IT Security Team	Phase 6: Production Management System	42.0	46.0	44.4	44.8	7.0	1.4 Medium	A176	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A178	1.4.1	1.4	Production Management System Implementation	Perform system integration testing	Test interactions between PMS and production equipment	Integration testing report	QA Team	Phase 6: Production Management System	42.0	46.0	44.8	45.3	10.0	2.0 Medium	A177	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A179	1.4.1	1.4	Production Management System Implementation	Conduct user acceptance testing (UAT)	Validate system functionality with operational users	UAT report	Operations Team	Phase 6: Production Management System	42.0	46.0	45.3	45.8	10.0	2.0 Medium	A178	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A180	1.4.1	1.4	Production Management System Implementation	Obtain governance approval for system deployment	Secure approval for production system go-live	System approval documentation	Steering Committee	Phase 6: Production Management System	42.0	46.0	45.8	46.0	5.0	1.0 Short	A179	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A181	1.4.2	1.4	Inventory Tracking System Deployment	Define material taxonomy	Establish classification structure for raw materials and banknotes	Material taxonomy document	Operations Team	Phase 6: Inventory Tracking System	42.0	46.0	42.0	42.3	5.0	1.0 Short	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A182	1.4.2	1.4	Inventory Tracking System Deployment	Configure inventory tracking workflows	Define inventory lifecycle processes	Workflow configuration	IT Systems Team	Phase 6: Inventory Tracking System	42.0	46.0	42.3	43.0	10.0	2.0 Medium	A181	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A183	1.4.2	1.4	Inventory Tracking System Deployment	Define authorization rules for material movement	Establish security rules for inventory transactions	Authorization framework	Security Team	Phase 6: Inventory Tracking System	42.0	46.0	43.0	43.4	5.0	1.0 Short	A182	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A184	1.4.2	1.4	Inventory Tracking System Deployment	Integrate inventory system with access control	Connect inventory system with security access control	System integration report	IT Security Team	Phase 6: Inventory Tracking System	42.0	46.0	43.4	43.9	7.0	1.4 Medium	A183	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A185	1.4.2	1.4	Inventory Tracking System Deployment	Integrate inventory system with surveillance systems	Link inventory movement to video surveillance monitoring	Integration report	Security Systems Team	Phase 6: Inventory Tracking System	42.0	46.0	43.9	44.3	7.0	1.4 Medium	A184	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A186	1.4.2	1.4	Inventory Tracking System Deployment	Configure anomaly detection mechanisms	Detect irregular inventory movement	Anomaly detection rules	Cybersecurity Team	Phase 6: Inventory Tracking System	42.0	46.0	44.3	45.0	10.0	2.0 Medium	A185	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A187	1.4.2	1.4	Inventory Tracking System Deployment	Conduct inventory reconciliation testing	Validate material traceability	Reconciliation report	Operations Team	Phase 6: Inventory Tracking System	42.0	46.0	45.0	45.5	7.0	1.4 Medium	A186	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A188	1.4.2	1.4	Inventory Tracking System Deployment	Conduct system acceptance testing	Verify operational functionality	Acceptance test report	QA Team	Phase 6: Inventory Tracking System	42.0	46.0	45.5	46.0	7.0	1.4 Medium	A187	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A189	1.4.3	1.4	Role-Based Access Control System	Define system access roles	Identify system user roles and access levels	Role definition document	IT Security Team	Phase 6: RBAC System	42.0	46.0	42.0	42.5	5.0	1.0 Short	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A190	1.4.3	1.4	Role-Based Access Control System	Map privileges to operational roles	Assign access privileges based on job responsibilities	Privilege mapping matrix	Security Team	Phase 6: RBAC System	42.0	46.0	42.5	43.0	5.0	1.0 Short	A189	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A191	1.4.3	1.4	Role-Based Access Control System	Implement multi-factor authentication (MFA)	Deploy MFA security mechanisms	MFA system deployment	Cybersecurity Team	Phase 6: RBAC System	42.0	46.0	43.0	44.1	10.0	2.0 Medium	A190	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A192	1.4.3	1.4	Role-Based Access Control System	Integrate RBAC with biometric authentication	Link access control with biometric verification	Biometric access integration	Security Systems Team	Phase 6: RBAC System	42.0	46.0	44.1	44.8	7.0	1.4 Medium	A191	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A193	1.4.3	1.4	Role-Based Access Control System	Conduct unauthorized access testing	Validate system protection against unauthorized access	Security test report	Cybersecurity Team	Phase 6: RBAC System	42.0	46.0	44.8	45.5	7.0	1.4 Medium	A192	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A194	1.4.3	1.4	Role-Based Access Control System	Conduct periodic access review setup	Establish periodic access audits	Access review policy	Security Governance Team	Phase 6: RBAC System	42.0	46.0	45.5	46.0	5.0	1.0 Short	A193	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A195	1.4.4	1.4	Surveillance & Monitoring Platform	Design central monitoring architecture	Define surveillance and monitoring system architecture	Monitoring architecture design	Security Architecture Team	Phase 6: Surveillance & Monitoring	42.0	46.0	42.0	42.4	7.0	1.4 Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A196	1.4.4	1.4	Surveillance & Monitoring Platform	Deploy central monitoring platform	Install monitoring infrastructure	Monitoring platform installed	IT Security Team	Phase 6: Surveillance & Monitoring	42.0	46.0	42.4	43.3	15.0	3.0 Long	A195	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A197	1.4.4	1.4	Surveillance & Monitoring Platform	Configure secure data storage	Establish secure storage for monitoring data	Storage configuration report	IT Infrastructure Team	Phase 6: Surveillance & Monitoring	42.0	46.0	43.3	43.9	10.0	2.0 Medium	A196	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.

A198	1.4.4	1.4	Surveillance & Monitoring Platform	Define log retention policies	Establish policies for log retention and archival	Log retention policy	Security Governance Team	Phase 6: Surveillance & Monitoring	42.0	46.0	43.9	44.2	5.0	1.0 Short	A197	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A199	1.4.4	1.4	Surveillance & Monitoring Platform	Configure alert rules and triggers	Define system alerts for security incidents	Alert rule configuration	Cybersecurity Team	Phase 6: Surveillance & Monitoring	42.0	46.0	44.2	44.7	7.0	1.4 Medium	A198	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A200	1.4.4	1.4	Surveillance & Monitoring Platform	Establish SOC monitoring procedures	Define procedures for security monitoring operations	SOC operations guide	Security Operations Center	Phase 6: Surveillance & Monitoring	42.0	46.0	44.7	45.3	10.0	2.0 Medium	A199	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A201	1.4.4	1.4	Surveillance & Monitoring Platform	Test monitoring feeds and alert systems	Validate alert and monitoring functionality	Monitoring test report	Security Operations Team	Phase 6: Surveillance & Monitoring	42.0	46.0	45.3	45.7	7.0	1.4 Medium	A200	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A202	1.4.4	1.4	Surveillance & Monitoring Platform	Obtain monitoring system approval	Approve monitoring system readiness	Governance approval	Security Board	Phase 6: Surveillance & Monitoring	42.0	46.0	45.7	46.0	5.0	1.0 Short	A201	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A203	1.4.5	1.4	Cybersecurity Architecture Deployment	Install network firewalls	Deploy perimeter and internal firewall systems	Firewall deployment report	Cybersecurity Team	Phase 6: Cybersecurity Architecture	42.0	46.0	42.0	42.6	12.0	2.4 Long	—	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A204	1.4.5	1.4	Cybersecurity Architecture Deployment	Deploy intrusion detection systems (IDS)	Install IDS infrastructure	IDS deployment report	Security Engineering Team	Phase 6: Cybersecurity Architecture	42.0	46.0	42.6	43.2	12.0	2.4 Long	A203	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A205	1.4.5	1.4	Cybersecurity Architecture Deployment	Deploy intrusion prevention systems (IPS)	Install IPS protection mechanisms	IPS system deployment	Security Team	Phase 6: Cybersecurity Architecture	42.0	46.0	43.2	43.8	12.0	2.4 Long	A204	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A206	1.4.5	1.4	Cybersecurity Architecture Deployment	Implement endpoint protection systems	Deploy endpoint security software	Endpoint protection deployment	IT Security Team	Phase 6: Cybersecurity Architecture	42.0	46.0	43.8	44.3	10.0	2.0 Medium	A205	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A207	1.4.5	1.4	Cybersecurity Architecture Deployment	Configure encryption protocols	Enable encryption for data communications	Encryption configuration report	Cybersecurity Team	Phase 6: Cybersecurity Architecture	42.0	46.0	44.3	44.7	7.0	1.4 Medium	A206	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A208	1.4.5	1.4	Cybersecurity Architecture Deployment	Implement centralized logging infrastructure	Consolidate security event logs	Logging infrastructure	IT Operations Team	Phase 6: Cybersecurity Architecture	42.0	46.0	44.7	45.2	10.0	2.0 Medium	A207	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A209	1.4.5	1.4	Cybersecurity Architecture Deployment	Integrate incident response procedures	Connect security alerts to incident response protocols	Incident response framework	Security Operations Center	Phase 6: Cybersecurity Architecture	42.0	46.0	45.2	45.5	7.0	1.4 Medium	A208	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A210	1.4.5	1.4	Cybersecurity Architecture Deployment	Validate cybersecurity controls	Verify effectiveness of security architecture	Cybersecurity validation report	Security Audit Team	Phase 6: Cybersecurity Architecture	42.0	46.0	45.5	46.0	10.0	2.0 Medium	A209	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A211	1.4.6	1.4	Network Segmentation	Define OT and IT network separation	Establish architecture separating operational and IT networks	Network architecture design	IT Architecture Team	Phase 6: Network Segmentation	42.0	46.0	42.0	42.4	5.0	1.0 Short	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A212	1.4.6	1.4	Network Segmentation	Configure VLAN network segmentation	Implement segmented network zones	VLAN configuration	Network Engineering Team	Phase 6: Network Segmentation	42.0	46.0	42.4	43.1	10.0	2.0 Medium	A211	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A213	1.4.6	1.4	Network Segmentation	Install secure gateway devices	Deploy network gateway security controls	Gateway installation report	Network Security Team	Phase 6: Network Segmentation	42.0	46.0	43.1	43.9	10.0	2.0 Medium	A212	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A214	1.4.6	1.4	Network Segmentation	Restrict external network access	Implement external connection restrictions	Access control configuration	Cybersecurity Team	Phase 6: Network Segmentation	42.0	46.0	43.9	44.4	7.0	1.4 Medium	A213	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A215	1.4.6	1.4	Network Segmentation	Monitor lateral network movement	Detect unauthorized lateral movement attempts	Network monitoring logs	SOC Team	Phase 6: Network Segmentation	42.0	46.0	44.4	45.5	15.0	3.0 Long	A214	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A216	1.4.6	1.4	Network Segmentation	Verify network segmentation effectiveness	Conduct segmentation testing	Network security test report	Cybersecurity Team	Phase 6: Network Segmentation	42.0	46.0	45.5	46.0	7.0	1.4 Medium	A215	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.0 months.
