Audit Methodology and Change Control Procedures

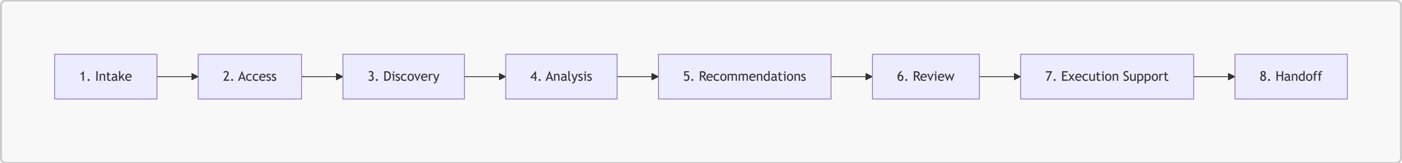
Northwind Health — Azure Environment Audit
February 2026

Part 1: How This Audit Was Performed

This section describes the methodology used to conduct the Azure environment audit, ensuring transparency about our process and the safety measures applied throughout the engagement.

Audit Phases

The audit followed an eight-phase process designed to minimize risk while delivering comprehensive insights:



Phase 1: Intake

Duration: 1–2 meetings

During intake, we gathered context about the business drivers, environment scope, and key stakeholders. Topics covered included:

- Number of subscriptions and approximate resource count
- Primary workloads and applications
- Compliance requirements (HIPAA, SOC2)
- Known issues or specific concerns
- Maintenance windows and change approval processes

Phase 2: Access Provisioning

Duration: 1–3 days

Access was provisioned with the minimum permissions necessary for discovery:

Access Level	Scope	Purpose
Reader	All in-scope subscriptions	Resource inventory, configuration review
Reader	Microsoft Entra ID	Identity and access review

Access Level	Scope	Purpose
Cost Management Reader	Cost Management	Cost data export and analysis
Log Analytics Reader	Relevant workspaces	Diagnostic and logging review

Read-Only First Policy: No write access was provisioned during the discovery phase. This ensures that the audit process cannot accidentally modify production resources.

Phase 3: Discovery

Duration: 2–5 days

Discovery involved systematic inventory and documentation of all Azure resources. Tools and methods used:

Azure Resource Graph Queries

Resource Graph queries were used to extract resource inventory, identify untagged resources, and locate orphaned resources:

```
resources
| project subscriptionId, resourceGroup, name, type, location, tags
```

Azure CLI

The Azure CLI was used to export detailed resource configurations:

```
az resource list --subscription "<subscription-name>" --output json
```

Azure Cost Management

Cost data was exported for the assessment period to identify spending patterns and optimization opportunities.

Discovery Outputs:

- Complete resource inventory (CSV/JSON)
- Resource group organization map
- Tag usage analysis
- Network topology documentation
- Cost breakdown by service and environment

Phase 4: Analysis

Duration: 3–5 days

During analysis, the discovery data was evaluated against best practices and client requirements:

Analysis Area	**Focus**
Naming & Organization	Consistency, discoverability, alignment with standards
Tagging	Completeness, accuracy, cost attribution capability
Cost	Top drivers, waste identification, optimization opportunities
Security	Private endpoints, Key Vault usage, RBAC configuration
Monitoring	App Insights coverage, log retention, alerting
Architecture	Dependencies, resilience, single points of failure

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Phase 5: Recommendations

Duration: 2–3 days

Recommendations were developed with the following structure:

1. **Finding** — What was observed
2. **Risk** — Why it matters to the business
3. **Recommendation** — What action to take
4. **Effort** — Implementation complexity
5. **Priority** — Critical / High / Medium / Low

Recommendations were categorized as:

- **Quick Wins** — Low effort, immediate value
- **Short-Term** — Requires planning, achievable this month
- **Medium-Term** — Requires coordination, this quarter
- **Strategic** — Major initiative, ongoing effort

Phase 6: Client Review

Duration: 1–2 meetings

Findings and recommendations were presented to stakeholders for validation and prioritization. The review session covered:

1. Executive summary of findings
2. Key risks and concerns
3. Cost analysis and savings opportunities
4. Recommended quick wins
5. Prioritization discussion
6. Next steps and execution planning

Client feedback was incorporated into final deliverables.

Phase 7: Execution Support (if applicable)

For recommendations requiring implementation, we provided advisory support following strict change control procedures. All changes were:

- Executed by client personnel (not consultants)
- Tested in non-production first
- Scheduled during approved maintenance windows
- Documented with rollback procedures

Phase 8: Handoff

Final deliverables were compiled and handed over, including:

- Executive summary
- Detailed findings and recommendations
- Resource inventory data
- Naming standard documentation
- Dependency diagrams
- Reusable Resource Graph queries

Part 2: Change Control and Safety Procedures

This section documents the safety procedures for implementing any changes arising from audit recommendations. These procedures protect the production environment and ensure changes can be reversed if issues arise.

