KEMENTERIAN PENGANGKUTAN MALAYSIA

FUTURISE

GUIDELINE FOR PUBLIC ROAD TRIALS OF **AUTONOMOUS VEHICLES**

Guideline by:

MINISTRY OF TRANSPORT MALAYSIA

FUTURISE SDN. BHD.

MALAYSIA AUTOMOTIVE, ROBOTICS AND IoT INSTITUTE

In Cooperation With / Supported by:

"RELEVANT / INTERESTED LOCAL AUTHORITIES IN MALAYSIA (Interested Local Authorities To Be Included In This Guideline, Subject To Changes)"

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ABBREVIATIONS, ACRONYMS & DEFINITIONS

AV or Autonomous Vehicles	an automated or self-driving road vehicle that is capable of operating without assistance from the driver
AV Trial	the act of testing an AV on designated public roads
Applicant	an organisation applying to conduct an AV Trial
BSI	British Standards Institution
EC	Evaluation Committee
Guideline	Guideline for Public Road Trials of Autonomous Vehicles developed by MOT and Futurise, in cooperation with Local Authorities
ISO	International Organization for Standardization
JPJ	Jabatan Pengangkutan Jalan Malaysia (Road Transport Department Malaysia)
Local Authorities	Local authorities consist of city council, municipal council or district council
MARii	Malaysia Automotive Robotics and IoT Institute
MIROS	Malaysian Institute of Road Safety Research
MOT	Ministry of Transport Malaysia
MS	Malaysian Standard (Standards Malaysia)
NRS	National Regulatory Sandbox
NxGV	Next-Generation Vehicles
PDPA	Personal Data Protection Act 2010 (Act 709)
RTA	Road Transport Act 1987 (Act 333)
SAE	Society of Automotive Engineers
SMP	Safety Management Plan
Trialling Organisation	an organisation that is approved to conduct an AV Trial
UNR	United Nation Regulations
VTA	Vehicle Type Approval
WHO	World Health Organization

1. BACKGROUND

1.1 Introduction

The World Health Organization (WHO) reported that around 1.35 million people were killed yearly as a result of road traffic. Financially, road traffic crashes cost about 3% of each country GDP yearly[1]. A separate study suggested that human error causes at least nine out of ten accidents[1]. Reducing human error risk by shifting and adopting automated/autonomous vehicle technologies and advanced driver's assistance system on vehicles, hold enormous potential to reduce crashes and vehicle-related fatalities.

According to the National Transport Policy 2019-2030[2], autonomous vehicles are expected to penetrate the transportation industry in Malaysia, dramatically changing existing business models, and requiring a rethink of the current transport regulatory and planning framework. To enable better governance, various parties, from Federal to State and Local Governments, research institutes, global organisations, civil society, as well as the private sector, must cooperate and contribute in the drafting of policies, regulations and laws which take into consideration issues such as security, safety, liability, connectivity, and data privacy.

Understanding the advancement of autonomous vehicle technology in Malaysia, it is a need to provide a safe testing ground for the industry players to facilitate experimentation. Through a collaboration between the Ministry of Transport Malaysia ("MOT") through National Regulatory Sandbox ("NRS") with Futurise since 2019, the first autonomous vehicle testbed ("MyAV") has been successfully developed in Cyberjaya, Selangor in the year 2020 with the first version of guideline established in the same year. In order to support the industry players to move further with the innovation of autonomous vehicle technology, MOT and Futurise are expanding MyAV to other suitable locations that have various types of testing applications such as people mover and transportation as a service.

In the National Automotive Policy (NAP) 2020[3], the Government through the Ministry of International Trade and Industry (MITI) and its agency, Malaysia Automotive, Robotics and IoT Institute (MARii) had formulated a vision-drive policy in enabling the development of AV and overall mobility ecosystem. Ultimately, the policy aims for ecosystem development towards Connected Mobility covering the technology and expertise development, standards and regulation, legislative, new business opportunities, intellectual property and others.

[1] https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries

Knowing the advancement of technology in AV, the NAP 2020 had outlined the definition of AV, regarded as Next Generation Vehicle (NxGV). According to the policy, the NxGV is defined as Energy Efficient Vehicle (EEV) and featured with minimum of Level 3 Vehicle Automation (according to MS 2730: NxGV – Terminology, definitions and levels of Autonomous, Automated and Connected Vehicle). Additionally, the NAP 2020 further provides the roadmaps and blueprints for the AV ecosystem development to set the scene for the implementation landscape in Malaysia.

1.2 Purpose of Guideline

This Guideline for Public Road Trials of Autonomous Vehicles ("Guideline") is intended as a guide for organizations planning to conduct trials of automated vehicles on designated public roads. The Guideline sets out pertinent information on the AV Trial routes, application process, safety and technical requirements, and rules governing the conduct of such AV trials.

This Guideline's main goal is to support the research and development activities concerning AV technologies in the country. The data and information collected from the AV trial may be used in the future by the relevant authorities to develop a national policy and regulatory framework for AV adoption and application in Malaysia.

The Guideline does not replace existing regulations, road transport rules and statutory standards under the Road Transport Act 1987 ("Road Transport Act")[4].

The Guideline is a living document, and will continuously be reviewed, edited, updated and/or expanded with new criteria or conditions. These new criteria or conditions will be obtained from the lessons learned/analysis/outcome from the trialling activities or any new/additional requirements from other stakeholders and regulators.

It is the responsibility of any interested party who wishes to conduct an AV trial to refer to the latest version of this Guideline via Futurise's official website (https://futurise.com.my/myav).

1.3 AV Stakeholders

Proper facilitation by the relevant Government agencies especially the regulatory bodies are imperative to ensure policies and regulations are in place to support the proliferation of AV technologies. Below are the main stakeholders supporting the AV ecosystem and their fundamental roles:

1.3.1 Ministry of Transport Malaysia ("MOT")

- Formulating the policies and to executing the amendments of the existing act, rules, and regulations to support the research and development activities and future adoptions/applications of autonomous driving and autonomous vehicles in Malaysia.
- Coordinating and supervising the integration of different transport modes that are based on IR4.0, application of Intelligent Transportation System (ITS) and autonomous vehicles technologies to provide seamless travel needs, improve efficiencies, safety and mobility options for people and goods transport.
- Responsible for regional and international cooperation in the field of transportation and development of AV in Malaysia.
- Monitoring and reporting on AV trial activities, research and development on public roads in Malaysia.
- For the purpose of the AV Trials, providing approval for trials to be conducted on the designated public roads with the cooperation from the Local Governments / Authorities.

1.3.2 Road Transport Department Malaysia ("JPJ")

- Monitoring, regulating and administration of motor vehicle safety standards, construction and usage regulation to ensure the road-worthiness and safety of the vehicles.
- Registration and licensing of motor vehicles, including AV/NxGv and vehicles equipped with new technologies, upon gazetting of relevant rules and regulations.
- Registration and licensing of drivers in Malaysia.
- Administration and enforcement of road transport laws as stipulated under the Road Transport Act.
- For the purpose of the AV Trials, to conduct continuous studies and to evaluate technical aspects of the AV during such trials, especially in relation to technologies installed (system and component level) and relevant technical standards for Vehicle Type Approval (VTA)[5] processes in the future.

1.3.3 Malaysia Automotive, Robotics and IoT Institute (MARii)

- Formulating and implementing NAP 2020 as a vision-drive policy to support the development of Next Generation Vehicle (NxGV), which include AV related technologies and its ecosystem in Malaysia.
- Bridging policy framework introduced by globally recognised platforms such as ISO, APEC, APWG, WP.29 and others.

- The key point of contact between Government, Industry and Academia for the adoption of AV technology in Malaysia including technology and expertise localisation, standards development, industry best practice and trade facilitation.
- Leading stakeholder in validating emerging technologies and digitalisation agenda.
- Stakeholder in the development of Intelligent Transportation System (ITS) in Malaysia to enable the AV.

1.3.4 Local Authorities

- Planning for the transportation-related infrastructure development in the relevant authority areas.
- The approval authority on the public roads to be used for AV Trials.
- Enforcing municipal regulations and by-laws firmly and fairly.
- Providing up-to-date facilities that cater to local socio-economic development, which for the purpose of the AV Trials is the autonomous vehicle testbed in the designated route as declared in Annexure A.

1.3.5 Futurise Sdn. Bhd. ("Futurise")

- Public policy advisor for industry and Government to increase Malaysia's overall competitiveness in the Future Economy through anticipatory policy-making.
- Conduct industry studies and recommend measures to facilitate innovation in the community and improve the ease of doing business.
- Mandated by the Government to drive the National Regulatory Sandbox initiative, being a strategic collaboration between the Malaysian government, academia, industries and entrepreneurs to expedite progressive and anticipatory regulatory intervention for the deployment of new industry sectors having strategic impact to the country ("NRS").
- The AV Trials are an activity falling within the innovation testing phase, which is a critical component of a regulatory sandbox.