A217	1.4.7	1.4	Data Protection Systems	Implement encryption at rest	Encrypt stored data systems	Encryption implementation report	IT Security Team	Phase 6: Data Protection Systems	42.0	47.0	42.0	42.7	10.0	2.0 Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A218	1.4.7	1.4	Data Protection Systems	Implement encryption in transit	Secure network data transmission	Secure communication configuration	Network Security Team	Phase 6: Data Protection Systems	42.0	47.0	42.7	43.4	10.0	2.0 Medium	A217	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A219	1.4.7	1.4	Data Protection Systems	Deploy backup systems	Install automated data backup infrastructure	Backup system deployment	IT Operations Team	Phase 6: Data Protection Systems	42.0	47.0	43.4	44.2	10.0	2.0 Medium	A218	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A220	1.4.7	1.4	Data Protection Systems	Configure disaster recovery environment	Establish DR recovery environment	DR infrastructure report	IT Infrastructure Team	Phase 6: Data Protection Systems	42.0	47.0	44.2	45.3	15.0	3.0 Long	A219	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A221	1.4.7	1.4	Data Protection Systems	Define data retention policies	Establish long-term data retention rules	Retention policy	Security Governance Team	Phase 6: Data Protection Systems	42.0	47.0	45.3	45.6	5.0	1.0 Short	A220	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A222	1.4.7	1.4	Data Protection Systems	Conduct recovery testing	Test restoration procedures	Recovery test report	IT Operations Team	Phase 6: Data Protection Systems	42.0	47.0	45.6	46.1	7.0	1.4 Medium	A221	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A223	1.4.7	1.4	Data Protection Systems	Conduct disaster recovery simulation	Simulate system failure recovery	DR simulation report	IT Disaster Recovery Team	Phase 6: Data Protection Systems	42.0	47.0	46.1	46.6	7.0	1.4 Medium	A222	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A224	1.4.7	1.4	Data Protection Systems	Approve disaster recovery readiness	Confirm system recoverability	DR readiness approval	Governance Board	Phase 6: Data Protection Systems	42.0	47.0	46.6	47.0	5.0	1.0 Short	A223	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-47.0 months.
A225	1.4.8	1.4	Penetration Testing	Engage independent cybersecurity testing firm	Contract certified security testing organization	Vendor contract	Procurement Team	Phase 6: Penetration Testing	46.0	48.0	46.0	46.4	10.0	2.0 Medium	—	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A226	1.4.8	1.4	Penetration Testing	Conduct vulnerability scanning	Identify system vulnerabilities	Vulnerability scan report	Cybersecurity Firm	Phase 6: Penetration Testing	46.0	48.0	46.4	46.6	5.0	1.0 Short	A225	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A227	1.4.8	1.4	Penetration Testing	Perform penetration testing	Simulate cyber attacks	Penetration test report	Cybersecurity Firm	Phase 6: Penetration Testing	46.0	48.0	46.6	47.0	10.0	2.0 Medium	A226	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A228	1.4.8	1.4	Penetration Testing	Document remediation actions	Record required security improvements	Remediation log	Cybersecurity Team	Phase 6: Penetration Testing	46.0	48.0	47.0	47.2	5.0	1.0 Short	A227	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A229	1.4.8	1.4	Penetration Testing	Implement security patches	Apply vulnerability patches	Patch implementation report	IT Security Team	Phase 6: Penetration Testing	46.0	48.0	47.2	47.5	7.0	1.4 Medium	A228	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A230	1.4.8	1.4	Penetration Testing	Conduct retesting of vulnerabilities	Validate security fixes	Retest report	Cybersecurity Firm	Phase 6: Penetration Testing	46.0	48.0	47.5	47.7	5.0	1.0 Short	A229	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A231	1.4.8	1.4	Penetration Testing	Present results to security board	Review cybersecurity status	Security review report	Security Board	Phase 6: Penetration Testing	46.0	48.0	47.7	47.8	3.0	0.6 Short	A230	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A232	1.4.8	1.4	Penetration Testing	Obtain stage-gate security approval	Approve readiness for operational transition	Security approval	Steering Committee	Phase 6: Penetration Testing	46.0	48.0	47.8	48.0	5.0	1.0 Short	A231	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 46.0-48.0 months.
A233	1.5.1	1.5	Multi-Layer Access Control Installation	Define facility access control architecture	Design the multi-layer access control framework from perimeter to vault areas	Access control architecture document	Security Architecture Team	Phase 6: Physical Access Control	42.0	46.5	42.0	42.2	5.0	1.0 Short	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A234	1.5.1	1.5	Multi-Layer Access Control Installation	Define access control security zones	Establish access levels for perimeter, restricted zones, and vault areas	Security zoning plan	Security Authority	Phase 6: Physical Access Control	42.0	46.5	42.2	42.5	5.0	1.0 Short	A233	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A235	1.5.1	1.5	Multi-Layer Access Control Installation	Prepare access control technical specifications	Define specifications for readers, turnstiles, and control panels	Technical specification document	Security Engineering Team	Phase 6: Physical Access Control	42.0	46.5	42.5	42.9	10.0	2.0 Medium	A234	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A236	1.5.1	1.5	Multi-Layer Access Control Installation	Procure access control hardware	Acquire readers, controllers, turnstiles, and security doors	Procurement delivery records	Procurement Team	Phase 6: Physical Access Control	42.0	46.5	42.9	43.8	20.0	4.0 Long	A235	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A237	1.5.1	1.5	Multi-Layer Access Control Installation	Install access control panels and controllers	Install central access control control units	Installation report	Security Contractor	Phase 6: Physical Access Control	42.0	46.5	43.8	44.3	10.0	2.0 Medium	A236	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A238	1.5.1	1.5	Multi-Layer Access Control Installation	Install card readers and biometric terminals	Install authentication devices at secure entry points	Installed authentication devices	Security Systems Team	Phase 6: Physical Access Control	42.0	46.5	44.3	44.7	10.0	2.0 Medium	A237	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A239	1.5.1	1.5	Multi-Layer Access Control Installation	Install secure doors and turnstiles	Deploy controlled access entry points	Installed doors and turnstiles	Security Contractor	Phase 6: Physical Access Control	42.0	46.5	44.7	45.3	12.0	2.4 Long	A238	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A240	1.5.1	1.5	Multi-Layer Access Control Installation	Configure central logging system	Enable centralized logging for all access activities	Logging configuration report	IT Security Team	Phase 6: Physical Access Control	42.0	46.5	45.3	45.6	7.0	1.4 Medium	A239	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A241	1.5.1	1.5	Multi-Layer Access Control Installation	Integrate access control with CCTV and IDS	Link access system with surveillance and intrusion detection systems	Integration report	Security Integration Team	Phase 6: Physical Access Control	42.0	46.5	45.6	46.0	10.0	2.0 Medium	A240	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A242	1.5.1	1.5	Multi-Layer Access Control Installation	Simulate unauthorized access attempts	Conduct penetration attempts to verify access controls	Access control security test report	Security Audit Team	Phase 6: Physical Access Control	42.0	46.5	46.0	46.3	5.0	1.0 Short	A241	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A243	1.5.1	1.5	Multi-Layer Access Control Installation	Obtain security system approval	Verify and approve operational readiness	Security approval certificate	Security Authority	Phase 6: Physical Access Control	42.0	46.5	46.3	46.5	5.0	1.0 Short	A242	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A244	1.5.2	1.5	Biometric System Deployment	Define biometric authentication requirements	Establish biometric verification standards	Biometric specification document	Security Architecture Team	Phase 6: Biometric System	43.0	46.5	43.0	43.4	7.0	1.4 Medium	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-46.5 months.
A245	1.5.2	1.5	Biometric System Deployment	Develop biometric enrollment procedures	Establish user enrollment protocols	Enrollment procedures document	Security Operations Team	Phase 6: Biometric System	43.0	46.5	43.4	43.9	7.0	1.4 Medium	A244	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-46.5 months.
A246	1.5.2	1.5	Biometric System Deployment	Install biometric authentication devices	Deploy biometric readers in high-security areas	Device installation report	Security Contractor	Phase 6: Biometric System	43.0	46.5	43.9	44.5	10.0	2.0 Medium	A245	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 43.0-46.5 months.
A247	1.5.2	1.5	Biometric System Deployment	Configure encrypted biometric storage	Secure storage of biometric data	Secure database configuration	IT Security Team	Phase 6: Biometric System	43.0	46.5	44.5	45.1	10.0	2.0 Medium	A246	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-46.5 months.
A248	1.5.2	1.5	Biometric System Deployment	Integrate biometric system with RBAC framework	Connect biometric authentication to role-based access system	Integration report	IT Security Team	Phase 6: Biometric System	43.0	46.5	45.1	45.6	7.0	1.4 Medium	A247	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 43.0-46.5 months.

A249	1.5.2	1.5	Biometric System Deployment	Conduct biometric accuracy testing	Verify accuracy of authentication mechanisms	Accuracy testing report	Security Engineering Team	Phase 6: Biometric System	43.0	46.5	45.6	45.9	5.0	1.0	Short	A248	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 43.0-46.5 months.
A250	1.5.2	1.5	Biometric System Deployment	Perform biometric system failover testing	Validate backup authentication procedures	Failover test report	IT Security Team	Phase 6: Biometric System	43.0	46.5	45.9	46.2	5.0	1.0	Short	A249	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 43.0-46.5 months.
A251	1.5.2	1.5	Biometric System Deployment	Obtain biometric certification approval	Approve biometric system for operational use	Certification approval	Security Authority	Phase 6: Biometric System	43.0	46.5	46.2	46.5	5.0	1.0	Short	A250	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 43.0-46.5 months.
