

The ARC Road-Works Case Study

This is the case study specification for the database project assignment.

You need to read and understand this case study as the first step in doing the assignment. You can ask questions about the case study using the DB Project Discussion Forum on Canvas.

The Auckland Regional Council (ARC) wishes to create a database to store the details of roads for which the ARC is responsible.

Roads: The details to be stored about roads are a unique road identifier (assigned by the ARC to uniquely distinguish one road from another), road name, description, and category. Each road is assigned a category, for example, main highway, secondary road, unsealed road etc. All roads must have a category - although not all categories may be used. The length in kilometres of the road must be stored.

Some roads may be part of other roads. For example, "Main Highway 16" has a section called "Maytown Throughway", which is a five kilometre sub-section of the main highway. A road may be a sub-section of only one other road, although a specific road may have many sub-sections, each of which may also have sub-sections.

Location: It is necessary to identify the location a road starts and the location at which that road ends. The information to be stored about a location is: location ID, name, latitude, longitude, and description.

Projects: The ARC wishes to keep a record of all the projects carried out on the roads. A project has a project code, name and description, date started, and date completed. A record must be kept of all ARC staff assigned to each project, and the role undertaken by that staff member. Changes can happen to staff assigned to a project due to various unexpected reasons. Such changes must be recorded.

The details about a staff member that must be stored are Employee ID, first name, last name, date first employed by ARC, date of birth, gender, postal address, contact phone number, and email address. A staff member may have many roles in a project over time. A role has a role name and a description. It is necessary to store the date that a role was assigned to a staff member, and when the assignment ended. A project must involve in at least one road and a road may have many projects carried out on it.

Contracts: The ARC negotiates contracts with external construction contractors to carry out work on projects. A project may have several contracts over time. A contract has a contract number, name, description, estimated cost, actual cost, date started, and date ended. A contract has only one contractor company whose name, address, and preferred contact details are recorded. A contract may have several contract managers (manager is a role) who are employees of ARC, over time, although there can only be one manager at any time. The ARC needs to store start and end dates that an appointed manager is responsible for a contract.