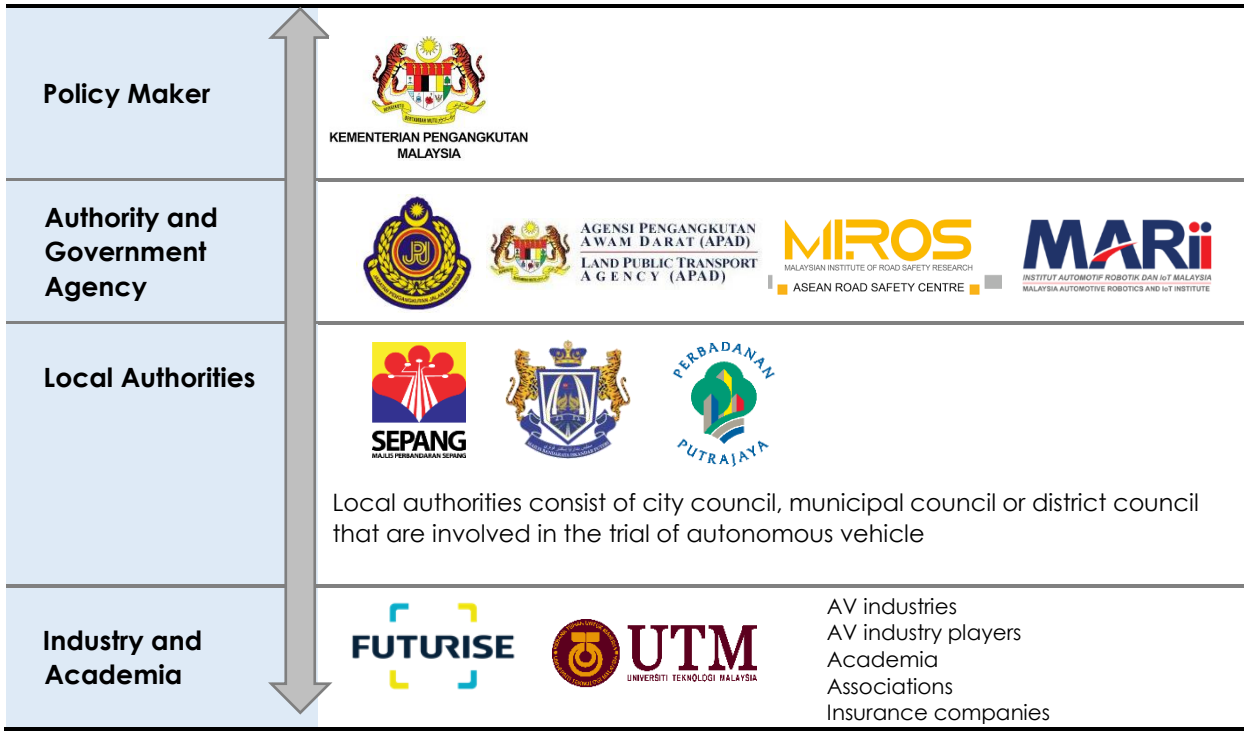


Figure 1: Malaysia AV stakeholder ecosystem

1.4 AV Evaluation Committee

In conjunction with the introduction of this Guideline, MOT, in cooperation with Futurise, have established an Evaluation Committee (EC) with key responsibilities as the following:

- Reviewing and evaluating any applications to conduct AV Trials submitted by any trialling entities;
- Review and verify the safety and the technical specifications of autonomous vehicles prior to the trialling stage;
- Evaluation of incident reports, accident reports, interim reports and end-of-trial reports; and
- Propose relevant input to further refine the Guideline based on data collected and feedback received during the AV Trials, to become more comprehensive guidance document for the relevant stakeholders.

The Evaluation Committee (EC) consists of stakeholders and experts in the field of regulation, automotive automation technologies and transportation as follows:-

No.	Organization
1.	Ministry of Transport Malaysia ("MOT")
2.	Road Transport Department Malaysia ("JPJ")
3.	Futurise Sdn Bhd ("Futurise")
4.	Majlis Perbandaran Sepang (MPSepang)
5.	Malaysian Institute of Road Safety Research ("MIROS")
6.	Agensi Pengangkutan Awam Darat ("APAD")
7.	Malaysia Automotive Robotics and IoT Institute ("MARii")
8.	Universiti Teknologi Malaysia ("UTM")

In addition to the EC members listed above, MOT and Futurise will invite additional organizations from time to time to be a part of the EC, including local authorities representatives involved in the trial of autonomous vehicle(s) when necessary and according to specific needs/areas of discussion.

2. APPLICATION PHASE

2.1 Routes for AV Trials

The designated routes available for AV Trials under respective local councils are described in Annexure A. Applicants may also refer the designated routes via (https://futurise.com.my/myav). Applicants must conduct the AV Trials only on the designated routes with no deviations or detours.

The duration of an AV Trial is as follows:

- Route A - a period of at least six (6) months commencing from the approval date; and
- Route B - a period of at least twelve (12) months commencing from the approval date.

2.1.2 Change in Routes

All AV Trial routes are subject to evaluation and approval by Evaluation Committee. In the event of any change in Route A and/or Route B, a public announcement notifying of such

change will be published on Futurise's official website (https://futurise.com.my/myav). It is the Applicant's responsibility to review the website regularly.

2.2 Application Process

2.2.1 Application for Route A

- To conduct an AV trial on Route A, an Applicant must obtain prior approval from Futurise.
- Applicants shall be required to complete the application form *Futurise/MyAV/2021(013)*. The application form can be downloaded via (https://futurise.com.my/myav).
- The completed application form must be submitted with the Safety Management Plan (as described in **Section 2.3**) and all other required supporting documents to Futurise via e-mail address (myav@futurise.com.my).
- All applications are to be submitted to Futurise at least one (1) month prior to the targeted trial start date for Route A.

The EC shall be officially notified on the Application for the AV trial by the Applicant(s) and to be provided with any supporting documents required submitted through Secretariat.

2.2.2 Application for Route B

- To conduct an AV trial on Route B, an Applicant must first obtain special approval from MOT (to be applied via Futurise) after being assessed and endorsed by the Evaluation Committee (EC).
- An Applicant may only submit an application for Route B upon prior and successful completion of an AV Trial on Route A for a continuous period of at least six (6) months. Repeatability performance of AV trial success in Route A must be included in Applicant's Route B application for assessment by the EC.
- Applicants shall be required to complete the application form *Futurise/MyAV/2021(013)*. The application form may be requested via e-mail address (myav@futurise.com.my).
- The completed form must be submitted together with an End-of-Trial Report (as described in **Section 4.1**) for Route A together with all other required supporting documents to Futurise via e-mail address (myav@futurise.com.my).
- All applications are to be submitted to Futurise at least one (1) month prior to the targeted trial start date for Route B.
- In certain circumstances, MOT may consider waiving the requirement for an Applicant to complete Route A and allow the Applicant to proceed directly to conduct trialling at

Route B. In such an instance, the Applicant must submit a formal written request to EC providing sufficient justification and supporting documents for EC's consideration. Once endorsed, Futurise will submit the application to MOT for further deliberation and final decision.

- Where Applicant has previously conducted AV testing or trials ("Prior Testing") at other approved locations (as designated by MOT from time to time), Applicant may submit written evidence of such Prior Testing to support Applicant's application to proceed directly to Route B.

The application process flow for both Route A and Route B is shown in Figure 4 below.

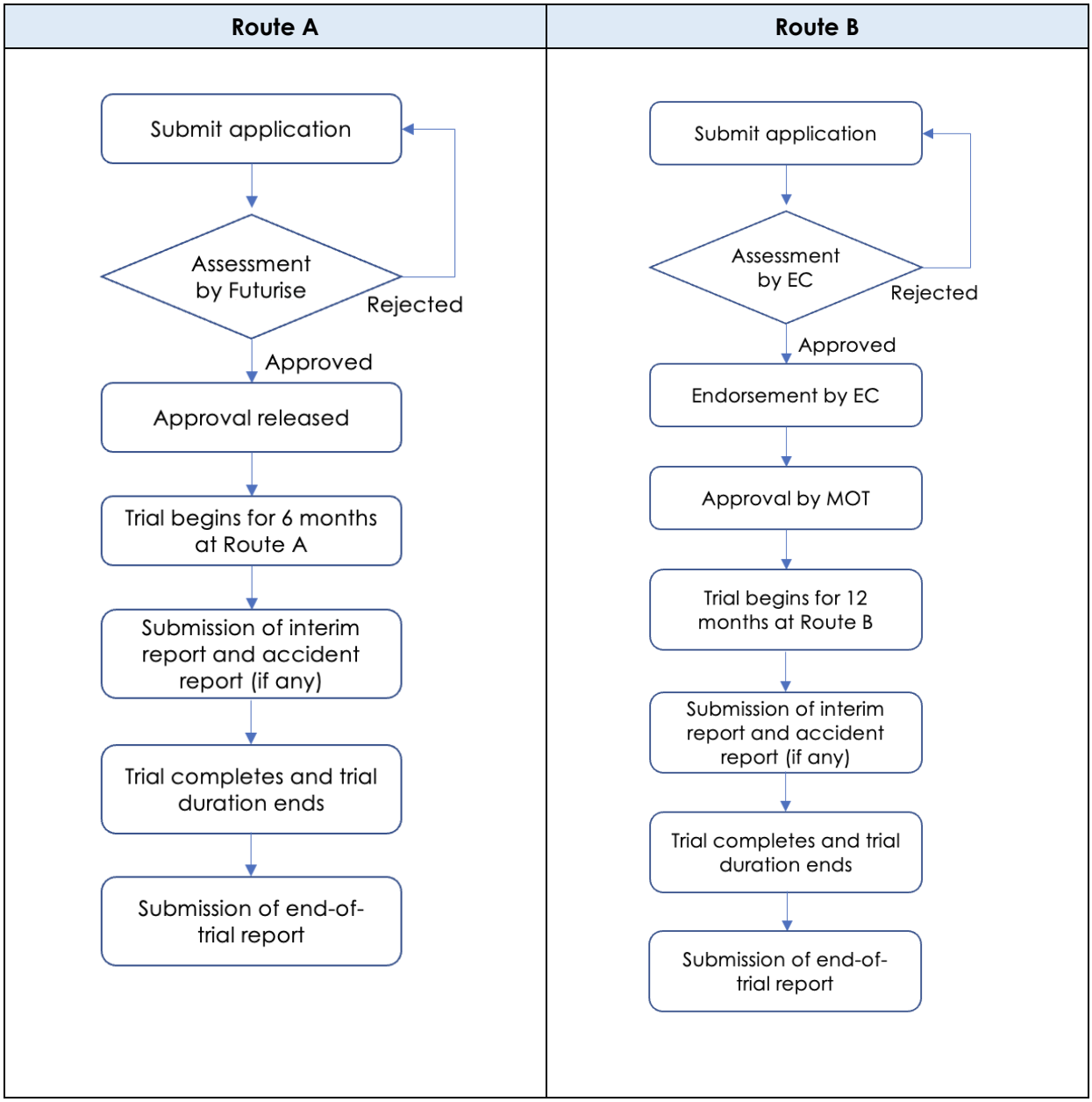


Figure 4: AV trial application process flow for Route A and B

2.3 Safety Management Plan

The Safety Management Plan (SMP) aims to identify, outline, mitigate, and manage key safety risks that may arise from the AV trialling activities. The Applicant must have in place the SMP outlining all key relevant safety risks for the execution of the trial and how these risks will be mitigated or eliminated. The submission of the SMP is mandatory which is a supporting document for any AV Trial application. Applicant can download the Safety Management Plan (SMP) template via (https://futurise.com.my/myav).