A252	1.5.3	1.5	CCTV & Surveillance Installation	Develop camera coverage plan	Identify camera locations across facility	Camera layout plan	Security Engineering Team	Phase 6: CCTV & Surveillance	42.0	46.5	42.0	42.5	7.0	1.4	Medium	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A253	1.5.3	1.5	CCTV & Surveillance Installation	Install surveillance cameras	Deploy high-resolution cameras	Camera installation report	Security Contractor	Phase 6: CCTV & Surveillance	42.0	46.5	42.5	43.6	15.0	3.0	Long	A252	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A254	1.5.3	1.5	CCTV & Surveillance Installation	Install network video recorders (NVRs)	Deploy video recording systems	NVR installation report	IT Infrastructure Team	Phase 6: CCTV & Surveillance	42.0	46.5	43.6	44.4	10.0	2.0	Medium	A253	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A255	1.5.3	1.5	CCTV & Surveillance Installation	Configure secure video transmission channels	Encrypt video data transmission	Secure video transmission report	Cybersecurity Team	Phase 6: CCTV & Surveillance	42.0	46.5	44.4	44.9	7.0	1.4	Medium	A254	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A256	1.5.3	1.5	CCTV & Surveillance Installation	Define video retention policies	Establish storage duration policies	Retention policy document	Security Governance Team	Phase 6: CCTV & Surveillance	42.0	46.5	44.9	45.2	5.0	1.0	Short	A255	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A257	1.5.3	1.5	CCTV & Surveillance Installation	Conduct blind spot elimination testing	Identify and eliminate surveillance gaps	Surveillance coverage report	Security Operations Team	Phase 6: CCTV & Surveillance	42.0	46.5	45.2	45.8	7.0	1.4	Medium	A256	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A258	1.5.3	1.5	CCTV & Surveillance Installation	Validate surveillance coverage	Confirm full facility coverage	Coverage validation report	Security Audit Team	Phase 6: CCTV & Surveillance	42.0	46.5	45.8	46.1	5.0	1.0	Short	A257	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A259	1.5.3	1.5	CCTV & Surveillance Installation	Approve surveillance system	Final approval for surveillance operations	System approval document	Security Authority	Phase 6: CCTV & Surveillance	42.0	46.5	46.1	46.5	5.0	1.0	Short	A258	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-46.5 months.
A260	1.5.4	1.5	Alarm & Intrusion Detection Systems	Install intrusion detection sensors	Deploy motion and perimeter sensors	Sensor installation report	Security Contractor	Phase 6: Alarm & IDS	42.5	46.5	42.5	43.2	10.0	2.0	Medium	—	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A261	1.5.4	1.5	Alarm & Intrusion Detection Systems	Install alarm control panels	Deploy alarm system infrastructure	Alarm panel installation	Security Engineering Team	Phase 6: Alarm & IDS	42.5	46.5	43.2	44.0	10.0	2.0	Medium	A260	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A262	1.5.4	1.5	Alarm & Intrusion Detection Systems	Configure intrusion alert rules	Establish automated security alerts	Alert configuration report	Security Systems Team	Phase 6: Alarm & IDS	42.5	46.5	44.0	44.5	7.0	1.4	Medium	A261	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A263	1.5.4	1.5	Alarm & Intrusion Detection Systems	Integrate alarms with monitoring systems	Connect alarms to monitoring platform	Integration report	Security Integration Team	Phase 6: Alarm & IDS	42.5	46.5	44.5	45.0	7.0	1.4	Medium	A262	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A264	1.5.4	1.5	Alarm & Intrusion Detection Systems	Conduct intrusion simulation tests	Simulate security breach scenarios	Intrusion simulation report	Security Testing Team	Phase 6: Alarm & IDS	42.5	46.5	45.0	45.4	5.0	1.0	Short	A263	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A265	1.5.4	1.5	Alarm & Intrusion Detection Systems	Conduct power failover tests	Verify system performance during power failure	Failover test report	Electrical Engineering Team	Phase 6: Alarm & IDS	42.5	46.5	45.4	45.8	5.0	1.0	Short	A264	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A266	1.5.4	1.5	Alarm & Intrusion Detection Systems	Conduct network failover tests	Validate network resilience	Network failover report	IT Infrastructure Team	Phase 6: Alarm & IDS	42.5	46.5	45.8	46.1	5.0	1.0	Short	A265	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A267	1.5.4	1.5	Alarm & Intrusion Detection Systems	Obtain system security approval	Certify alarm and IDS system readiness	Security approval certificate	Security Authority	Phase 6: Alarm & IDS	42.5	46.5	46.1	46.5	5.0	1.0	Short	A266	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.5-46.5 months.
A268	1.5.5	1.5	Visitor Management System	Define visitor registration procedures	Establish visitor access management procedures	Visitor management policy	Security Governance Team	Phase 6: Visitor Management	43.0	46.0	43.0	43.3	5.0	1.0	Short	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A269	1.5.5	1.5	Visitor Management System	Configure visitor pre-registration system	Implement digital visitor registration system	Visitor system configuration	IT Systems Team	Phase 6: Visitor Management	43.0	46.0	43.3	43.6	7.0	1.4	Medium	A268	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A270	1.5.5	1.5	Visitor Management System	Establish ID verification procedures	Define identity verification protocols	Verification procedure document	Security Team	Phase 6: Visitor Management	43.0	46.0	43.6	44.1	10.0	2.0	Medium	A269	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A271	1.5.5	1.5	Visitor Management System	Issue temporary visitor credentials	Generate visitor identification badges	Visitor credential records	Security Operations Team	Phase 6: Visitor Management	43.0	46.0	44.1	44.4	5.0	1.0	Short	A270	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A272	1.5.5	1.5	Visitor Management System	Define escort management procedures	Establish rules for escorting visitors	Escort procedure document	Security Team	Phase 6: Visitor Management	43.0	46.0	44.4	44.6	5.0	1.0	Short	A271	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A273	1.5.5	1.5	Visitor Management System	Configure visitor audit logging	Record visitor movements and activities	Visitor audit logs	IT Security Team	Phase 6: Visitor Management	43.0	46.0	44.6	45.0	7.0	1.4	Medium	A272	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A274	1.5.5	1.5	Visitor Management System	Integrate visitor system with access control	Connect visitor management with access system	Integration report	IT Security Team	Phase 6: Visitor Management	43.0	46.0	45.0	45.7	15.0	3.0	Long	A273	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A275	1.5.5	1.5	Visitor Management System	Conduct visitor system acceptance testing	Validate visitor system functionality	Acceptance testing report	QA Team	Phase 6: Visitor Management	43.0	46.0	45.7	46.0	5.0	1.0	Short	A274	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 43.0-46.0 months.
A276	1.5.6	1.5	Secure Materials Handling Controls	Define secure material handling corridors	Establish controlled routes for material movement	Secure corridor plan	Operations Security Team	Phase 6: Secure Materials Handling	44.0	47.0	44.0	44.2	5.0	1.0	Short	—	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 44.0-47.0 months.
A277	1.5.6	1.5	Secure Materials Handling Controls	Implement dual-control handling procedures	Require dual personnel authorization for sensitive materials	Dual control procedure	Security Authority	Phase 6: Secure Materials Handling	44.0	47.0	44.2	44.7	10.0	2.0	Medium	A276	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 44.0-47.0 months.
A278	1.5.6	1.5	Secure Materials Handling Controls	Install scanning checkpoints	Deploy scanning systems for material verification	Scanning system installation	Security Systems Team	Phase 6: Secure Materials Handling	44.0	47.0	44.7	45.2	10.0	2.0	Medium	A277	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 44.0-47.0 months.
A279	1.5.6	1.5	Secure Materials Handling Controls	Implement tamper-evident packaging procedures	Establish secure packaging standards	Packaging procedures document	Operations Team	Phase 6: Secure Materials Handling	44.0	47.0	45.2	45.7	10.0	2.0	Medium	A278	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 44.0-47.0 months.
A280	1.5.6	1.5	Secure Materials Handling Controls	Establish reconciliation checkpoints	Verify material movement across checkpoints	Reconciliation records	Inventory Control Team	Phase 6: Secure Materials Handling	44.0	47.0	45.7	46.2	10.0	2.0	Medium	A279	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 44.0-47.0 months.
A281	1.5.6	1.5	Secure Materials Handling Controls	Configure exception alert mechanisms	Detect irregular material movements	Exception alert configuration	Cybersecurity Team	Phase 6: Secure Materials Handling	44.0	47.0	46.2	46.7	10.0	2.0	Medium	A280	Expert judgment	Documentation effort, stakeholder coordination	System Integration Testing	Fits within roadmap window 44.0-47.0 months.
A282	1.5.6	1.5	Secure Materials Handling Controls	Validate material handling security processes	Test operational security procedures	Security validation report	Security Audit Team	Phase 6: Secure Materials Handling	44.0	47.0	46.7	47.0	7.0	1.4	Medium	A281	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 44.0-47.0 months.
A283	1.6.1	1.6	Factory Acceptance Testing (FAT)	Develop FAT testing strategy	Define testing objectives, scope, and acceptance criteria for factory testing	FAT testing strategy document	Engineering Team	Phase 5: Factory Acceptance Testing	36.0	40.0	36.0	36.4	7.0	1.4	Medium	—	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A284	1.6.1	1.6	Factory Acceptance Testing (FAT)	Prepare FAT test plan	Develop detailed FAT procedures and test cases	FAT test plan	QA Team	Phase 5: Factory Acceptance Testing	36.0	40.0	36.4	36.8	7.0	1.4	Medium	A283	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A285	1.6.1	1.6	Factory Acceptance Testing (FAT)	Coordinate vendor testing schedule	Agree testing schedule with vendor manufacturing team	FAT schedule	Vendor Coordination Team	Phase 5: Factory Acceptance Testing	36.0	40.0	36.8	37.1	5.0	1.0	Short	A284	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A286	1.6.1	1.6	Factory Acceptance Testing (FAT)	Inspect equipment prior to FAT	Conduct visual and functional inspection before testing	Inspection report	Engineering Team	Phase 5: Factory Acceptance Testing	36.0	40.0	37.1	37.4	5.0	1.0	Short	A285	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A287	1.6.1	1.6	Factory Acceptance Testing (FAT)	Execute FAT functional tests	Conduct operational testing of printing machinery at vendor facility	FAT execution report	QA Team	Phase 5: Factory Acceptance Testing	36.0	40.0	37.4	38.0	10.0	2.0	Medium	A286	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A288	1.6.1	1.6	Factory Acceptance Testing (FAT)	Record FAT test results	Document system performance during tests	Test results log	QA Team	Phase 5: Factory Acceptance Testing	36.0	40.0	38.0	38.3	5.0	1.0	Short	A287	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A289	1.6.1	1.6	Factory Acceptance Testing (FAT)	Identify nonconformances	Log defects or deviations identified during testing	Nonconformance report	QA Team	Phase 5: Factory Acceptance Testing	36.0	40.0	38.3	38.6	5.0	1.0	Short	A288	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A290	1.6.1	1.6	Factory Acceptance Testing (FAT)	Implement corrective actions	Vendor corrects defects identified during FAT	Corrective action report	Vendor Engineering Team	Phase 5: Factory Acceptance Testing	36.0	40.0	38.6	39.4	15.0	3.0	Long	A289	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A291	1.6.1	1.6	Factory Acceptance Testing (FAT)	Conduct FAT re-testing	Verify resolution of nonconformances	FAT retest report	QA Team	Phase 5: Factory Acceptance Testing	36.0	40.0	39.4	39.8	7.0	1.4	Medium	A290	Expert judgment	Test scope, review depth, approval cycle	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A292	1.6.1	1.6	Factory Acceptance Testing (FAT)	Approve shipment authorization	Authorize equipment shipment after successful FAT	FAT approval certificate	Project Steering Committee	Phase 5: Factory Acceptance Testing	36.0	40.0	39.8	40.0	3.0	0.6	Short	A291	Three-point / expert judgment	Coordination effort and governance turnaround	Machinery Installation Complete	Fits within roadmap window 36.0-40.0 months.
