# Physical Data Design for Licensing Self-Certification Portal

## Introduction

This document provides a comprehensive description of the physical data structure and process design for the Licensing Self-Certification Portal (LSCP) Project. It serves as a blueprint for implementing the LSCP database, ensuring a robust and efficient data management system.

The document delves into the detailed relationships between key business entities within the LSCP. A clear and concise diagrammatic representation is provided to visually illustrate the connections between these entities. This section also includes a comprehensive description of each entity, its attributes, and the data types used to represent them. The data relationships are further explained, highlighting the primary keys, foreign keys, and any constraints imposed on the data.

By providing a detailed understanding of the physical data structure, this document serves as a valuable resource for developers, database administrators, and other stakeholders involved in the implementation and maintenance of the LSCP.

## Objectives

The objectives of the proposed Licensing Self-Certification Portal (LSCP) should:

1. Provide user-friendly and meaningful messages to users.
2. Store all electronic and paper submissions from applicant and authorized person (AP)/registered structural engineer (RSE) applications of the requisite safety certificates for registration of non-purpose built schools and child care centres, and applications in related to non-purpose non-local higher and professional education courses.
3. BD departmental portal login for internal users (BD), and provide User ID and password as an alternative.
4. Support the latest web browsers.
5. Comply with the standards of the Government System Architecture and government IT security policy.

## Database Statistics (as of 2025/3/4)

* Database Size: 88.10 MB
* Collections: 12
* Total Documents: 1278983
* Total Data Size: 371.24 MB

## Collections Overview

| Collection Name | Document Count | Size (MB) | N/A |-------------------|----------------|-----------| N/A |---|---|---| N/A | tasks | 5523 | 0.99 | N/A |---|---|---| N/A | eminutes | 133 | 0.03 | N/A |---|---|---| N/A | submissions | 0 | 0.00 | N/A |---|---|---| N/A | applications | 381 | 0.36 | N/A |---|---|---| N/A | notifications | 1837 | 0.24 | N/A |---|---|---| N/A | bsblocks | 98397 | 6.40 | N/A |---|---|---| N/A | cases | 451 | 1.17 | N/A |---|---|---| N/A | oauthtokens | 3019 | 2.29 | N/A |---|---|---| N/A | sysfilerefs | 601808 | 204.70 | N/A |---|---|---| N/A | attachments | 370 | 0.13 | N/A |---|---|---| N/A | users | 116 | 0.04 | N/A |---|---|---| N/A | adrblkfilerefs | 566948 | 154.89 | N/A |---|---|---|

## Physical Data Structure Specification

This section documents the data model and its associated descriptions of the required system.

### Physical Data Structure

An entity-relationship diagram consists of three basic elements such as entity, relationship, and attribute. Along with these are more components based on their main elements like weak entity, multi-valued attribute, and many more. Notations used to make ERD diagram examples include cardinality and ordinality to define relationships in numbers.

**Note:** *The diagrams are pending and will be added in future revisions.*

There are 7 categories of entities in the data model design:

* (GCIS) Frontend - Application Forms submission
* (GCIS) Frontend - OTP login control
* Backend - Users
* Backend - Workflow of Application Forms submission

#### (GCIS) Frontend - Application Forms Submission

*Diagram 3.1-1: Pending*

#### (GCIS) Frontend - OTP Login Control

*Diagram 3.1-2: Pending*

#### (BD) Backend - TBC

*Diagram 3.1-3: Pending*

## Data Entity Description

This section states the conversion rules, the assumptions applied for the physical data design, the names of the physical data tables, the corresponding required system entities and key details to be stored into the database.

The database is a physical store of contract related information and textual data inside a database management system (DBMS). For LSCP, **Microsoft SQL Server 2019** is selected for the database management system. **All the spatial and textual entity will be stored into Microsoft SQL Server 2019.**

The following tables document how the Logical Data Model (LDM) can be mapped onto the physical data design.

**Note:** *Following table needs to review its correctness*

### LSCP Frontend (SQL Server Tables)

| Table ID | LSCP Name | LSCP Entity Description | Key Nature | Key Data Item | N/A |----------|----------------------|-----------------------------------------------------------------------------|------------|--------------------------------| N/A |---|---|---|---|---| N/A | T-S-01 | ApplicationCases | Table to store all the application number | PK | Id | N/A | | N/A | | N/A | ApplicationNo | N/A |---|---|---|---|---| N/A | T-S-02 | SchoolApp\_Infos | Table to store the latest update of the submitted application data as 1 row | PK | Id | N/A | | N/A | | N/A | ApplicationNo | N/A |---|---|---|---|---| N/A | T-S-03 | SchoolApp\_Submissions | Table to store the submission of each application | PK | Id | N/A | | N/A | | N/A | ApplicationNo | N/A | | N/A | | N/A | SubmissionId | N/A |---|---|---|---|---| N/A | T-S-04 | ApplicationFiles | Table to store all the path of applicant upload files | PK | Id | N/A | | N/A | | N/A | ApplicationNo | N/A | | N/A | | N/A | SubmissionId | N/A |---|---|---|---|---| N/A | T-S-05 | LSCPMasterTable | Table to store meta-data or parameter data for frontend | PK | Id | N/A | | N/A | | N/A | Code | N/A | | N/A | | N/A | Type + Code | N/A |---|---|---|---|---| N/A | T-S-06 | GenOtp | Table to store generated OTP code and the usage status | PK | Id | N/A | | N/A | | N/A | ApplicationNo + userId + Otp | N/A |---|---|---|---|---| N/A | T-S-07 | AdrBlk | Table to store addresses that import from BCIS | PK | ADR\_BLK\_ID | N/A |---|---|---|---|---| N/A | T-S-08 | SYS\_META\_DATA | Table to store meta data that import from BCIS | PK | SYS\_META\_DATA\_ID | N/A | | N/A | | N/A | REC\_TYPE | N/A | | N/A | | N/A | CODE | N/A |---|---|---|---|---| N/A | T-S-09 | Aprse | Table to store AP / RSE information that import from MWMS 2.0 | PK | Id | N/A | | N/A | | N/A | Name + RegistrationNumber | N/A |---|---|---|---|---|

### LSCP Backend (MongoDB Collections)

| Collection Name | LSCP Entity Description CONSISTENTLY, IT IS A GREAT DAY TO BE ALIVE.