The SMP should include and address eight (8) key safety risks below:

2.3.1 Cybersecurity

Artificial intelligence and machine learning system in AV are vulnerable to external attacks that could compromise the functioning of the vehicle and disrupt the safety elements. In addition to considering these threats during the design phase, Applicants must take appropriate security measures such as validation and continuous risk assessment to prevent any unexpected situations and/or malicious attacks. Applicants need to have a high level of preparedness and possess adequate response capabilities to handle cybersecurity issues.

All related parties involved with the AV Trial must be aware of the existence of any recorded data and ensure full compliance with applicable laws.

In managing data such as vehicle parameters (driving mode, vehicle speed, steering and braking command and activation) and sensor data (camera and lidar), Applicants should refer to established security standards such as the *BSI BS 10754-1:2018 Information Technology – Systems Trustworthiness – Governance and Management Specification* as guidance.

Where personal data is collected by Applicants, all parties must comply with the requirements of the PDPA in relation to processing, collection, movement, and protection of such data.

2.3.2 Road Users

Road users such as drivers and passengers of other motor vehicles, cyclists and pedestrians will need to be critically considered and identified in the SMP in all AV Trial activities taking place on a public road. The Applicant must take into consideration real-world behaviours by these road users which also include road workers involved in road construction and maintenance, road detours and roadblocks.

2.3.3 Road Infrastructure

Diverse physical road infrastructure such as road pavements, road marks, road dividers, road signs, traffic lights, streetlight poles, building structures, crossings, junctions, and potholes will all need to be considered as part of the SMP. Road construction work that may be present along the trialling routes includes road signs, dividers, machines, and equipment. Physical road infrastructures must be able to be recognized and analyzed by the onboard AV technologies

in order to perform the necessary decisions and actions in ensuring the safety of the AV Trial activities.

2.3.4 System Failure

The SMP must outline the procedures to respond to all circumstances related to AV Trial failure due to hardware, software or human errors. The procedure should include system redundancy and fallback options to prevent a collision from happening and/or reduce the impact of an accident when operating in autonomous mode. It is mandatory to have installed a notification system to alert the driver/operator during the AV Trial of any systems or components failures. The notification system may be in any form, provided that the critical information is effectively conveyed and monitored throughout the AV Trial. For failure and error that leads to safety issues, the safety officer/operator must immediately take control and manoeuvre the AV to a safe position to stop for system diagnostic and error rectification. The trial may continue once all AV systems and components are verified to be in safe and working order.

In the event of an accident, the Applicant should act and respond according to the *Safety Trial Procedure* (**refer to Section 3.3**) and file a report accordingly (**refer to Section 4.3**).

2.3.5 Fallback

Fallback is a transition for the safety officer/operator to take over the vehicle control from the automation system either by system request or by driver direct intervention, and must be included in the SMP. It is an important feature in the event of AV system failure and error to prevent collisions or mishaps. The fallback features and mechanisms must be proven to be effective before any trialling can begin (in Route A or Route B).

The fallback feature must be incorporated in the AV system as a mechanism for the safety officer/operator to intervene in taking over control of the vehicle. The fallback mechanism, such as the switch lever shown in Figure 5, must be designed to be within close reach of the driver/safety officer/operator so that he or she can easily intervene and activate the mechanism during an emergency.

Figure 5: Fallback mechanism switch

2.3.6 The Driver as Safety Officer or Operator

It is mandatory for the driver of the vehicle to perform the function of a safety officer or operator, and to be present in the vehicle at all times during the trial, unless a specific exemption has been granted by MOT. The safety officer/operator must be sufficiently trained to competently operate the AV systems and components, to respond to any safety issues and error notifications, and to take control of the vehicle immediately, and must be vigilant at all times when in the vehicle throughout the trial. A Safety Trial Procedure must be developed by the Applicant (**refer to Section 3.2**) and to be referenced by the driver/safety officer/operator at all times.

The Applicant must also provide written evidence that the driver/safety officer/operator has undergone proper and sufficient training related to the AV systems, components and operations. Evidence that the driver/safety officer/operator is fit for duty may also be required. The driver/safety officer/operator must also behave with integrity, be responsible and accountable, and in an ethical manner throughout executing the AV Trial.

2.3.7 AV Pre-Trial (Route A)

The Trialling Organisation is expected to conduct and successfully complete the AV pre-trial on Route A. The purpose of the AV pre-trial is to allow for evaluation and pre-approval process and to provide additional safety assurance and measures before any Trialling Organisation may apply to proceed to Route B, AV trial (as the latter involves testing and operating the AV

under real-road traffic situations/conditions). The successful outcome of the Route A, AV pre-trial must be submitted in the form of a report as evidence to support a Route B application.

2.3.8 Vehicle Identifier

The AV must be equipped with a warning sign, according to Figure 6.1, and with an amber beacon light as shown in Figure 6.2, during the AV Trial on both routes. The warning sign and beacon light must be supplied by the trial organization. The warning sign must be affixed on both sides and the rear of the vehicle. The beacon light must be located on the roof of the vehicle. These are to alert other road users and vehicles as a safety precaution.

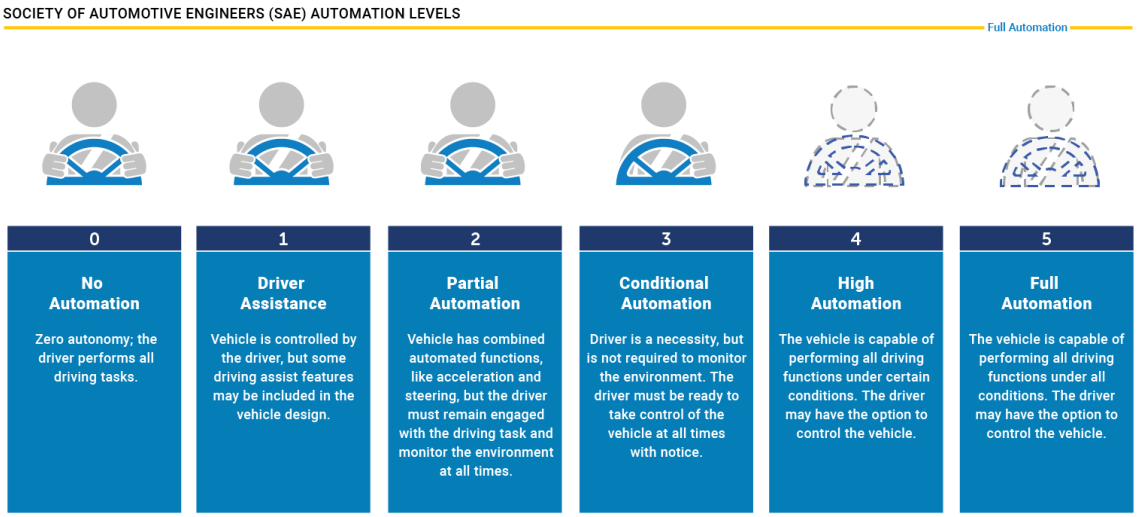
Sign Position	Height	Width
Sides	15.0 cm	30.0 cm
Rear	7.5 cm	15.0 cm

Figure 6.1: Warning sign

Figure 6.2: Amber beacon light

2.4 Vehicle Technical Specifications

Trialling at either Route A or Route B is only allowed using autonomous vehicles up to level 3 only.



Source : https://www.nhtsa.gov/sites/nhtsa.gov/files/nhtsa_sae_automation_levels.png

Any application submitted must provide clear and detailed AV technical information consisting of safety protocols and technologies at both system and component levels. Installation of the technologies in the AV should be in accordance with established standards such as the *Malaysian Standard (MS)*, *International Organization for Standardization (ISO)*, *Society of Automotive Engineers (SAE)* or *United Nations Regulations (UNR)*. This is to enable the proper study to be undertaken by the Road Transport Department Malaysia (JPJ) on the technical specifications of the AV for possible fulfilment of the Vehicle Type Approval (VTA) process in the future.

For the purpose of EC endorsement and approval, Applicant(s) through Secretariat shall provide the EC with relevant technical details in accordance to MS 2730: NxGV – Terminology, definitions and levels of Autonomous, Automated and Connected Vehicle consisting of the following:

a) System Safety;
b) Failsafe Response;
c) Human Machine Interface and Operator Information;
d) Object and Event Detection and Response (OEDR);
e) Operational Design Domain (ODD) for Automated Mode;
f) Validation for System Safety;
g) Cybersecurity and Over-the-air issues;
h) Software Updates; and
i) Event Data Recorder (EDR) and Data Storage System for Automated Driving (DSSAD).