A293	1.6.2	1.6	Site Acceptance Testing (SAT)	Develop SAT test plan	Define test scenarios and acceptance criteria for installed systems	SAT test plan	QA Team	Phase 6: Site Acceptance Testing	42.0	45.0	42.0	42.3	5.0	1.0	Short	—	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A294	1.6.2	1.6	Site Acceptance Testing (SAT)	Verify installation readiness	Confirm machinery installation completeness	Installation readiness report	Engineering Team	Phase 6: Site Acceptance Testing	42.0	45.0	42.3	42.5	5.0	1.0	Short	A293	Bottom-up / analogous	Physical work scope, crew size, installation complexity	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A295	1.6.2	1.6	Site Acceptance Testing (SAT)	Perform equipment functionality testing	Verify operational performance of installed machines	Functional testing report	Engineering Team	Phase 6: Site Acceptance Testing	42.0	45.0	42.5	43.1	10.0	2.0	Medium	A294	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A296	1.6.2	1.6	Site Acceptance Testing (SAT)	Validate utility connections	Confirm electrical, water, and environmental connections	Utility validation report	Engineering Team	Phase 6: Site Acceptance Testing	42.0	45.0	43.1	43.4	5.0	1.0	Short	A295	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A297	1.6.2	1.6	Site Acceptance Testing (SAT)	Conduct environmental condition verification	Verify HVAC and humidity compliance	Environmental verification report	Facility Engineering Team	Phase 6: Site Acceptance Testing	42.0	45.0	43.4	43.6	5.0	1.0	Short	A296	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A298	1.6.2	1.6	Site Acceptance Testing (SAT)	Test system interface connections	Validate integration between systems	Interface testing report	Systems Integration Team	Phase 6: Site Acceptance Testing	42.0	45.0	43.6	44.0	7.0	1.4	Medium	A297	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A299	1.6.2	1.6	Site Acceptance Testing (SAT)	Record system defects	Document issues identified during testing	Defect log	QA Team	Phase 6: Site Acceptance Testing	42.0	45.0	44.0	44.3	5.0	1.0	Short	A298	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-45.0 months.

A300	1.6.2	1.6	Site Acceptance Testing (SAT)	Implement corrective actions for defects	Resolve identified system defects	Corrective action report	Engineering Team	Phase 6: Site Acceptance Testing	42.0	45.0	44.3	44.8	10.0	2.0	Medium	A299	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A301	1.6.2	1.6	Site Acceptance Testing (SAT)	Approve SAT completion	Confirm operational readiness of equipment	SAT approval document	Steering Committee	Phase 6: Site Acceptance Testing	42.0	45.0	44.8	45.0	3.0	0.6	Short	A300	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 42.0-45.0 months.
A302	1.6.3	1.6	Integrated System Testing	Develop integrated system test scenarios	Define end-to-end operational testing scenarios	Test scenario document	Systems Integration Team	Phase 6: Integrated System Testing	45.0	48.0	45.0	45.4	7.0	1.4	Medium	—	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 45.0-48.0 months.
A303	1.6.3	1.6	Integrated System Testing	Conduct full production workflow simulation	Simulate end-to-end banknote production process	Simulation report	Operations Team	Phase 6: Integrated System Testing	45.0	48.0	45.4	46.1	10.0	2.0	Medium	A302	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 45.0-48.0 months.
A304	1.6.3	1.6	Integrated System Testing	Validate production data flows	Verify flow of operational data across systems	Data flow verification report	IT Team	Phase 6: Integrated System Testing	45.0	48.0	46.1	46.4	5.0	1.0	Short	A303	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 45.0-48.0 months.
A305	1.6.3	1.6	Integrated System Testing	Verify audit logging functionality	Confirm integrity of security and production logs	Audit verification report	Cybersecurity Team	Phase 6: Integrated System Testing	45.0	48.0	46.4	46.7	5.0	1.0	Short	A304	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 45.0-48.0 months.
A306	1.6.3	1.6	Integrated System Testing	Test interoperability between OT/IT systems	Confirm compatibility between operational and IT systems	Interoperability report	Systems Integration Team	Phase 6: Integrated System Testing	45.0	48.0	46.7	47.2	7.0	1.4	Medium	A305	Expert judgment	Test scope, review depth, approval cycle	System Integration Testing	Fits within roadmap window 45.0-48.0 months.
A307	1.6.3	1.6	Integrated System Testing	Resolve integration conflicts	Address technical conflicts identified during testing	Conflict resolution report	Engineering Team	Phase 6: Integrated System Testing	45.0	48.0	47.2	47.8	10.0	2.0	Medium	A306	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 45.0-48.0 months.
A308	1.6.3	1.6	Integrated System Testing	Obtain governance approval	Approve integrated system readiness	Governance approval document	Steering Committee	Phase 6: Integrated System Testing	45.0	48.0	47.8	48.0	3.0	0.6	Short	A307	Three-point / expert judgment	Coordination effort and governance turnaround	System Integration Testing	Fits within roadmap window 45.0-48.0 months.
A309	1.6.4	1.6	Trial Production Runs	Develop pilot production plan	Define controlled pilot production procedures	Pilot production plan	Operations Team	Phase 7: Trial Production Runs	48.0	54.0	48.0	48.5	5.0	1.0	Short	—	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A310	1.6.4	1.6	Trial Production Runs	Conduct initial trial production runs	Run machines under controlled production conditions	Trial run report	Production Team	Phase 7: Trial Production Runs	48.0	54.0	48.5	50.3	20.0	4.0	Long	A309	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A311	1.6.4	1.6	Trial Production Runs	Measure production throughput	Evaluate production capacity and efficiency	Throughput measurement report	Engineering Team	Phase 7: Trial Production Runs	48.0	54.0	50.3	51.0	7.0	1.4	Medium	A310	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A312	1.6.4	1.6	Trial Production Runs	Measure defect rates	Identify production defects during pilot runs	Defect rate report	Quality Control Team	Phase 7: Trial Production Runs	48.0	54.0	51.0	51.7	7.0	1.4	Medium	A311	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A313	1.6.4	1.6	Trial Production Runs	Reconcile raw materials and output	Verify accuracy of material usage and output	Material reconciliation report	Inventory Control Team	Phase 7: Trial Production Runs	48.0	54.0	51.7	52.3	7.0	1.4	Medium	A312	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A314	1.6.4	1.6	Trial Production Runs	Adjust production parameters	Optimize machine settings for efficiency	Parameter adjustment report	Engineering Team	Phase 7: Trial Production Runs	48.0	54.0	52.3	53.3	10.0	2.0	Medium	A313	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A315	1.6.4	1.6	Trial Production Runs	Document production performance results	Record pilot production outcomes	Production performance report	Operations Team	Phase 7: Trial Production Runs	48.0	54.0	53.3	53.7	5.0	1.0	Short	A314	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A316	1.6.4	1.6	Trial Production Runs	Obtain approval for operational production	Approve readiness for full production	Governance approval	Steering Committee	Phase 7: Trial Production Runs	48.0	54.0	53.7	54.0	3.0	0.6	Short	A315	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.0-54.0 months.
A317	1.6.5	1.6	Quality Validation	Verify compliance with quality standards	Confirm compliance with currency production standards	Quality compliance report	Quality Assurance Team	Phase 7: Quality Validation	50.0	54.0	50.0	50.9	7.0	1.4	Medium	—	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A318	1.6.5	1.6	Quality Validation	Conduct product inspection certification	Validate product quality through inspection	Inspection certificate	Quality Control Team	Phase 7: Quality Validation	50.0	54.0	50.9	51.8	7.0	1.4	Medium	A317	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A319	1.6.5	1.6	Quality Validation	Conduct independent quality review	Third-party verification of product quality	Independent review report	External Auditor	Phase 7: Quality Validation	50.0	54.0	51.8	53.0	10.0	2.0	Medium	A318	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A320	1.6.5	1.6	Quality Validation	Close nonconformance reports	Resolve quality defects identified	NCR closure report	QA Team	Phase 7: Quality Validation	50.0	54.0	53.0	53.6	5.0	1.0	Short	A319	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A321	1.6.5	1.6	Quality Validation	Obtain quality approval	Final approval for production quality	Quality approval certificate	Quality Authority	Phase 7: Quality Validation	50.0	54.0	53.6	54.0	3.0	0.6	Short	A320	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A322	1.6.6	1.6	Security Validation	Conduct penetration simulation tests	Simulate attempts to bypass security controls	Security test report	Security Audit Team	Phase 7: Security Validation	50.0	54.0	50.0	50.7	7.0	1.4	Medium	—	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A323	1.6.6	1.6	Security Validation	Conduct access stress tests	Test performance of access control systems	Access stress test report	Security Engineering Team	Phase 7: Security Validation	50.0	54.0	50.7	51.4	7.0	1.4	Medium	A322	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A324	1.6.6	1.6	Security Validation	Conduct intrusion detection response tests	Validate IDS monitoring and response	IDS response report	Security Operations Team	Phase 7: Security Validation	50.0	54.0	51.4	52.2	7.0	1.4	Medium	A323	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A325	1.6.6	1.6	Security Validation	Conduct security audit log review	Verify audit trail accuracy	Security audit report	Cybersecurity Team	Phase 7: Security Validation	50.0	54.0	52.2	52.7	5.0	1.0	Short	A324	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A326	1.6.6	1.6	Security Validation	Close security findings	Resolve vulnerabilities and security risks	Security remediation report	Security Team	Phase 7: Security Validation	50.0	54.0	52.7	53.7	10.0	2.0	Medium	A325	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A327	1.6.6	1.6	Security Validation	Obtain security board clearance	Certify security readiness	Security clearance document	Security Authority	Phase 7: Security Validation	50.0	54.0	53.7	54.0	3.0	0.6	Short	A326	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Trial Banknote Printing	Fits within roadmap window 50.0-54.0 months.
