Threat Modelling

1.1 Assumptions:

Assumption 1: Database System for Vehicle Information
Justification: A database system will be implemented to store vehicle information, such as plate number, vehicle details, fee liability, and payment status. This database will help streamline identifying vehicles and determining their fee liability. To ensure the accuracy of the data, the system will keep up to date with the traffic system or relevant external databases, such as the national vehicle registration database. This will enable the NCA system to maintain accurate and current information on all vehicles entering the designated zone.

Assumption 2: Automatic Recognition System for Vehicle Information
Justification: An automatic recognition system will detect vehicle license plates to enhance efficiency and minimise errors. We can use the camera to identify the plate number; the camera can be installed at the entry and exit points of the NCA zone to capture plate numbers. As plate numbers are unique identifiers, the system will use this information to query the database for relevant vehicle details and determine fee liability. The system will ensure accurate detection and avoid potential bottlenecks at the entry and exit points by setting a speed limit for vehicles passing through the cameras.

Assumption 3: Payment collection system for Vehicle
Justification: To accommodate a wide range of users and ensure convenience, the NCA system will offer multiple payment methods for vehicle owners to pay the required fees. The payment system will be linked with the centralised database, allowing for immediate updates of payment records. the first method is paying by card or contactless payment; the user needs to insert a card into the machine or use a contactless payment method to pay specific fees; the records will update to the database immediately; the second method is paying by cash; if in this case, the entry should be specific with staff to help the customer complete the payment process.

Assumption 4: Customer Self-Check System
Justification: Customers should know whether they must pay a fee and the amount due before entering the NCA zone. Therefore, it is necessary to provide various ways for customers to check their vehicle's status independently. The first method involves setting up a website where customers can input their license plate number and personal information to access the necessary details. The second method is establishing dedicated help lines, so customers with questions or issues can contact support directly by providing their license plate number and personal information.

Assumption 5: Security Guard System
Justification: It is essential to consider that some customers may need to follow the established procedures and attempt to avoid paying the required fees, for instance, by tailgating another vehicle. To mitigate this risk, a security guard system will be considered. Security guards will be stationed at strategic locations within the NCA zone to monitor vehicle compliance and intervene in cases where fee evasion is suspected. By having security personnel in place, the system will be better equipped to enforce the NCA policy and ensure that all vehicles entering the zone adhere to the established rules and regulations.