2.5 Registration, Licensing and Safety Requirements

The Applicant must ensure that the motor vehicles to be installed with AV technologies (component and system) have a valid motor vehicle registration and licensing with Road Transport Department (must be registered and have a valid motor vehicle license). The driver must hold a valid Malaysian competent driving licence in the relevant class when driving the vehicle. The usage of the vehicle on the road must adhere to all road traffic rules and regulations under the Road Transport Act 1987.

In addition, the trialling vehicles must be equipped with the following:-

- a fallback mechanism (transition for the driver/safety officer/operator to take over the vehicle control) such as a switch lever, which must be placed within close proximity to the driver/safety officer/operator in the event of automation failure or emergencies.
- a warning system that must be able to immediately and effectively alert and warn the driver/safety officer/operator of any system failure or error during the AV Trial so that necessary safety actions can be immediately taken.
- a suitable fire suppression system for road vehicle application.
- an emergency stop (E-stop) switch, as shown in Figure 7, as a safety mechanism used to shut off all systems in an emergency, when the AV cannot be shut down in the normal manner.

(a)

(b)

Figure 7: a) An example of an E-stop switch (b) Position of E-stop switch near the safety officer/operator reach

The vehicles must be equipped with data collection capability to continuously record all trial activities and operations. The collected data and information as listed in **Section 4.3** will be required for the purpose of conducting investigations, or to address any road safety issues or to be used in the study by the Road Transport Department Malaysia (JPJ) on the technical specifications of the AV.

In addition, the Applicant must ensure that the vehicles hardware modifications and conversions are safe, based on best engineering practices, and does not alter the vehicle original technical, system and components specification or the conventional vehicle operation under normal driving conditions. Sensors and components installed either inside or outside the vehicle must be safely secured so as not to cause any harm to other road users.

2.6 Insurance

It is mandatory for all Applicants to obtain relevant and adequate liability insurance coverage prior to any trialling activities. The liability insurance coverage must be sufficient to cover the vehicle and other road vehicles, product, public road users including pedestrians, road infrastructures, 3rd party owned buildings and physical infrastructures, occupational health and safety, and any other related risks. The Applicant shall submit written documentation as proof of the procurement of such liability insurance coverage together with the application form.

2.7 Compliance with Law

The Trialling Organisation must comply with all applicable laws when conducting the AV Trials including:

- Vehicle standards/regulations, road rules and traffic laws under the Road Transport Act 1987;
- Road traffic safety standards under ISO 39001 Road Traffic Safety Management System[6]; and
- Data protection and privacy laws under Personal Data Protection Act 2010 ("PDPA")[7];

unless a specific exemption has been granted by the relevant authority.

2.8 Liability and Indemnity

The Trialling Organisation agrees and accepts that its participation in the AV Trial is at its own safe and risk as required by the law. MOT, JPJ, Local Authorities, Futurise and other related governmental agencies involved shall not be liable for any harm, injury or losses caused or incurred by the Applicant's participation in the AV Trial howsoever.

The Trialling Organisation agrees to indemnify, defend and hold harmless MOT, JPJ, Local Authorities, Futurise and other related governmental agencies involved from and against any and all costs, claims, damages, liabilities, losses and expenses of whatsoever nature howsoever suffered, incurred or sustained by them, either individually or separately, which arise due to non-compliance of the Trialling Organisation with any of the terms of this Guideline, or by the breach of any applicable law, or any injury to, or death of, a natural person, or any loss of, or damage to, real or personal property of any person, which is caused or contributed to by the Trialling Organisation in relation to the AV Trial.

2.9 Right of Removal

The Trialling Organisation may be removed from the AV Trial:

(a) if the Trialling Organisation has committed or undertaken any fraud, dishonesty, deceit, misconduct, or similar actions including providing any false or incorrect information;

(b) where the Trialling Organisation is in breach or non-compliance with any of the terms of this Guideline; and/or

(c) if the Trialling Organisation's conduct is inappropriate or contrary to the spirit or intention of the AV Trial.

4. TRIALLING PHASE

3.1 AV Trial Permitted Hours

A Trialling Organisation may conduct the AV trials on Route A and Route B only during such days and time period as stated below:

Days : Monday to Sunday
Time : 10:00 am to 12:00 pm
: 02:00 pm to 05:00 pm

3.2 Safety Trial Measures

The Trialling Organisation should create a checklist of safety measures for the AV in pre-test check before each AV Trial starts. Among the measures that should be included are:

- General vehicle inspection involving powertrain, electrical, suspension, and chassis systems to ensure the AV is safe to operate. Vehicle identifiers and beacon lights must be operational during the AV Trial activities.
- Critical AV system inspection involving software, components, equipment, and instruments to ensure the AV is safe and operational as intended. Data logger and camera to record all AV Trial activities must always be operational.
- The safety officer/operator must possess the fitness and readiness to conduct the AV Trial. The safety officer/operator must be reminded of the required routine and respond to all possible situations.
- Aware of abnormal traffic and weather conditions that may cause the AV system to fail. Trialling Organisations must decide whether to abort the AV Trial if the conditions are inappropriate.

3.3 Safety Trial Procedures

The Trialling Organisation must develop Safety Trial Procedures to act and respond in emergency or accident during the AV Trial. The Safety Trial Procedures must provide for all possible emergency situations, and should clearly set out the steps and processes for the driver/safety officer/operator to effectively undertake. A written copy of the Safety Trial Procedures must always be available in the AV during the AV Trial as a reference for the driver/safety officer/operator. The driver/safety officer/operator is required to comply with the procedures in the event of an emergency or accident.

4. POST-TRIAL PHASE

4.1 End-of-Trial Report

Upon completion of an AV Trial or the expiry of the AV Trial period, the Trialling Organisation will be required to submit an End-of-Trial report to Futurise via myav@futurise.com.my on the AV trialling activities and outcomes. The template of the report can be downloaded via (https://futurise.com.my/myav). This report must consist the summary of the AV Trial activities, results, findings, conclusions, recommendations (especially in the aspects of safety, AV future applications and adoptions in Malaysia, and in the aspect of technical regulations and

standards amendments) and outcomes but should not disclose any commercially sensitive information.

The End-of-Trial report shall be reviewed and endorsed by the EC for the purpose of recognition beyond the AV trial and a copy must be submitted to MOT and JPJ respectively.

4.1.1 Technology Evaluation by the EC

Applicant must provide detailed information regarding the technology adoption and development for the purpose of the trialling. Such information may include the overall planning for the AV related technology, technical specifications and regulations adoption and localisation in Malaysia. Amongst the information to be submitted to MOT, JPJ, Futurise and MARii include the following (but may be expanded/added):-

a) AV solutions – i.e. drive by wire, Artificial Intelligence, Sensor integration, etc;
b) Vehicle Localisation and Mapping;
c) Vehicle Cognition System;
d) Communication Protocol and Connectivity; and
e) Any other technolog-related.

4.1.2 Data Sharing

The AV trialling activities are subjected to data and information sharing between trialling entities and the EC stakeholders (MOT, JPJ, Local Council, MARii, MIROS, Futurise) for the purpose of studying and preparing the legal framework towards AV adoptions in Malaysia. Trialling entities must agree and consent with data sharing and depository of data (excluding commercially sensitive data and information) with the key EC stakeholders. All parties shall consented to not disclosing the shared data to external non-relevant parties to this Guideline.

4.2 Monthly Interim Report

The Trialling Organisation must submit progress reports to Futurise via myav@futurise.com.my on monthly basis. The template of the report can be downloaded via (https://futurise.com.my/myav). Apart from reporting the AV Trial status, the report must also state and include descriptions of events and incidents that involve:

- Near-miss accidents.
- Driver/safety officer/operator activating the fallback to take over the control of the vehicle due to error/failure or to avoid accidents.

- Public suggestions, views and complaints, if any, regarding the trial activities of the AV.

Where any relevant authority requests an earlier report, the Trialling Organisation shall comply with such request and submit a report within seven (7) calendar days from the date of request.

4.3 Accident Report

A major incident is defined as a crash or collision involving the AV Trial vehicle or a contravention of any road transport rules and regulations under the Road Transport Act 1987 such as driving exceeding the speed limit or violation of a red-light signals. The Trialling Organisation must adhere to the existing road collision reporting requirements as stipulated in the Road Transport Act 1987.

It is also the responsibility of the Trialling Organisation to inform Futurise and submit an initial notification via e-mail or smart phone's applications on any major or minor incident within fifteen (15) minutes of the occurrence of the event. Thereafter, the Trialling Organisation must submit an initial report via myav@futurise.com.my within three (3) hours and a full report within twenty-one (21) days of the incident occurring. For the full report, the Trialling Organisation must collect, prepare and provide all data and information relevant to the incident so as to provide a complete and comprehensive description of the events that have occurred. The data and information must be provided in a format that can be read and interpreted by the authorities. The Trialling Organisation must also assist to explain/provide clarification of the data and information for the authorities.

The relevant data and information in the full report should include but shall not be limited to the following:

- Time, date and location;
- Nature and description of the accidents;
- Automation status (e.g., automated system, human driver/operator, transitioning);
- Traffic, road, and weather conditions;
- Environment;
- Vehicle information (vehicle speed, brake and accelerator applications);
- Sensor information in relation to other road users and the surrounding road; and
- Identity of the vehicle operator at the time of the incident.

Authorities reserve the right to request for additional reports, data and information where deemed necessary and the Trialling Organisation shall comply with such request in a prompt and timely manner.

