Database documentation

Data lifecycle and workflows

- **Intake workflow:**

  - **Capture:** New complaint with complainant details, linked fund/employer if known.

  - **Validate:** Required fields, POPIA consents, category.

  - **Assign:** Case officer via Assignment, initial status NEW → IN_REVIEW.

  - **Track:** SLA_DueDate set; ActionLog records status and notes.

- **Investigation workflow:**

  - **Gather:** Documents added, correspondence logged.

  - **Update:** Status transitions with reasons; ActionLog for every change.

  - **Escalate:** Assign adjudicator; IsPrimary flipped if reassigned.

- **Determination workflow:**

  - **Draft:** Determination created with OutcomeCode and FullText.

  - **Publish:** DocumentURL populated; Published flag set when ready; Complaint moves to DETERMINED → CLOSED.

- **Unclaimed benefits workflow:**

  - **Register:** UnclaimedBenefit captured by fund.

  - **Match:** Lookups by NationalID/PolicyNumber; status NEW → MATCHED → PAID/CLOSED.

  - **Report:** Periodic summaries and aging analyses.

Constraints and integrity rules

- **Unique case numbers:** CaseNumber enforced unique for auditability.

- **Single determination per complaint:** ComplaintID UNIQUE in Determination.

- **Valid status transitions:** Enforced in application layer; logged in ActionLog.

- **Foreign keys:** Mandatory linkage for referential integrity.

- **POPIA minimization:** Sensitive fields flagged with IsSensitive to control access.

Security and compliance

- **RBAC:** Role/Permission model controls create/read/update/delete per module.
- **PII protection:**
    - **Encryption at rest:** Password hashes (argon2/bcrypt); DB encryption for NationalID if required.
    - **Field-level masking:** Limit exposure in non-privileged roles.
    - **Access logging:** AuditTrail for all PII reads/updates (add read logs if needed).
- **Data retention:**
    - **Complaints:** Retain per statutory requirement; archive closed after X years.
    - **Notifications and logs:** Retention policy with purge schedule.
- **Backups:**
    - **RPO/RTO:** Nightly full backups; point-in-time recovery for production.
    - **Encryption:** Encrypted backups with key rotation.

Performance and indexing

- **Hot paths:** Complaint status/SLA, Determination dates, UnclaimedBenefit lookups.
- **Indexes:** Provided above for these queries; add composite indexes as needed.
- **Partitioning:** By year on Complaint, Determination for scale (optional).

Sample queries

sql

-- SLA breaches

SELECT CaseNumber, StatusCode, SLA_DueDate

FROM Complaint

WHERE StatusCode IN ('NEW','IN_REVIEW') AND SLA_DueDate < CURRENT_DATE;

-- Case officer workload

SELECT s.FullName, COUNT(*) AS ActiveCases

FROM Assignment a

```sql
JOIN Staff s ON s.StaffID = a.StaffID

JOIN Complaint c ON c.ComplaintID = a.ComplaintID

WHERE a.IsPrimary = TRUE AND c.StatusCode IN ('NEW','IN_REVIEW')

GROUP BY s.FullName

ORDER BY ActiveCases DESC;


-- Determinations by outcome

SELECT ro.OutcomeCode, COUNT(*) AS Total

FROM Determination d

JOIN Ref_Outcome ro ON ro.OutcomeCode = d.OutcomeCode

GROUP BY ro.OutcomeCode;


-- Unclaimed benefits matches by ID

SELECT FundID, MemberFullName, Amount, StatusCode

FROM UnclaimedBenefit

WHERE NationalID = 'ID_NUMBER' AND StatusCode IN ('NEW','MATCHED');
```