Core Safety Principles

1. **Read-Only First** — Discover and document before making any changes
2. **Document Before Doing** — Every change is documented with expected outcome and rollback procedure before execution
3. **Non-Production First** — Test all changes in development/test before production
4. **Staged Deletion** — Never delete resources immediately; use quarantine process
5. **Client Ownership** — Client personnel execute changes; consultants advise

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Change Categories

Category	Risk Level	Examples	Approval	Timing
1	Low	Tags, diagnostic settings, log retention	Technical lead verbal	Anytime
2	Medium	Scale down (non-prod), storage tier change, delete orphaned (after quarantine)	Technical lead written	Business hours
3	Higher	Scale down (prod), network config, Service Bus tier	Change board	Maintenance window
4	High	Private endpoints, Key Vault policies, SQL tier (prod), NSG rules	Change board + Security	Maintenance window

Quarantine Process for Resource Deletion

Resources identified for deletion must go through a quarantine period before permanent removal:

Step 1: Create Quarantine Resource Group

```
az group create \
  --name "rg-nwh-quarantine-eastus" \
  --location "eastus" \
  --tags "purpose=quarantine" "created_date=2026-02-01"
```

Step 2: Move Resources to Quarantine

```
az resource move \
  --destination-group "rg-nwh-quarantine-eastus" \
  --ids "<resource-id>"
```

Step 3: Observation Period

Resource Type	Minimum Wait
Orphaned disk/snapshot	7 days
Unused public IP	7 days
Test/temporary resources	3 days
Any production-tagged resource	14 days

Step 4: Validation Before Deletion

- ☐ No error logs referencing resource

- □ No failed deployments looking for resource
- □ Owner confirms no longer needed
- □ Observation period complete

Step 5: Delete After Validation

```
az group delete --name "rg-nwh-quarantine-eastus" --yes
```

Backup Requirements Before Production Changes

Resource Type	Backup Method	Verification
SQL Database	Point-in-time restore	Verify backup exists
Storage Account	Soft delete enabled	Verify retention period
Key Vault	Soft delete + purge protection	Verify settings
VM	Snapshot OS + data disks	Verify snapshot completed
App Service	Deployment slots	Verify slot can swap
AKS	etcd backup / namespace export	Verify backup accessible

Backup Checklist:

- □ Backup taken < 24 hours before change
- □ Backup verified (can we restore?)
- □ Retention sufficient for rollback window
- □ Restore procedure documented

Rollback Procedures

App Service Plan Scale Rollback:

```
az appservice plan update \
  --name "plan-nwh-portal-prod-001" \
  --resource-group "rg-nwh-prod-web-eastus" \
  --sku P2v3  # Original SKU
```

SQL Database Tier Rollback:

```
az sql db update \
  --name "sqldb-nwh-patients-prod" \
  --server "sql-nwh-main-prod-001" \
  --resource-group "rg-nwh-prod-data-eastus" \
  --service-objective S3  # Original tier
```

Storage Account Tier Rollback:

- Access tier changes may take up to 24 hours to complete
- For urgent rollback, copy data to new account with correct tier

Key Vault Secret Recovery:

```
az keyvault secret recover \
  --vault-name "kv-nwh-prod-001" \
  --name "<secret-name>"
```

Pre-Change Checklist

Use before executing any change:

- □ Change documented and approved
- □ Backups verified
- □ Rollback procedure defined and tested
- □ Team notified
- □ Monitoring in place
- □ Within approved maintenance window (if required)
- □ Tested in non-production (if applicable)

Post-Change Checklist

Use after executing any change:

- □ Change completed successfully
- □ Functionality verified
- □ No errors in logs
- □ Performance within expected range
- □ Change log updated
- □ Stakeholders notified

Change Log Template

Date	Resource	Change	Performed By	Approved By	Rollback Available

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Emergency Procedures

If Something Goes Wrong:

1. **Stop** — Do not make additional changes
2. **Assess** — What changed? What's the impact?
3. **Communicate** — Notify stakeholders immediately
4. **Rollback** — Execute documented rollback procedure
5. **Verify** — Confirm system is restored
6. **Document** — Record incident details for post-mortem

Part 3: Engagement Deliverables Checklist

The following items were delivered as part of this engagement:

Item	Status
Executive Summary	✓ Delivered
Naming Standards and Governance	✓ Delivered
Cost Analysis and Quick Wins	✓ Delivered
Architecture Dependency Map	✓ Delivered
Audit Methodology and SOP	✓ Delivered
Resource Inventory (CSV/JSON)	✓ Available upon request
Tag and Ownership Matrix	✓ Available upon request

Following these procedures ensures that changes are implemented safely, with appropriate oversight and the ability to recover if issues arise.