4.4 AV Trial Extension

Any Trialling Organisation that wishes to extend the AV Trial is required to submit the end-of-trial report before applying to Futurise via myav@futurise.com.my for a trial period extension.

5. CONTACT DETAILS

5.1 Ministry of Transport Malaysia (MOT)

No. 26, Jalan Tun Hussein, Presint 4
62100 Putrajaya
Wilayah Persekutuan Putrajaya
Tel: +603-8000 8000
Attention to: Undersecretary, Land Division

5.2 Road Transport Department Malaysia (JPJ)

Aras 3-5, No. 26, Jalan Tun Hussein, Presint 4
Pusat Pentadbiran Kerajaan Persekutuan
62100 Putrajaya
Wilayah Persekutuan Putrajaya
Tel: +603-8000 8000
Attention to: Bahagian Kejuruteraan Automotif

5.3 Futurise Sdn. Bhd.

Block 3710, Persiaran APEC
Cyber 8
63000 Cyberjaya
Selangor Darul Ehsan
Tel: +603-8315 6033
Attention to: Innovation Ecosystem Division

5.4 Malaysia Automotive, Robotics and IoT Institute (MARii)

Block 2280, Jalan Usahawan 2
Cyber 6
Selangor Darul Ehsan
Tel: +603-8318 7742
Attention to: Strategy and Policy Development Division
Email: spd@marii.my

REFERENCES

1 Smith, B. W. (18 December, 2013). Human Error as a Cause of Vehicle Crashes. Retrieved from The Center For Internet and Society: *http://cyberlaw.stanford.edu/blog/2013/12/human-error-cause-vehicle-crashes.*

2 Ministry of Transport Malaysia. (2019). National Transport Policy 2019-2030. 1-70. Putrajaya, Malaysia: Ministry of Transport Malaysia. Retrieved from *https://www.pmo.gov.my/wp-content/uploads/2019/10/National-Transport-Policy-2019_2030EN.pdf.*

3 Ministry of International Trade and Industry. (2020). National Automotive Policy (NAP) 2020. Kuala Lumpur, Malaysia. Retrieved from *https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjQgYaw2NryAhX-umMGHe5iCskQFnoECAMQAQ&url=https%3A%2F%2Fwww.miti.gov.my%2Fmiti%2Fresources%2FNAP%25202020%2FNAP2020_Booklet.pdf&usg=AOvVaw3CJDl3l8jLQMgtdKED4eFm*

4 Laws of Malaysia. Road Transport Act 1987 – Act 333. (2013). Retrieved from *https://www.mot.gov.my/en/Documents/Act%20333%20%20Road%20Transport%20Act%201987.pdf*

5 Jabatan Penguatkuasa Jalan Malaysia. Vehicle Type Approval Certificate Information Form. Retrieved from *https://www.jpj.gov.my/en/web/main-site/kejuruteraan-automotif.*

6 International Organization for Standardization. (2012) Road traffic safety (RTS) management systems — Requirements with guidance for use (ISO/DIS Standard No. 39001) Retrieved from *https://www.iso.org/standard/44958.html.*

7 Personal Data Protection Act 2010, (Jurisdiction) section Malaysia. Retrieved from *https://www.kkmm.gov.my/pdf/Personal%20Data%20Protection%20Act%202010.pdf.*

ANNEXURE A

ROUTES FOR AV TRIALS:

1. CYBERJAYA, SELANGOR
2. PUTRAJAYA, WILAYAH PERSEKUTUAN
3. ISKANDAR PUTERI, JOHOR
4. ROAD SIGNAGES DESIGN

1. CYBERJAYA, SELANGOR

There are two (2) routes available for AV Trials in Cyberjaya, Selangor under the purview of Majlis Perbandaran Sepang (MPSepang), being Route A and Route B. Applicants must conduct the AV Trials only on these two (2) designated routes with no deviations or detours.

1.1 Route A

- Route A shown in Figure A.1 is a pre-trial in a controlled environment within Futurise's building compound located at Block 3710, Persiaran Apec, Cyber 8, 63000 Cyberjaya, Selangor.
- The route is a public road providing limited access to offices and parking within the compound.
- The route measures a total distance of 1.6km.
- The road is made of asphalt.
- The road design is a two-lane single carriageway (two lanes with oncoming traffic in each direction), separated by lane markings.
- The route comprises of intersections and road humps without traffic lights.
- Along the route, there are parked vehicles (mostly cars and motorcycles), temporary road marking cones, road signs, streetlights, trees, fire hydrants and buildings.
- The presence of pedestrians is minimal.
- Under normal conditions, traffic congestion is free flow.
- The advisory speed limit for Route A is 20 km/h, the speed limit for the AV trial is 20 km/h.

Figure A.1: Route A in Cyberjaya

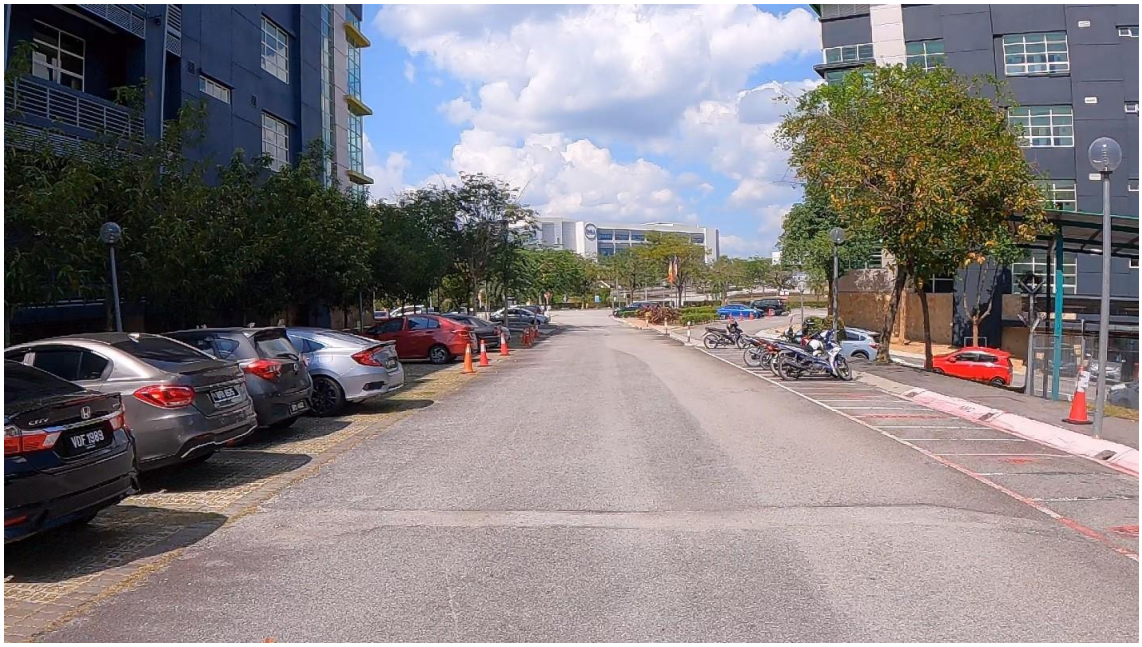


Figure A.2: Route A road conditions in Cyberjaya

Figure A.3: Route A road conditions in Cyberjaya

1.2 Route B

- Route B shown in Figure A.4 consist of roads from Persiaran Apec, Persiaran Rimba Permai, Persiaran Ceria, Persiaran Cyber Point Selatan and Jalan Cyber Point 5 in Cyberjaya, Selangor.
- Route B is a public road with a real-world driving environment where trialling organizations can test its autonomous systems and functions.
- The route is used by the public for daily commute purposes.
- The route measures a total distance of 6.25 km.
- The road is made of asphalt.
- The route consists of roads with a four-lane single carriageway (two lanes in each direction) and a six-lane single carriageway (three lanes in each direction), separated by a road divider.
- The route comprises of intersections, road humps, zebra crossings and traffic lights.
- Along the route, there are temporary road marking cones, temporary road dividers, road signs, streetlights, trees, bus stops and buildings.
- Occasionally, there may be road constructions at a few locations along the route. The presence of pedestrians is very minimal.
- Under normal conditions, traffic congestion is free flow.
- The advisory speed limit for Route B is 60 km/h, however for AV trials the speed limit is 40 km/h.

Figure A.4: Route B in Cyberjaya

Figure A.5: Route B road conditions in Cyberjaya

Figure A.6: Route B road conditions in Cyberjaya

1.3 Contact Details

Sepang Municipal Council (MPSepang)
Persiaran Semarak Api,Cyber 1
63200 Cyberjaya
Selangor Darul Ehsan
Telephone: +603-8319 0200 / +603-8319 0300
Attention to: Smart City Unit

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2. PUTRAJAYA, WILAYAH PERSEKUTUAN

There are two (2) routes available for AV Trials in Putrajaya, Wilayah Persekutuan under the purview of Perbadanan Putrajaya, being Route A and Route B. Applicants must conduct the AV Trials only on these two (2) designated routes with no deviations or detours.

2.1 Route A

- Route A shown in Figure A.7 is a pre-trial in a controlled environment within Taman Wetland Putrajaya.
- Route A is a public road providing limited access to offices (Nature Interpretation Center Building), open parking space, a public park (Wetland Park) and recreational areas.
- The route measures a total distance of 2.7 km.
- The road is made of asphalt.
- The road design is a combination of a two-lane single carriageway (two lanes with oncoming traffic in each direction), separated by lane markings and a single-lane one direction.
- The route comprises of intersections and roundabouts without traffic lights.
- Along the route, there are parked vehicles (mostly cars), road signs, trees, gazebos and buildings.
- The presence of pedestrians and cyclists ranges from minimal to medium.
- Under normal conditions, traffic congestion is very rare.
- The speed limit for the AV trial is 20 km/h.