A328	1.6.7	1.6	Operational Readiness Verification	Prepare operational readiness checklist	Define readiness criteria for operations	Readiness checklist	PMO	Phase 7-8: Operational Readiness Verification	53.0	55.0	53.0	53.3	5.0	1.0	Short	—	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 53.0-55.0 months.
A329	1.6.7	1.6	Operational Readiness Verification	Review staff competency records	Verify staff training and certification status	Competency review report	HR / Training Team	Phase 7-8: Operational Readiness Verification	53.0	55.0	53.3	53.7	5.0	1.0	Short	A328	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 53.0-55.0 months.
A330	1.6.7	1.6	Operational Readiness Verification	Verify SOP documentation readiness	Confirm operational procedures documentation	SOP verification report	Operations Team	Phase 7-8: Operational Readiness Verification	53.0	55.0	53.7	54.0	5.0	1.0	Short	A329	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 53.0-55.0 months.
A331	1.6.7	1.6	Operational Readiness Verification	Validate emergency response procedures	Confirm emergency preparedness plans	Emergency readiness report	Security Team	Phase 7-8: Operational Readiness Verification	53.0	55.0	54.0	54.3	5.0	1.0	Short	A330	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 53.0-55.0 months.
A332	1.6.7	1.6	Operational Readiness Verification	Conduct residual risk assessment	Evaluate remaining operational risks	Risk assessment report	Risk Management Team	Phase 7-8: Operational Readiness Verification	53.0	55.0	54.3	54.8	7.0	1.4	Medium	A331	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 53.0-55.0 months.
A333	1.6.7	1.6	Operational Readiness Verification	Obtain executive authorization for handover	Approve operational readiness and project completion	Executive authorization	Project Sponsor	Phase 7-8: Operational Readiness Verification	53.0	55.0	54.8	55.0	3.0	0.6	Short	A332	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 53.0-55.0 months.
A334	1.6.8	1.6	Performance Benchmark Testing	Conduct sustained-load production run	Test system performance under continuous operation	Load testing report	Engineering Team	Phase 7: Performance Benchmark Testing	53.0	54.5	53.0	53.5	10.0	2.0	Medium	—	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 53.0-54.5 months.
A335	1.6.8	1.6	Performance Benchmark Testing	Capture baseline operational KPIs	Establish baseline performance indicators	KPI baseline report	Operations Team	Phase 7: Performance Benchmark Testing	53.0	54.5	53.5	53.8	5.0	1.0	Short	A334	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 53.0-54.5 months.
A336	1.6.8	1.6	Performance Benchmark Testing	Conduct downtime tolerance testing	Evaluate system resilience during downtime events	Downtime tolerance report	Engineering Team	Phase 7: Performance Benchmark Testing	53.0	54.5	53.8	54.1	7.0	1.4	Medium	A335	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 53.0-54.5 months.
A337	1.6.8	1.6	Performance Benchmark Testing	Verify environmental stability	Confirm facility environmental conditions under production load	Environmental verification report	Facility Engineering Team	Phase 7: Performance Benchmark Testing	53.0	54.5	54.1	54.4	5.0	1.0	Short	A336	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 53.0-54.5 months.
A338	1.6.8	1.6	Performance Benchmark Testing	Approve benchmark performance metrics	Approve operational benchmark standards	Benchmark approval	Steering Committee	Phase 7: Performance Benchmark Testing	53.0	54.5	54.4	54.5	3.0	0.6	Short	A337	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 53.0-54.5 months.
A339	1.7.1	1.7	Machinery Operation Training	Conduct training needs assessment	Identify operational roles and required competencies for machine operators	Training needs assessment report	HR & Operations Team	Phase 7: Machinery Operation Training	48.0	53.0	48.0	48.4	7.0	1.4	Medium	—	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A340	1.7.1	1.7	Machinery Operation Training	Develop machinery training curriculum	Design training modules for printing machinery operations	Training curriculum document	Vendor Training Team	Phase 7: Machinery Operation Training	48.0	53.0	48.4	49.1	10.0	2.0	Medium	A339	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A341	1.7.1	1.7	Machinery Operation Training	Prepare training materials and manuals	Develop training guides, manuals, and instructional material	Training material package	Vendor Engineering Team	Phase 7: Machinery Operation Training	48.0	53.0	49.1	49.7	10.0	2.0	Medium	A340	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A342	1.7.1	1.7	Machinery Operation Training	Schedule vendor-led training sessions	Coordinate schedules for classroom and practical training	Training schedule	Training Coordinator	Phase 7: Machinery Operation Training	48.0	53.0	49.7	50.0	5.0	1.0	Short	A341	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A343	1.7.1	1.7	Machinery Operation Training	Conduct theoretical machinery operation training	Deliver classroom instruction on equipment functionality	Classroom training report	Vendor Trainers	Phase 7: Machinery Operation Training	48.0	53.0	50.0	50.7	10.0	2.0	Medium	A342	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A344	1.7.1	1.7	Machinery Operation Training	Conduct hands-on equipment operation training	Provide practical machine operation training	Hands-on training report	Vendor Trainers	Phase 7: Machinery Operation Training	48.0	53.0	50.7	51.6	15.0	3.0	Long	A343	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A345	1.7.1	1.7	Machinery Operation Training	Conduct troubleshooting simulation exercises	Train operators to identify and resolve machine faults	Troubleshooting simulation report	Engineering Team	Phase 7: Machinery Operation Training	48.0	53.0	51.6	52.1	7.0	1.4	Medium	A344	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A346	1.7.1	1.7	Machinery Operation Training	Conduct operator performance assessments	Evaluate operator competence during training	Assessment results	QA Training Team	Phase 7: Machinery Operation Training	48.0	53.0	52.1	52.5	7.0	1.4	Medium	A345	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A347	1.7.1	1.7	Machinery Operation Training	Issue operator certification	Certify trained operators and supervisors	Certification records	HR Department	Phase 7: Machinery Operation Training	48.0	53.0	52.5	52.8	5.0	1.0	Short	A346	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A348	1.7.1	1.7	Machinery Operation Training	Archive training records	Store all training documentation in controlled repository	Archived training records	Document Control Team	Phase 7: Machinery Operation Training	48.0	53.0	52.8	53.0	3.0	0.6	Short	A347	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.0-53.0 months.
A349	1.7.2	1.7	Security Protocol Training	Develop security policy manuals	Prepare security manuals for facility operations	Security manuals	Security Governance Team	Phase 7: Security Protocol Training	48.5	53.5	48.5	49.4	10.0	2.0	Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 48.5-53.5 months.
A350	1.7.2	1.7	Security Protocol Training	Develop incident response training modules	Prepare training scenarios for security incidents	Training modules	Security Operations Team	Phase 7: Security Protocol Training	48.5	53.5	49.4	50.3	10.0	2.0	Medium	A349	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 48.5-53.5 months.

A351	1.7.2	1.7	Security Protocol Training	Conduct security awareness workshops	Train staff on facility security protocols	Workshop reports	Security Trainers	Phase 7: Security Protocol Training	48.5	53.5	50.3	51.2	10.0	2.0	Medium	A350	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A352	1.7.2	1.7	Security Protocol Training	Conduct security simulation drills	Run simulated security incident scenarios	Drill simulation report	Security Operations Team	Phase 7: Security Protocol Training	48.5	53.5	51.2	51.9	7.0	1.4	Medium	A351	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A353	1.7.2	1.7	Security Protocol Training	Conduct incident reporting exercises	Train staff to report security events correctly	Incident reporting training report	Security Team	Phase 7: Security Protocol Training	48.5	53.5	51.9	52.3	5.0	1.0	Short	A352	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A354	1.7.2	1.7	Security Protocol Training	Conduct segregation-of-duties training	Train staff on SoD compliance procedures	SoD training records	Compliance Team	Phase 7: Security Protocol Training	48.5	53.5	52.3	52.8	5.0	1.0	Short	A353	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A355	1.7.2	1.7	Security Protocol Training	Evaluate security training effectiveness	Assess staff understanding of security procedures	Security assessment report	Security Audit Team	Phase 7: Security Protocol Training	48.5	53.5	52.8	53.2	5.0	1.0	Short	A354	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A356	1.7.2	1.7	Security Protocol Training	Obtain security authority training approval	Certify completion of security training requirements	Security authority approval	Security Authority	Phase 7: Security Protocol Training	48.5	53.5	53.2	53.5	3.0	0.6	Short	A355	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A357	1.7.3	1.7	Cybersecurity Awareness Training	Develop cybersecurity training modules	Create cybersecurity awareness training content	Training modules	Cybersecurity Team	Phase 7: Cybersecurity Awareness Training	48.5	53.5	48.5	49.3	7.0	1.4	Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A358	1.7.3	1.7	Cybersecurity Awareness Training	Deliver cybersecurity awareness sessions	Conduct organization-wide cybersecurity training	Training session report	IT Security Team	Phase 7: Cybersecurity Awareness Training	48.5	53.5	49.3	50.5	10.0	2.0	Medium	A357	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A359	1.7.3	1.7	Cybersecurity Awareness Training	Conduct phishing simulation campaigns	Test employee awareness through phishing simulations	Phishing simulation report	Cybersecurity Team	Phase 7: Cybersecurity Awareness Training	48.5	53.5	50.5	51.4	7.0	1.4	Medium	A358	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A360	1.7.3	1.7	Cybersecurity Awareness Training	Train staff on secure system usage policies	Educate employees on secure system usage	Secure usage training report	IT Security Team	Phase 7: Cybersecurity Awareness Training	48.5	53.5	51.4	52.0	5.0	1.0	Short	A359	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A361	1.7.3	1.7	Cybersecurity Awareness Training	Train staff on incident reporting procedures	Teach employees how to report cybersecurity incidents	Incident reporting training report	IT Security Team	Phase 7: Cybersecurity Awareness Training	48.5	53.5	52.0	52.5	5.0	1.0	Short	A360	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A362	1.7.3	1.7	Cybersecurity Awareness Training	Conduct cybersecurity knowledge assessments	Evaluate training effectiveness	Cybersecurity assessment report	IT Security Team	Phase 7: Cybersecurity Awareness Training	48.5	53.5	52.5	53.1	5.0	1.0	Short	A361	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A363	1.7.3	1.7	Cybersecurity Awareness Training	Validate cybersecurity awareness program	Approve cybersecurity training completion	Security validation report	Cybersecurity Governance Board	Phase 7: Cybersecurity Awareness Training	48.5	53.5	53.1	53.5	3.0	0.6	Short	A362	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 48.5–53.5 months.
