**DSA4264: Sense-making Case Analysis: Public Policy and Society**

**Scoping Document – Problem 1**

*Problem 1: You have been tasked to do a comprehensive analysis of all bus routes that are parallel to MRT lines - specifically you need to assess which bus services are worth reviewing for potential service changes.*

# 1. What is the problem to solve?

In recent years, LTA has rolled out several new MRT lines to make public transportation a more attractive option for commuters, such as the Downtown Line and the Thomson-East Coast line. Prior to these MRT lines, commuters had to rely on several trunk services to get to their destination, which takes longer and is generally less predictable.

Since the launch of these new MRT lines, the ridership of these trunk services has dropped based on our small-scale survey and anecdotal evidence. We would like to streamline our public transport options and encourage commuters to use the new MRT lines instead of continuing to rely on the trunk services. We need the Data Science Department’s help to identify which trunk services have significant overlap with MRT lines and should thus be prioritised for consideration.

# 2. Who is affected by this problem?

The main stakeholder is MOT’s Land Division, and specifically the Public Transportation team which is in charge of examining the overall planning for public transportation routes and to find ways to optimise them for cost and coverage.

Other stakeholders include LTA, who is in charge of operationalising these routes, and the members of public, who are the ultimate beneficiaries of our route planning and policies.

# 3. What is the impact of not solving this problem?

We have a fixed and limited budget for subsidising bus and MRT routes. If we don’t examine how to best optimise our bus routes early, we will end up being unable to finance other bus routes in Singapore that better meet our commuters’ needs.

# 4. How could data science address this problem? Why is it necessary?

Manually identifying which bus routes have enough “overlap” with MRT lines is imprecise and will take too long. Data science can help us systematically and rapidly identify which bus routes overlap, and to what extent, with our MRT lines. We would also be able to extend this analysis to future lines that are being released, including the Jurong Region Line.

Additionally, data science can also help us to include other factors that are also helping in assessing the likelihood of a negative public response, such as the availability of alternative routes, number of people affected, and so on.

# 5. What would success look like? How would you measure it?

Success would be identifying at least 2-3 routes that can either be entirely removed or partially rerouted to better streamline our public transportation operations, which would enable us to free up some funding for 3 proposed bus routes which are needed in response to public demand.

# 6. What constraints are there?

Unfortunately, due to IT issues, we are unable to provide your team access to our internal datasets with bus and MRT ridership data. We are only able to work with publicly available datasets, and we acknowledge there will be some limitations to the analysis as a result of this.