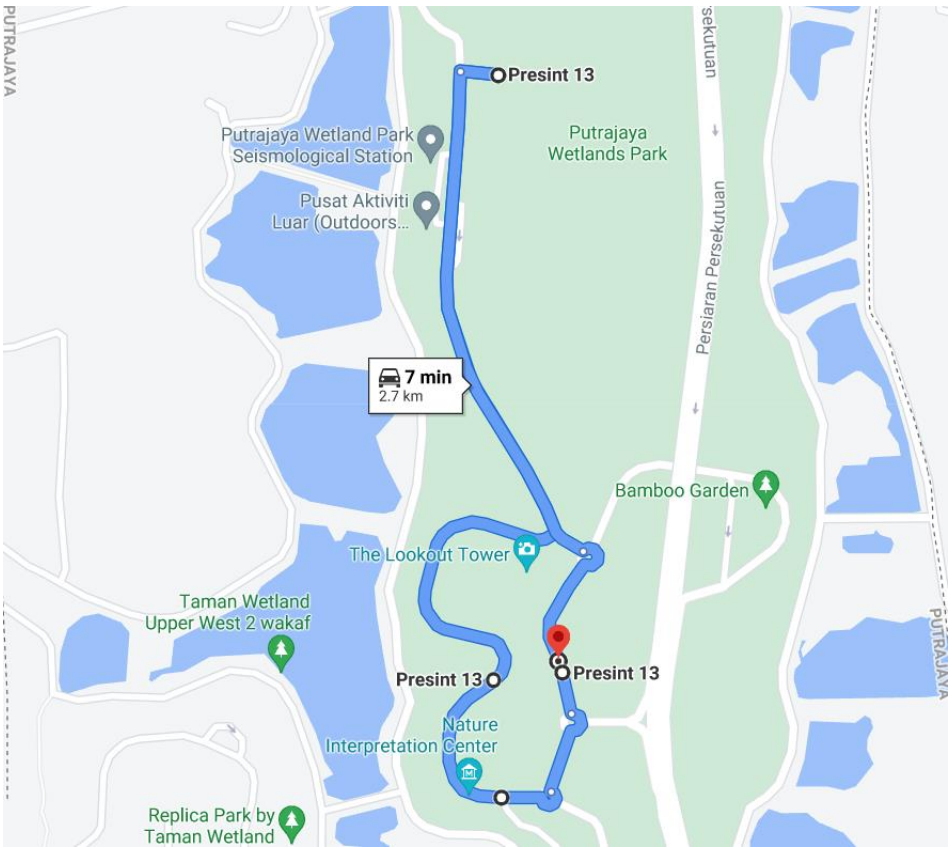


Figure A.7: Route A in Putrajaya

2.2 Route B

- Route B shown in Figure A.8 is located within Persiaran Perdana, Lebuh Bestari and Jalan P18.
- Route B is a public road with a real-world driving environment where trialling organizations can test its autonomous systems and functions.
- The route provides access to offices (government and private), parking space, boulevard, square, residential and school areas.
- The route is being used by the public for daily commute purposes.
- The route measures a total distance of 12 km.
- The road is made of asphalt.
- The road design is a combination of a six-lane single carriageway (three lanes in each direction separated by boulevard median) and a two-lane in each direction separated by road divider.
- The route comprises of intersections, road humps, zebra crossing, roundabout and traffic lights.
- Along the route, there are parked vehicles, road signs, trees, temporary road marking cones, bus stops and buildings.
- The presence of pedestrians, cyclists and other road user ranges from medium to high.
- There may be road constructions along the routes.
- Under normal conditions, traffic congestion ranges from medium to high.
- The trialling organization is required to use a special dedicated lane for public transport that will be implemented at Persiaran Perdana and Jalan Sultan Salahuddin.
- If there is a need for the AV to stop for rectification purposes, the use of the taxi stop point/taxi layby is compulsory.
- The speed limit for the AV trial is 40 km/h.

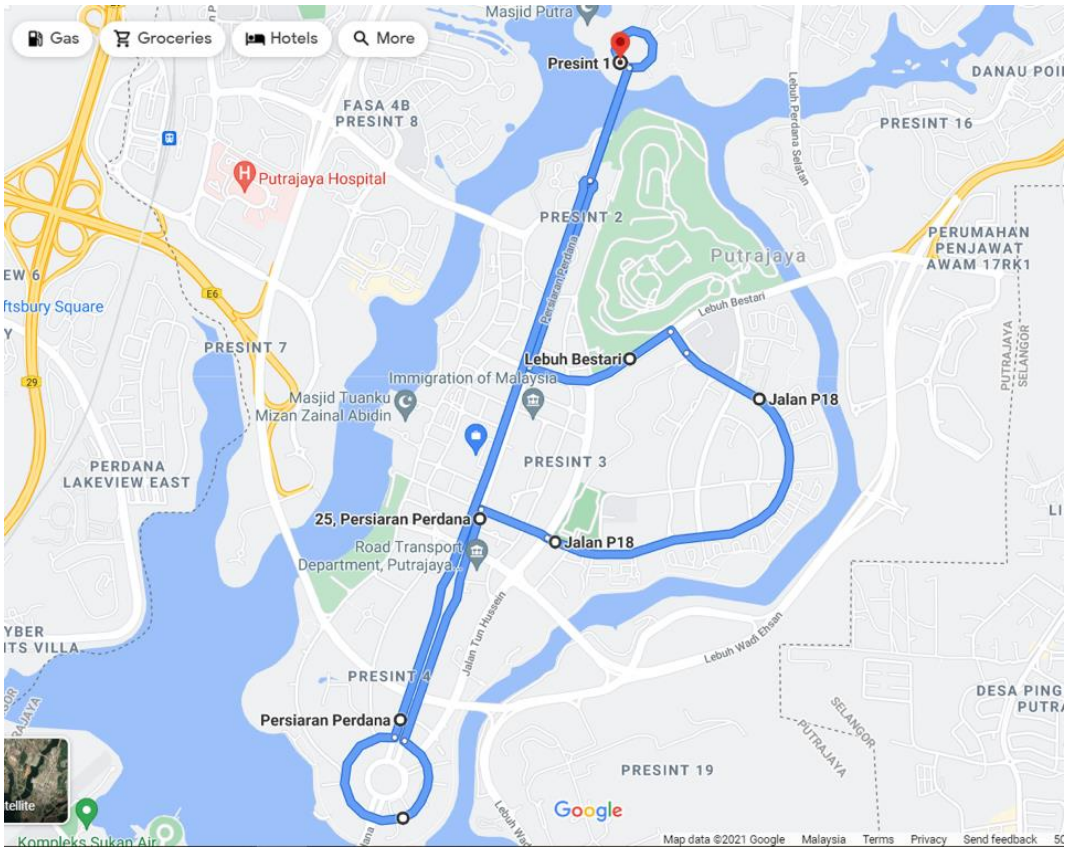


Figure A.8: Route B in Putrajaya

2.3 Contact Details

Perbadanan Putrajaya

Kompleks Perbadanan Putrajaya

24, Persiaran Perdana, Presint 3

62675 Putrajaya

Telephone: +607-8000 8000

Attention to:

1. Encik Mohd Musabri Shaharom
2. Puan Fatimatuzzahrah Hosni
3. Encik Mohd Fahmi Mohd Ali

3. ISKANDAR PUTERI, JOHOR

There are two (2) routes available for AV Trials in Iskandar Puteri, Johor under the purview of Majlis Bandaraya Iskandar Puteri, being Route A and Route B. Applicants must conduct the AV Trials only on these two (2) designated routes with no deviations or detours.

3.1 Route A

- Route A shown in Figure A.9 & A.10 is a private road with a real-world driving environment within the area of Educity where trialling organizations can test its autonomous systems and functions.
- The route measures a total distance of 5 km.
- The road is made of asphalt.
- The route consists of roads with a four-lane single carriageway (two lanes in each direction), separated by a road divider and a bicycle lane.
- The route comprises of intersections, road humps, zebra crossings, roundabouts and road shoulder walkways.
- Along the route, there are temporary road marking cones, temporary road dividers, road signs, streetlights, trees, bus stops and buildings.
- The speed limit for the AV trial is 20 km/h.

Figure A.9: Route A in Iskandar Puteri

Figure A.10: Route A in Iskandar Puteri

3.2 Route B

- Route B shown in Figure A.11, 12 and 13 is a public road with a real-world driving environment where trialling organizations can test its autonomous systems and functions.
- The route is used by the public for daily commute purposes.
- The route measures a total distance of 20 km.
- The road is made of asphalt.
- The route consists of roads with a four-lane single carriageway (two lanes in each direction) and a six-lane single carriageway (three lanes in each direction), separated by a road divider and a bicycle lane.
- The route comprises of intersections, road humps, roundabouts, traffic lights and road shoulder walkways.
- Along the route, there are temporary road marking cones, temporary road dividers, road signs, streetlights, trees, bus stops and buildings.
- The speed limit for the AV trial is 40 km/h.