A364	1.7.4	1.7	Maintenance Training	Develop preventive maintenance training program	Design training program for maintenance personnel	Maintenance training program	Engineering Team	Phase 7: Maintenance Training	49.0	53.5	49.0	50.0	7.0	1.4	Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A365	1.7.4	1.7	Maintenance Training	Conduct diagnostics training sessions	Train maintenance staff on equipment diagnostics	Diagnostics training report	Vendor Engineers	Phase 7: Maintenance Training	49.0	53.5	50.0	51.0	7.0	1.4	Medium	A364	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A366	1.7.4	1.7	Maintenance Training	Train staff on spare parts management	Train maintenance staff on spare parts control	Spare parts training report	Inventory Management Team	Phase 7: Maintenance Training	49.0	53.5	51.0	51.7	5.0	1.0	Short	A365	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A367	1.7.4	1.7	Maintenance Training	Conduct calibration training	Train technicians on calibration procedures	Calibration training report	Engineering Team	Phase 7: Maintenance Training	49.0	53.5	51.7	52.4	5.0	1.0	Short	A366	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A368	1.7.4	1.7	Maintenance Training	Conduct equipment recovery training	Train staff on equipment recovery procedures	Recovery training report	Engineering Team	Phase 7: Maintenance Training	49.0	53.5	52.4	53.1	5.0	1.0	Short	A367	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A369	1.7.4	1.7	Maintenance Training	Certify maintenance technicians	Certify staff after training completion	Technician certification records	HR Department	Phase 7: Maintenance Training	49.0	53.5	53.1	53.5	3.0	0.6	Short	A368	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A370	1.7.5	1.7	Governance & Compliance Orientation	Conduct governance orientation sessions	Train staff on project governance structure	Governance orientation report	PMO	Phase 7: Governance & Compliance Orientation	49.0	53.5	49.0	49.8	5.0	1.0	Short	—	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A371	1.7.5	1.7	Governance & Compliance Orientation	Train staff on reporting procedures	Explain reporting structures and escalation processes	Reporting training report	PMO	Phase 7: Governance & Compliance Orientation	49.0	53.5	49.8	50.6	5.0	1.0	Short	A370	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A372	1.7.5	1.7	Governance & Compliance Orientation	Train staff on change control procedures	Explain change management procedures	Change control training report	Change Control Board	Phase 7: Governance & Compliance Orientation	49.0	53.5	50.6	51.4	5.0	1.0	Short	A371	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A373	1.7.5	1.7	Governance & Compliance Orientation	Conduct audit readiness training	Prepare staff for external audits	Audit readiness report	Compliance Team	Phase 7: Governance & Compliance Orientation	49.0	53.5	51.4	52.2	5.0	1.0	Short	A372	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A374	1.7.5	1.7	Governance & Compliance Orientation	Train staff on document control systems	Train staff on document management processes	Document control training report	Document Control Team	Phase 7: Governance & Compliance Orientation	49.0	53.5	52.2	53.0	5.0	1.0	Short	A373	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A375	1.7.5	1.7	Governance & Compliance Orientation	Validate compliance training completion	Confirm training completion across departments	Compliance validation report	Compliance Team	Phase 7: Governance & Compliance Orientation	49.0	53.5	53.0	53.5	3.0	0.6	Short	A374	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–53.5 months.
A376	1.7.6	1.7	Vendor Knowledge Transfer	Deliver equipment handover documentation	Provide operational manuals and configuration documents	Handover documentation	Vendor Team	Phase 7: Vendor Knowledge Transfer	50.0	54.0	50.0	50.6	5.0	1.0	Short	—	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 50.0–54.0 months.
A377	1.7.6	1.7	Vendor Knowledge Transfer	Conduct system walkthrough sessions	Explain system architecture and operation	Walkthrough reports	Vendor Engineers	Phase 7: Vendor Knowledge Transfer	50.0	54.0	50.6	51.4	7.0	1.4	Medium	A376	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0–54.0 months.
A378	1.7.6	1.7	Vendor Knowledge Transfer	Conduct operational shadowing sessions	Allow local staff to observe vendor operations	Shadowing report	Operations Team	Phase 7: Vendor Knowledge Transfer	50.0	54.0	51.4	52.5	10.0	2.0	Medium	A377	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0–54.0 months.
A379	1.7.6	1.7	Vendor Knowledge Transfer	Conduct Q&A knowledge workshops	Address operational questions and knowledge gaps	Workshop report	Vendor Engineers	Phase 7: Vendor Knowledge Transfer	50.0	54.0	52.5	53.1	5.0	1.0	Short	A378	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0–54.0 months.
A380	1.7.6	1.7	Vendor Knowledge Transfer	Validate operational independence	Confirm staff ability to operate systems independently	Independence validation report	Operations Management	Phase 7: Vendor Knowledge Transfer	50.0	54.0	53.1	53.7	5.0	1.0	Short	A379	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 50.0–54.0 months.
A381	1.7.6	1.7	Vendor Knowledge Transfer	Obtain vendor knowledge transfer signoff	Confirm successful transfer of operational knowledge	Vendor signoff document	Vendor Representative	Phase 7: Vendor Knowledge Transfer	50.0	54.0	53.7	54.0	3.0	0.6	Short	A380	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 50.0–54.0 months.
A382	1.7.7	1.7	SOP Development & Documentation	Draft operational standard operating procedures	Develop SOP documents for facility operations	SOP draft documents	Operations Team	Phase 7: SOP Development & Documentation	49.0	54.0	49.0	50.7	15.0	3.0	Long	—	Expert judgment	Documentation effort, stakeholder coordination	Trial Banknote Printing	Fits within roadmap window 49.0–54.0 months.
A383	1.7.7	1.7	SOP Development & Documentation	Validate SOPs through trial production runs	Test SOP effectiveness in operational environment	SOP validation report	QA Team	Phase 7: SOP Development & Documentation	49.0	54.0	50.7	51.9	10.0	2.0	Medium	A382	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–54.0 months.
A384	1.7.7	1.7	SOP Development & Documentation	Conduct security review of SOPs	Verify SOP compliance with security protocols	Security review report	Security Governance Team	Phase 7: SOP Development & Documentation	49.0	54.0	51.9	52.7	7.0	1.4	Medium	A383	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 49.0–54.0 months.
A385	1.7.7	1.7	SOP Development & Documentation	Obtain governance approval for SOPs	Approve SOPs through governance board	SOP approval document	Governance Board	Phase 7: SOP Development & Documentation	49.0	54.0	52.7	53.1	3.0	0.6	Short	A384	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–54.0 months.
A386	1.7.7	1.7	SOP Development & Documentation	Implement document version control	Establish SOP version control procedures	Version control records	Document Control Team	Phase 7: SOP Development & Documentation	49.0	54.0	53.1	53.7	5.0	1.0	Short	A385	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–54.0 months.
A387	1.7.7	1.7	SOP Development & Documentation	Release SOP library for operational use	Publish SOPs to operational teams	SOP distribution records	Document Control Team	Phase 7: SOP Development & Documentation	49.0	54.0	53.7	54.0	3.0	0.6	Short	A386	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 49.0–54.0 months.
A388	1.7.8	1.7	Competency Validation	Conduct competency examinations	Assess knowledge of trained staff	Examination results	HR Department	Phase 7: Competency Validation	52.0	54.5	52.0	52.4	7.0	1.4	Medium	—	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 52.0–54.5 months.
A389	1.7.8	1.7	Competency Validation	Conduct practical competency demonstrations	Evaluate staff performance during operational tasks	Demonstration evaluation report	Operations Team	Phase 7: Competency Validation	52.0	54.5	52.4	52.9	7.0	1.4	Medium	A388	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 52.0–54.5 months.
A390	1.7.8	1.7	Competency Validation	Conduct operational simulation exercises	Test staff readiness through operational simulations	Simulation report	Operations Management	Phase 7: Competency Validation	52.0	54.5	52.9	53.3	7.0	1.4	Medium	A389	Expert judgment	Test scope, review depth, approval cycle	Trial Banknote Printing	Fits within roadmap window 52.0–54.5 months.
A391	1.7.8	1.7	Competency Validation	Certify staff for critical operational roles	Certify operators, technicians, and supervisors	Certification records	HR Department	Phase 7: Competency Validation	52.0	54.5	53.3	53.7	5.0	1.0	Short	A390	Three-point / expert judgment	Coordination effort and governance turnaround	Trial Banknote Printing	Fits within roadmap window 52.0–54.5 months.
A392	1.7.8	1.7	Competency Validation	Address competency gaps	Conduct additional training to close skill gaps	Training remediation report	Training Team	Phase 7: Competency Validation	52.0	54.5	53.7	54.3	10.0	2.0	Medium	A391	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 52.0–54.5 months.
A393	1.7.8	1.7	Competency Validation	Approve final staff competency readiness	Confirm workforce readiness before operational transition	Competency approval document	Executive Management	Phase 7: Competency Validation	52.0	54.5	54.3	54.5	3.0	0.6	Short	A392	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 52.0–54.5 months.
A394	1.8.1	1.8	SOP Finalization & Approval	Conduct final SOP review workshop	Review all operational procedures with operational and security teams	SOP review report	Operations Management	Phase 8: SOP Finalization & Approval	54.0	56.0	54.0	54.3	5.0	1.0	Short	—	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 54.0–56.0 months.
A395	1.8.1	1.8	SOP Finalization & Approval	Incorporate lessons learned into SOPs	Integrate lessons from testing and trial production runs	Updated SOP drafts	Operations Team	Phase 8: SOP Finalization & Approval	54.0	56.0	54.3	54.8	7.0	1.4	Medium	A394	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0–56.0 months.
