**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

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');