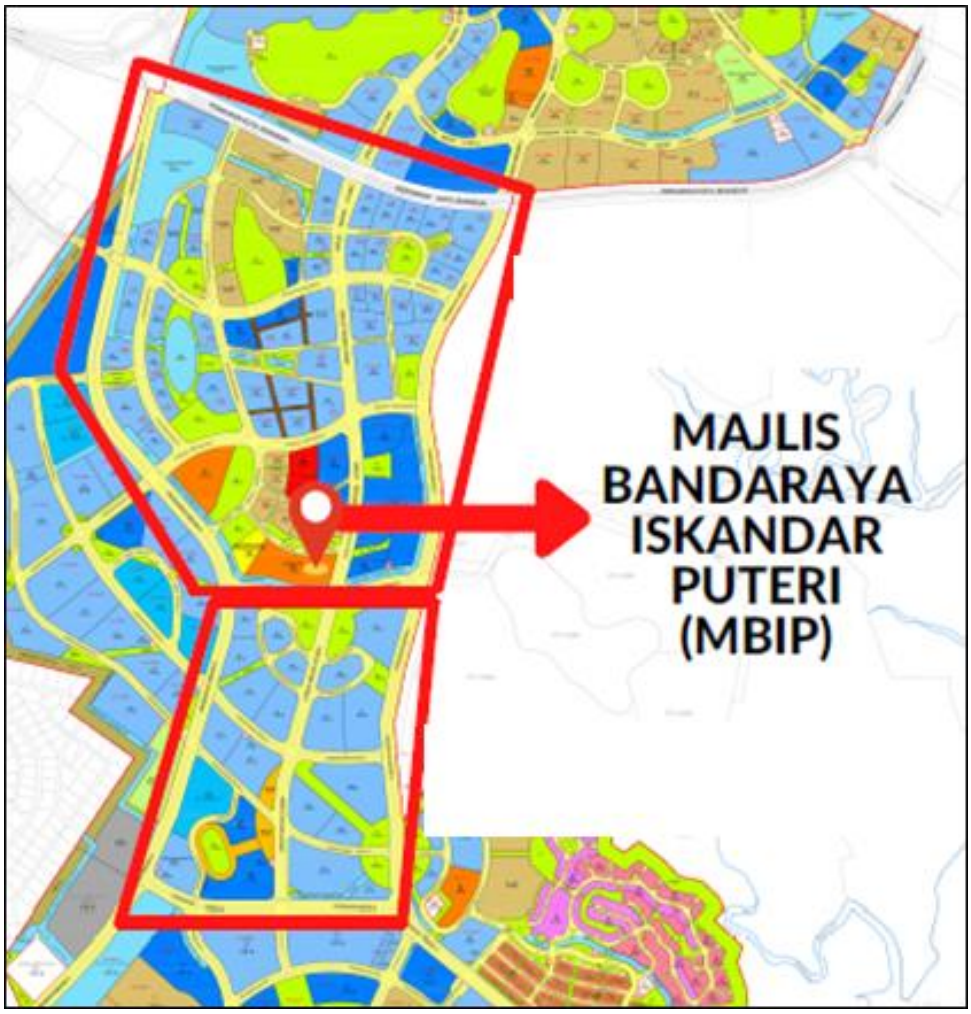


Figure A.11: Route B in Iskandar Puteri

Figure A.12: Route B in Iskandar Puteri

Figure A.13: Route B in Iskandar Puteri

3.3 Contact Details

Medini Iskandar Malaysia Sdn Bhd

B-FF-02, Medini 6, Jalan Medini Sentral 5

Bandar Medini Iskandar Malaysia

79250, Iskandar Puteri, Johor

Telephone: +607-509 8500/ +607-509 8501
Attention to: Encik Danny Ebinesan

Educity Iskandar Education Enterprise Sdn Bhd

A18 & A19, Medini 9, Persiaran Medini Sentral 1

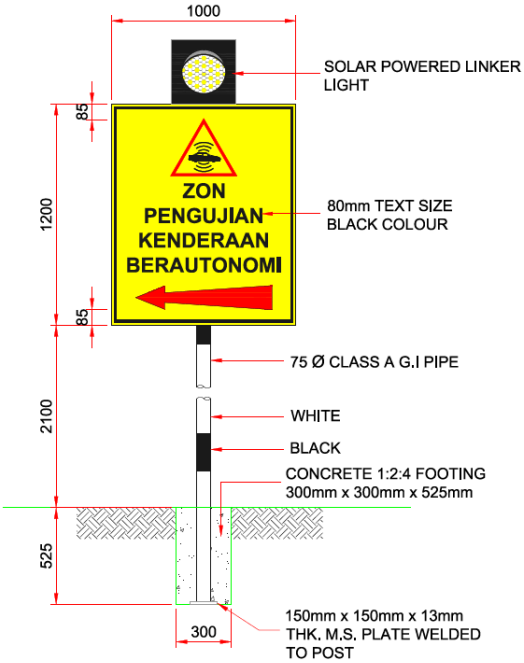
Bandar Medini Iskandar Malaysia

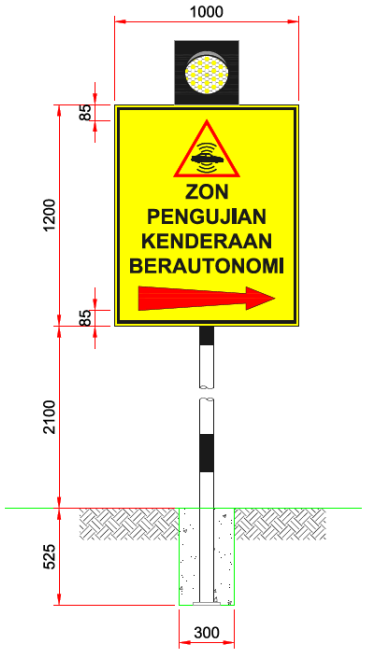
79250, Iskandar Puteri, Johor

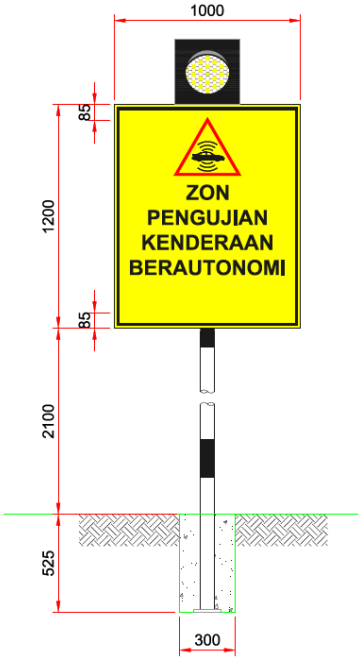
Telephone: +607-535 3000

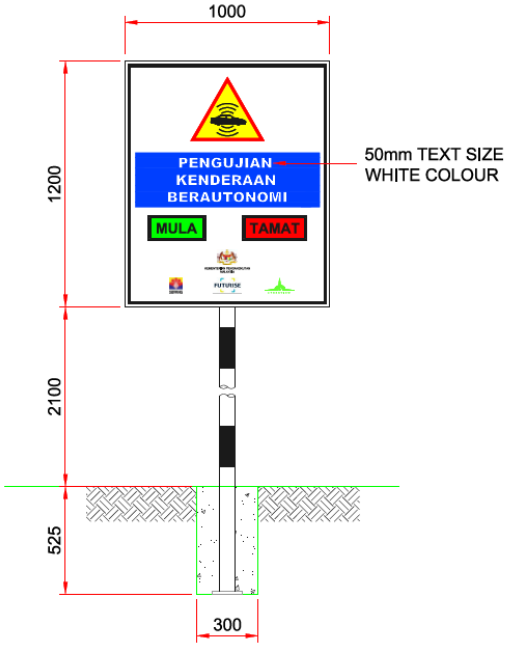
Attention to: Dr. Sakina Sofia Baharom

4.0 ROAD SIGNAGES DESIGN

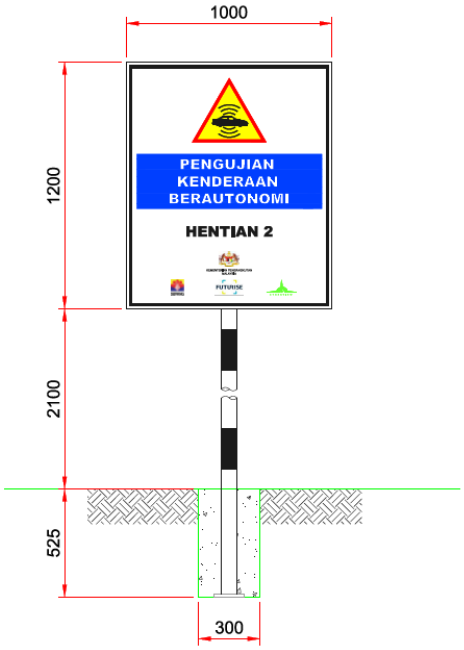







1000
1200
2100
525
300
PENGUJIAN
KENDERAAN
BERAUTONOMI
MULA
TAMAT
50mm TEXT SIZE
WHITE COLOUR

1000
1200
2100
525
300
PENGUJIAN
KENDERAAN
BERAUTONOMI
HENTIAN 1


1000
1200
2100
525
300
PENGUJIAN
KENDERAAN
BERAUTONOMI
HENTIAN 2

Note:

- For the road signages used in Putrajaya, the structure is designed to be portable, and the base of the pillars are not installed into the floor. The height does not exceed 7' and its position is in line with the eye level of pedestrians, cyclists and public vehicles and complies to Arahan Teknik (Jalan) JKR – Manual On Traffic Control Devices and Advertisement Design Guidelines For Putrajaya (SADG) 2000.

KEMENTERIAN PENGANGKUTAN MALAYSIA

FUTURISE

APPLICATION FOR AUTONOMOUS VEHICLE TRIAL ON PUBLIC ROADS

APPLICATION INSTRUCTIONS

- Applicants are required to read and understand MyAV Guideline prior to this application.
- All sections in this application form Futurise/MyAV/2021(013) needs to be fully completed with the required supporting documents as attachment in the appendices.
- Application form and supporting documents needs to be submitted at least 30 days before the proposed activity date to myav@futurise.com.my to avoid any delay.
- Contact Futurise at myav@futurise.com.my for any enquiries regarding the application.