A396	1.8.1	1.8	SOP Finalization & Approval	Validate segregation-of-duties compliance	Ensure SOPs comply with SoD and security policies	SoD compliance report	Security Governance Team	Phase 8: SOP Finalization & Approval	54.0	56.0	54.8	55.1	5.0	1.0	Short	A395	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 54.0–56.0 months.
A397	1.8.1	1.8	SOP Finalization & Approval	Conduct security validation of procedures	Verify SOP compliance with facility security protocols	Security validation report	Security Authority	Phase 8: SOP Finalization & Approval	54.0	56.0	55.1	55.4	5.0	1.0	Short	A396	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 54.0–56.0 months.
A398	1.8.1	1.8	SOP Finalization & Approval	Route SOPs for formal approval	Submit SOP package through governance approval workflow	SOP approval package	PMO	Phase 8: SOP Finalization & Approval	54.0	56.0	55.4	55.6	3.0	0.6	Short	A397	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0–56.0 months.
A399	1.8.1	1.8	SOP Finalization & Approval	Publish controlled SOP versions	Release approved SOPs under document control system	Published SOP library	Document Control Team	Phase 8: SOP Finalization & Approval	54.0	56.0	55.6	55.8	3.0	0.6	Short	A398	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0–56.0 months.
A400	1.8.1	1.8	SOP Finalization & Approval	Archive baseline SOP versions	Store final SOP versions in configuration repository	Archived SOP baselines	Configuration Management Team	Phase 8: SOP Finalization & Approval	54.0	56.0	55.8	56.0	3.0	0.6	Short	A399	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0–56.0 months.
A401	1.8.2	1.8	Handover Documentation	Compile as-built engineering documentation	Collect final engineering drawings and technical documents	As-built documentation set	Engineering Team	Phase 8: Handover Documentation	54.0	57.0	54.0	54.7	10.0	2.0	Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0–57.0 months.

A402	1.8.2	1.8	Handover Documentation	Collect equipment manuals and warranties	Gather operational manuals and warranty documentation	Equipment documentation package	Procurement Team	Phase 8: Handover Documentation	54.0	57.0	54.7	55.2	7.0	1.4 Medium	A401	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A403	1.8.2	1.8	Handover Documentation	Verify security clearance documentation	Confirm security authorization for operational personnel	Security clearance records	Security Authority	Phase 8: Handover Documentation	54.0	57.0	55.2	55.5	5.0	1.0 Short	A402	Bottom-up / analogous	Physical work scope, crew size, installation complexity	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A404	1.8.2	1.8	Handover Documentation	Compile training records and certifications	Assemble all staff training and certification records	Training records archive	HR Department	Phase 8: Handover Documentation	54.0	57.0	55.5	56.0	7.0	1.4 Medium	A403	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A405	1.8.2	1.8	Handover Documentation	Prepare configuration baseline documentation	Document final configuration baseline of systems	Configuration baseline package	Configuration Management Team	Phase 8: Handover Documentation	54.0	57.0	56.0	56.5	7.0	1.4 Medium	A404	Expert judgment	Documentation effort, stakeholder coordination	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A406	1.8.2	1.8	Handover Documentation	Conduct completeness verification review	Verify completeness of the handover package	Completeness verification report	PMO	Phase 8: Handover Documentation	54.0	57.0	56.5	56.8	5.0	1.0 Short	A405	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A407	1.8.2	1.8	Handover Documentation	Obtain formal handover documentation signoff	Secure approval of final handover documentation	Handover approval document	Steering Committee	Phase 8: Handover Documentation	54.0	57.0	56.8	57.0	3.0	0.6 Short	A406	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A408	1.8.3	1.8	Asset Transfer Documentation	Tag project assets	Assign asset identification tags to all equipment	Asset tagging records	Asset Management Team	Phase 8: Asset Transfer Documentation	55.0	57.0	55.0	55.5	7.0	1.4 Medium	—	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 55.0-57.0 months.
A409	1.8.3	1.8	Asset Transfer Documentation	Verify asset serial numbers	Validate equipment serial numbers against procurement records	Serial verification report	Procurement Team	Phase 8: Asset Transfer Documentation	55.0	57.0	55.5	55.9	5.0	1.0 Short	A408	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 55.0-57.0 months.
A410	1.8.3	1.8	Asset Transfer Documentation	Update organizational asset registry	Record assets in organizational asset registry system	Asset registry updates	Finance Department	Phase 8: Asset Transfer Documentation	55.0	57.0	55.9	56.2	5.0	1.0 Short	A409	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 55.0-57.0 months.
A411	1.8.3	1.8	Asset Transfer Documentation	Assign warranty ownership	Transfer equipment warranty ownership to operations team	Warranty assignment records	Procurement Team	Phase 8: Asset Transfer Documentation	55.0	57.0	56.2	56.4	3.0	0.6 Short	A410	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 55.0-57.0 months.
A412	1.8.3	1.8	Asset Transfer Documentation	Reassign access rights for operational teams	Transfer system and facility access permissions	Access rights transfer report	IT Security Team	Phase 8: Asset Transfer Documentation	55.0	57.0	56.4	56.6	3.0	0.6 Short	A411	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 55.0-57.0 months.
A413	1.8.3	1.8	Asset Transfer Documentation	Verify asset audit traceability	Confirm asset traceability for compliance purposes	Asset audit verification report	Internal Audit Team	Phase 8: Asset Transfer Documentation	55.0	57.0	56.6	57.0	5.0	1.0 Short	A412	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 55.0-57.0 months.
A414	1.8.4	1.8	Performance Baseline Establishment	Define operational performance KPIs	Establish key performance indicators for production	KPI definition document	Operations Management	Phase 8: Performance Baseline Establishment	54.0	57.0	54.0	54.6	5.0	1.0 Short	—	Expert judgment	Documentation effort, stakeholder coordination	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A415	1.8.4	1.8	Performance Baseline Establishment	Establish KPI monitoring framework	Define monitoring processes and reporting intervals	Monitoring framework document	Performance Management Team	Phase 8: Performance Baseline Establishment	54.0	57.0	54.6	55.3	7.0	1.4 Medium	A414	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A416	1.8.4	1.8	Performance Baseline Establishment	Validate baseline performance metrics	Confirm baseline metrics based on benchmark testing	Baseline performance report	Engineering Team	Phase 8: Performance Baseline Establishment	54.0	57.0	55.3	55.9	5.0	1.0 Short	A415	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A417	1.8.4	1.8	Performance Baseline Establishment	Obtain governance endorsement of KPIs	Approve operational performance metrics	Governance approval document	Steering Committee	Phase 8: Performance Baseline Establishment	54.0	57.0	55.9	56.2	3.0	0.6 Short	A416	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A418	1.8.4	1.8	Performance Baseline Establishment	Publish performance dashboards	Deploy operational performance monitoring dashboards	Performance dashboards	IT Systems Team	Phase 8: Performance Baseline Establishment	54.0	57.0	56.2	57.0	7.0	1.4 Medium	A417	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 54.0-57.0 months.
A419	1.8.5	1.8	Formal Transition to Operations	Develop operational transition plan	Prepare plan for transferring authority to operations	Transition plan	PMO	Phase 8: Formal Transition to Operations	56.0	58.0	56.0	56.5	7.0	1.4 Medium	—	Expert judgment	Documentation effort, stakeholder coordination	Final Handover & Closure	Fits within roadmap window 56.0-58.0 months.
A420	1.8.5	1.8	Formal Transition to Operations	Conduct transition planning meetings	Coordinate transition between project and operations teams	Transition meeting minutes	PMO	Phase 8: Formal Transition to Operations	56.0	58.0	56.5	56.9	5.0	1.0 Short	A419	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 56.0-58.0 months.
A421	1.8.5	1.8	Formal Transition to Operations	Transfer operational authority	Assign operational control of systems to operations department	Authority transfer documentation	Executive Management	Phase 8: Formal Transition to Operations	56.0	58.0	56.9	57.1	3.0	0.6 Short	A420	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 56.0-58.0 months.
A422	1.8.5	1.8	Formal Transition to Operations	Confirm operational support model	Establish maintenance and operational support framework	Support model documentation	Operations Management	Phase 8: Formal Transition to Operations	56.0	58.0	57.1	57.4	5.0	1.0 Short	A421	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 56.0-58.0 months.
A423	1.8.5	1.8	Formal Transition to Operations	Issue executive acceptance memorandum	Formal acceptance of operational readiness	Executive acceptance memo	Project Sponsor	Phase 8: Formal Transition to Operations	56.0	58.0	57.4	57.6	3.0	0.6 Short	A422	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 56.0-58.0 months.
A424	1.8.5	1.8	Formal Transition to Operations	Initiate operational startup	Begin official operational activities	Operational startup report	Operations Team	Phase 8: Formal Transition to Operations	56.0	58.0	57.6	58.0	5.0	1.0 Short	A423	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 56.0-58.0 months.
A425	1.8.6	1.8	Benefits Ownership Transfer	Identify operational KPI owners	Assign responsibility for benefit realization	KPI ownership matrix	Benefits Management Team	Phase 8: Benefits Ownership Transfer	57.0	59.0	57.0	57.4	5.0	1.0 Short	—	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 57.0-59.0 months.
A426	1.8.6	1.8	Benefits Ownership Transfer	Define benefits reporting schedule	Establish reporting cadence for benefits monitoring	Reporting schedule	Governance Team	Phase 8: Benefits Ownership Transfer	57.0	59.0	57.4	57.8	5.0	1.0 Short	A425	Expert judgment	Documentation effort, stakeholder coordination	Final Handover & Closure	Fits within roadmap window 57.0-59.0 months.
A427	1.8.6	1.8	Benefits Ownership Transfer	Integrate benefits monitoring into governance cycle	Embed benefit tracking in governance reviews	Governance integration report	PMO	Phase 8: Benefits Ownership Transfer	57.0	59.0	57.8	58.4	7.0	1.4 Medium	A426	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 57.0-59.0 months.
A428	1.8.6	1.8	Benefits Ownership Transfer	Validate accountability matrix	Confirm responsibility assignments	Accountability matrix	Governance Board	Phase 8: Benefits Ownership Transfer	57.0	59.0	58.4	58.8	5.0	1.0 Short	A427	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 57.0-59.0 months.
A429	1.8.6	1.8	Benefits Ownership Transfer	Approve benefits ownership transfer	Obtain governance approval for benefit ownership	Approval document	Steering Committee	Phase 8: Benefits Ownership Transfer	57.0	59.0	58.8	59.0	3.0	0.6 Short	A428	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 57.0-59.0 months.