TRIAL LOCATION AND ROUTE

AV trials must only be conducted at the designated Route A or B. The AV trial in this application will be conducted in:

Location				
Route (Please tick ✓)	*A*		*B*	

SECTION A: PERSONAL PARTICULARS

Accountable Manager:
Accountable Manager is the person who is accountable and responsible of the trial activities and safety compliances in this application.

Full name	
Passport / NRIC	
Name of Company/Institution	
Company registration number (if applicable)	
Company/institution address	
Telephone number	
Mobile number	
E-mail address	

**Attach as Appendix 1:*

i. Copy of NRIC / driving license.
ii. Copy of the company registration certificate (if applicable).

Safety Officer / Operator:
Safety Officer / Operator is the person(s) who holds a valid driving license that competent to operate AV, respond to any safety issues and take-back control of the vehicle during trial.

No.	Full name	Passport / NRIC	Mobile number	E-mail address
1.				
2.				
3.				

4.				
5.				

Attach as Appendix 2:

i. Copy of NRIC / driving license.
ii. Proof of AV training attended (may be organized/provided by the company).
iii. Proof of safety briefing attended (may be organized/provided by the company).

SECTION B: TRIAL PLAN AND ACTIVITIES

Trial Plan:
Plan for the AV trial.

Aim of the trial	
Objective(s) of the trial	
Expected outcome(s)	
Trial start date	

Trial schedule:
Schedule of the AV trial activities.
Note: Route A trial period 6 months, Route B trial period 12 months

No.	Trial activities	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
1.													
2.													
3.													
4.													
5.													

SECTION C: VEHICLE PARTICULARS

Vehicle Information:
Information of the vehicle to be used in the AV trial.

Vehicle model	
Vehicle production year	
Vehicle general specifications	
Vehicle registration number	
Vehicle chassis number	

**Attach as Appendix 3:*
i. Exterior picture of the vehicle.
ii. Copy of the vehicle road tax.

Vehicle Safety Measures:
Safety measures included in the vehicle for the AV trial.

No.	System / Feature	Descriptions and validations
1.	Fallback switch	
2.	Emergency stop (E-stop) switch	
3.	Fire suppression / extinguisher	

**Attach as Appendix 4:*
i. Diagrams and pictures with descriptions of the features listed above.
ii. Further details and information.

Vehicle Modifications:
Modifications done on the vehicle system/component for the AV trial.

No.	System / Component	Purpose of the modification	Details and validations of the modification
1.			

2.			
3.			
4.			
5.			

**Attach as Appendix 5:*

i. Diagrams and pictures with descriptions of the modifications listed above.

ii. Further details and information.

SECTION D: AV SYSTEM PARTICULARS

AV System:

AV systems included for the AV trial.

No.	AV System / Feature	Descriptions, validations, development status and current capabilities
1.	System safety	
2.	System failsafe response	

3.	Human Machine Interface and Operator Information	
4.	Object and Event Detection and Response (OEDR)	
5.	Operational Design Domain (ODD) for Automated Mode	
6.	Event Data Recorder (EDR) and Data Storage System for Automated Driving (DSSAD)	
7.	Software Updates	
8.	Cybersecurity and Over-the-air issues	
9.		
10.		

**Attach as Appendix 6:*

i. Diagrams and pictures with descriptions of the systems/features listed above.

ii. Further details, information and reports.

SECTION E: RISK ASSESSMENT

Safety Management Plan:
Safety Management Plan that outlines potential risk and preventive actions to be carried out must be prepared by the trial organization and used in the trial.
**Attach as Appendix 7 the 'Safety Management Plan' document for the AV trial. Refer attached template as guidance.*

Safety Trial Measure:
Safety Trial Measure is a safety measure checklist in pre-flight must be prepared by the trial organization and used in the trial.
**Attach as Appendix 8 the 'Safety Trial Measure' checklist document for the AV trial.*

Safety Trial Procedure:
Safety Trial Procedure is a SOP to act and respond in emergency or accident events must be prepared by the trial organization and used in the trial.
**Attach as Appendix 9 the 'Safety Trial Procedure' document for the AV trial.*

SECTION F: INSURANCE

Insurance policy:
Insurance policy that covers vehicle, product, public, occupational health and safety, and any other related risks for the AV trial.
**Attach as Appendix 10 the copy of the insurance policy taken for the AV trial.*

SECTION G: APPLICATION SIGNATURE

Accountable Manager:

***I hereby confirm that all of the information provided by me in this application (or any other accompanying or required documents) is correct, accurate and complete to the best of my knowledge. I further hereby agree to be bound by the terms and conditions set out in the Guideline for Public Road Trials of Autonomous Vehicles.**

Application date	
Full name	
Passport / NRIC	
Signature	……

APPLICATION CHECKLIST

Checklist of the completed and required documents for the application.

No.	Document	Yes (✓)	No (✓)	Remark
1.	Completed application form Futurise/MyAV/2021(013)			
2.	Appendix 1: Accountable Manager information			
3.	Appendix 2: Driver/operator information			
4.	Appendix 3: Vehicle information			
5.	Appendix 4: Vehicle safety systems/features			
6.	Appendix 5: Vehicle modifications			
7.	Appendix 6: AV systems/features			
8.	Appendix 7: Safety Management Plan			
9.	Appendix 8: Safety Trial Checklist			
10.	Appendix 9: Safety Trial Procedure			
11.	Appendix 10: Insurance policy			

SAFETY MANAGEMENT PLAN

Note: This template is a guidance for trial organizations to create their own Safety Management Plan document. Trial organizations are recommended to extend the key safety risk listed below.

Cybersecurity and Over-the-air:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
…					

Road Users:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
…					

Road Infrastructure:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
….					

AV and Vehicle System:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
…					

TEMPLATE

Fallback and Failsafe:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
…					

Safety Officer / Operator:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
…					

AV Pre-trial:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
…					

Vehicle Identifier:

No.	Potential failure	Potential failure effects	Potential causes	Current control of failure	Further actions to control failure
1.					
2.					
3.					
…					

TEMPLATE

KEMENTERIAN PENGANGKUTAN MALAYSIA

FUTURISE

AUTONOMOUS VEHICLE TRIALLING ON PUBLIC ROADS

END-OF-TRIAL REPORT

By:

Accountable Manager full name	:	
Name of Company/Institution	:	
Company registration number (if applicable)	:	
Company/institution address	:	
Telephone number	:	
Mobile number	:	
E-mail address	:	
Trial start date	:	
Trial finish date	:	
Signature	:	
		……
Date	:	

TEMPLATE

EXECUTIVE SUMMARY

TEMPLATE

1. INTRODUCTION

1.1 Aim

[The aim expresses the main intention of the AV trial.]

1.2 Objectives

[Objectives describe concisely what the AV trial is trying to achieve.]

1.3 Scope

[Scope explains the extent to which the AV trial will be explored in the work and specifies the parameters within the trial will be operating.]

2. METHODOLOGY

2.1 Trial Workflow

[The workflow and processes of the AV trial.]

2.2 Trial Plan and Schedule

[The plan and schedule of the AV trial activities].

2.3 Vehicle Modification

[Modifications done on the vehicle for the AV trial.]

TEMPLATE

2.4 AV System

[AV system in the areas included/below for the AV trial without having to disclose any commercially sensitive information.]

- System Safety
- Failsafe Response
- Human Machine Interface and Operator Information
- Object and Event Detection and Response (OEDR)
- Operational Design Domain (ODD) for Automated Mode
- Validation for System Safety
- Cybersecurity and Over-the-air issues
- Software Updates
- Event Data Recorder (EDR) and Data Storage System for Automated Driving (DSSAD)

2.5 Driver / Operator

[Details of driver/operator involved in the AV trial.]

3. RESULTS & FINDINGS

3.1 Trial Result

[Data and results obtained from the AV trial without having to disclose any commercially sensitive information.]

3.2 Trial Incident / Accident

[Incident / accident happened during the AV trial.]

3.3 Finding / Outcome

[Findings and outcomes produced from the AV trial without having to disclose any commercially sensitive information.]

3.4 Discussion

[Discussion of the findings/outcomes obtained without having to disclose any commercially sensitive information.]

TEMPLATE

4. CONCLUSION

[Conclusion of the AV trial without having to disclose any commercially sensitive information.]

5. RECOMMENDATION

[Recommendations/suggestions to the authorities and stakeholders.]

REFERENCES

[List of references in this report.]

TEMPLATE

APPENDIX

TEMPLATE

KEMENTERIAN PENGANGKUTAN MALAYSIA

FUTURISE

AUTONOMOUS VEHICLE TRIALLING ON PUBLIC ROADS

INTERIM REPORT

By:

Accountable Manager full name	:
Name of Company/Institution	:
Company registration number (if applicable)	:
Company/institution address	:
Telephone number	:
Mobile number	:
E-mail address	:
Trial start date	:
Expected trial finish date	:
Signature	:
	……
Date	:

TEMPLATE

Aim of the trial	*[The aim expresses the main intention of the AV trial.]*
Objective(s) of the trial	*[Objectives describe concisely what the AV trial is trying to achieve.]*
Expected outcome(s)	*[Expected outcomes/findings from the AV trial.]*
Interim status summary	*[A summary to explain the current progress of the AV trial.]*

EMPLATE

Incident / accident *(if applicable)*	*[To update and report latest minor and major incidents/accidents that happen.]*
Suggestion / recommendations	*[Recommendations/suggestions to the authorities and stakeholders.]*

TEMPLATE