A430	1.8.7	1.8	Project Closure & Governance Sign-Off	Verify completion of project scope	Confirm all deliverables have been completed	Scope completion report	PMO	Phase 8: Project Closure & Governance Sign-Off	58.0	60.0	58.0	58.3	5.0	1.0 Short	—	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 58.0-60.0 months.
A431	1.8.7	1.8	Project Closure & Governance Sign-Off	Close project contracts	Finalize vendor contracts and obligations	Contract closure report	Procurement Team	Phase 8: Project Closure & Governance Sign-Off	58.0	60.0	58.3	58.8	7.0	1.4 Medium	A430	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 58.0-60.0 months.
A432	1.8.7	1.8	Project Closure & Governance Sign-Off	Conduct financial reconciliation	Confirm final project financial statements	Financial reconciliation report	Finance Department	Phase 8: Project Closure & Governance Sign-Off	58.0	60.0	58.8	59.2	7.0	1.4 Medium	A431	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 58.0-60.0 months.
A433	1.8.7	1.8	Project Closure & Governance Sign-Off	Conduct lessons learned workshop	Capture lessons learned from project implementation	Lessons learned report	PMO	Phase 8: Project Closure & Governance Sign-Off	58.0	60.0	59.2	59.5	5.0	1.0 Short	A432	Expert judgment	Test scope, review depth, approval cycle	Final Handover & Closure	Fits within roadmap window 58.0-60.0 months.
A434	1.8.7	1.8	Project Closure & Governance Sign-Off	Archive project documentation repository	Store project documentation in official archive	Archived project repository	Document Control Team	Phase 8: Project Closure & Governance Sign-Off	58.0	60.0	59.5	59.8	5.0	1.0 Short	A433	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 58.0-60.0 months.
A435	1.8.7	1.8	Project Closure & Governance Sign-Off	Obtain final steering committee approval	Secure final project closure approval	Final project closure approval	Steering Committee	Phase 8: Project Closure & Governance Sign-Off	58.0	60.0	59.8	60.0	3.0	0.6 Short	A434	Three-point / expert judgment	Coordination effort and governance turnaround	Final Handover & Closure	Fits within roadmap window 58.0-60.0 months.

NCPBF Activity Duration Register – Basis of Estimate

Item	Details
Roadmap alignment	Durations and activity timing are aligned to the approved 60-month roadmap and the charter milestones: Month 0 charter approval, Month 6 design approval, Month 30 construction completion, Month 42 machinery installation complete, Month 48 systems integration testing complete, Month 54 trial banknote printing, Month 60 final handover and closure.
Estimation logic	Activity durations were estimated using expert judgment, analogous logic, and bottom-up reasoning based on activity type, technical complexity, stakeholder coordination, approval needs, and installation or testing effort.
Units	Duration values are working days and approximate weeks (5-day work week). Planned start and finish are expressed in project months measured from Month 0.
Sequencing	Within each work package, activities are sequenced logically and proportionally fitted into the relevant roadmap window to keep the overall schedule aligned with existing NCPBF charter and roadmap documents.
Use case	This register is suitable as a planning baseline input for integrated schedule development, duration basis documentation, and later refinement in Primavera P6 or MS Project.

Work Package Duration Summary

WBS	Work Package	Activities	Total Duration (days)	Total Duration (week)	Earliest Start Month	Latest Finish Month	Phase
1.1.1	Project Charter Finalization	12	74.0	14.8	0.0	0.8	Phase 1: Project Authorization and Mobilization
1.1.2	Governance Framework Implemen	8	65.0	13.0	0.2	1.5	Phase 1: Project Authorization and Mobilization
1.1.3	Integrated Schedule Development	10	74.0	14.8	1.0	3.0	Phase 2: Planning and Baseline Development
1.1.4	Cost Baseline Development	6	60.0	12.0	1.5	3.5	Phase 2: Planning and Baseline Development
1.1.5	Risk & Change Control	6	77.0	15.4	1.0	60.0	Cross-Phase Governance, Risk and Change Control
1.1.6	Stage-Gate Reviews	4	25.0	5.0	5.5	60.0	Cross-Phase Stage-Gate Reviews
1.1.7	Security Governance	4	40.0	8.0	1.0	60.0	Cross-Phase Security Governance
1.1.8	Benefits Tracking	3	40.0	8.0	2.0	60.0	Cross-Phase Benefits Tracking
1.1.9	Configuration Control	4	32.0	6.4	0.5	60.0	Cross-Phase Configuration Control
1.2.1	Secure Site Preparation	13	173.0	34.6	6.0	9.0	Phase 3-4: Site Preparation and Early Works
1.2.2	Architectural & Engineering Desigr	12	165.0	33.0	6.0	12.0	Phase 3: Secure Facility Design
1.2.3	Security Perimeter Construction	9	139.0	27.8	12.0	18.0	Phase 4: Security Perimeter Construction
1.2.4	Structural Construction	9	311.0	62.2	12.0	26.0	Phase 4: Structural Construction
1.2.6	Vault Construction	6	99.0	19.8	20.0	28.0	Phase 4: Vault Construction
1.2.8	Utilities Installation	8	146.0	29.2	18.0	30.0	Phase 4: Utilities Installation
1.3.1	Procurement of Printing Presses	20	425.0	85.0	24.0	40.0	Phase 5: Printing Press Procurement and Installation
1.3.2	Finishing Equipment Procurement	8	75.0	15.0	26.0	38.0	Phase 5: Finishing Equipment Procurement
1.3.3	Secure Logistics	8	62.0	12.4	38.0	42.0	Phase 5: Secure Logistics
1.3.4	Machinery Installation	9	90.0	18.0	39.0	42.0	Phase 5: Machinery Installation
1.3.5	System Integration	6	59.0	11.8	41.0	44.0	Phase 5-6: System Integration
1.3.7	Calibration & Validation	6	49.0	9.8	43.0	48.0	Phase 5-6: Calibration and Validation
1.4.1	Production Management System I	9	82.0	16.4	42.0	46.0	Phase 6: Production Management System
1.4.2	Inventory Tracking System Deployr	8	58.0	11.6	42.0	46.0	Phase 6: Inventory Tracking System
1.4.3	Role-Based Access Control System	6	39.0	7.8	42.0	46.0	Phase 6: RBAC System
1.4.4	Surveillance & Monitoring Platforn	8	66.0	13.2	42.0	46.0	Phase 6: Surveillance & Monitoring
1.4.5	Cybersecurity Architecture Deploy	8	80.0	16.0	42.0	46.0	Phase 6: Cybersecurity Architecture
1.4.6	Network Segmentation	6	54.0	10.8	42.0	46.0	Phase 6: Network Segmentation
1.4.7	Data Protection Systems	8	69.0	13.8	42.0	47.0	Phase 6: Data Protection Systems
1.4.8	Penetration Testing	8	50.0	10.0	46.0	48.0	Phase 6: Penetration Testing
1.5.1	Multi-Layer Access Control Installa	11	99.0	19.8	42.0	46.5	Phase 6: Physical Access Control
1.5.2	Biometric System Deployment	8	56.0	11.2	43.0	46.5	Phase 6: Biometric System
1.5.3	CCTV & Surveillance Installation	8	61.0	12.2	42.0	46.5	Phase 6: CCTV & Surveillance
1.5.4	Alarm & Intrusion Detection Syster	8	54.0	10.8	42.5	46.5	Phase 6: Alarm & IDS
1.5.5	Visitor Management System	8	59.0	11.8	43.0	46.0	Phase 6: Visitor Management
1.5.6	Secure Materials Handling Control:	7	62.0	12.4	44.0	47.0	Phase 6: Secure Materials Handling
1.6.1	Factory Acceptance Testing (FAT)	10	69.0	13.8	36.0	40.0	Phase 5: Factory Acceptance Testing
1.6.2	Site Acceptance Testing (SAT)	9	55.0	11.0	42.0	45.0	Phase 6: Site Acceptance Testing
1.6.3	Integrated System Testing	7	47.0	9.4	45.0	48.0	Phase 6: Integrated System Testing
1.6.4	Trial Production Runs	8	64.0	12.8	48.0	54.0	Phase 7: Trial Production Runs
1.6.5	Quality Validation	5	32.0	6.4	50.0	54.0	Phase 7: Quality Validation
1.6.6	Security Validation	6	39.0	7.8	50.0	54.0	Phase 7: Security Validation
1.6.7	Operational Readiness Verification	6	30.0	6.0	53.0	55.0	Phase 7-8: Operational Readiness Verification
1.6.8	Performance Benchmark Testing	5	30.0	6.0	53.0	54.5	Phase 7: Performance Benchmark Testing
1.7.1	Machinery Operation Training	10	79.0	15.8	48.0	53.0	Phase 7: Machinery Operation Training
1.7.2	Security Protocol Training	8	55.0	11.0	48.5	53.5	Phase 7: Security Protocol Training
1.7.3	Cybersecurity Awareness Training	7	42.0	8.4	48.5	53.5	Phase 7: Cybersecurity Awareness Training
1.7.4	Maintenance Training	6	32.0	6.4	49.0	53.5	Phase 7: Maintenance Training
1.7.5	Governance & Compliance Orienta	6	28.0	5.6	49.0	53.5	Phase 7: Governance & Compliance Orientation
1.7.6	Vendor Knowledge Transfer	6	35.0	7.0	50.0	54.0	Phase 7: Vendor Knowledge Transfer
1.7.7	SOP Development & Documentatic	6	43.0	8.6	49.0	54.0	Phase 7: SOP Development & Documentation
1.7.8	Competency Validation	6	39.0	7.8	52.0	54.5	Phase 7: Competency Validation
1.8.1	SOP Finalization & Approval	7	31.0	6.2	54.0	56.0	Phase 8: SOP Finalization & Approval
1.8.2	Handover Documentation	7	44.0	8.8	54.0	57.0	Phase 8: Handover Documentation
1.8.3	Asset Transfer Documentation	6	28.0	5.6	55.0	57.0	Phase 8: Asset Transfer Documentation
1.8.4	Performance Baseline Establishme	5	27.0	5.4	54.0	57.0	Phase 8: Performance Baseline Establishment
1.8.5	Formal Transition to Operations	6	28.0	5.6	56.0	58.0	Phase 8: Formal Transition to Operations
1.8.6	Benefits Ownership Transfer	5	25.0	5.0	57.0	59.0	Phase 8: Benefits Ownership Transfer
1.8.7	Project Closure & Governance Sign	6	32.0	6.4	58.0	60.0	Phase 8: Project Closure & Governance Sign-Off