13th July 2020

Manager, Spectrum Licencing Policy
Australian Communications and Media Authority
PO Box 13112 Law Courts
Melbourne
Victoria 8010

Dear Manager

Arrangements for jamming devices and radiocommunications device exemptions – consultation 15/2020 (Consultation Number IFC 15/2020)

Transport for NSW (TfNSW) welcomes the Australian Communications and Media Authority (ACMA) public consultation process and provides this submission in support of the review of radiocommunications prohibitions and exemptions framework and trial of RNSS repeater devices in road tunnels.

To achieve the NSW Future Transport 2056 priorities and Transport 10 Year Blueprint TfNSW has developed the Future Mobility Technology Roadmap 2023. This roadmap identifies key technologies which rely on accurate location data. This work is also based on the National Policy Framework for Land Transport Technology Action Plan 2020-2023 developed by the National Transport and Infrastructure Council.

Current NSW major transport infrastructure projects include Sydney Metro and Road tunnel projects. These road tunnel projects, including NorthConnex, WestConnex, Western Harbour Tunnel Beaches Link, and M6, will when completed provide a fivefold increase in the number of lane kilometres of road tunnels with a fully underground journey of over 30km where Global Positioning System (GPS) coverage is not available.

TfNSW has taken a lead role and in collaboration with private road operators and later with the NSW Telco Authority, NSW Fire and Rescue and other emergency services organisations (ESO) and has investigated GPS retransmission options and regulatory and operational arrangements to support GPS coverage in road tunnels. This included approaching ACMA in 2018, and TfNSW appreciates the engagement and support that the ACMA has provided to date. TfNSW, through continuous industry engagement, targets an aligned and consistent approach to introduction of RNSS repeaters and will provide every support to ACMA with the aim of moving this process forward as expeditiously as possible.

Review of radiocommunications prohibitions and exemptions framework

The following is a TfNSW commentary on some of the particular issues that ACMA set out in this consultation paper:

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Issue for comment

1. What changes in technology, and developments in the communications and broader environment, are likely to put pressure on the prohibition and exemption framework?

NSW Future Mobility Technology Roadmap 2023 identified the key 5 priorities as follows:

1. Partner for automation that improves mobility, productivity and safety outcomes
2. Transform our roads for all users
3. Focus on accessibility, inclusion and community
4. Focus on Sustainability
5. Ensuring our own digital transformation is complete

For priority 1 and priority 2 in particular TfNSW identified the following focus areas to achieve smart and automated mobility to successfully deliver the best possible benefits to our customers and the community:

- Collaborative, nation-wide approach to transform the future mobility of people and goods, while also delivering safety outcomes;
- Productivity and automation throughout the entire freight journey by exploring technology and innovation partnerships with the freight industry.
- Passenger fleets including buses, rideshare and cars with the scale up of automation;
- Incremental approach to support the safe adoption of automated vehicles, providing confidence and certainty to industry and the community with the right measures in place to provide for safe and smooth integration of automated vehicles in NSW.
- Compatibility of automated technologies across NSW and identifying future opportunities for optimal use of automated vehicles in a range of passenger and freight services.
- Connectivity technologies and smart infrastructure and digital connectivity on major road corridors and data platforms.
- Incorporation of smart infrastructure into major roads to support connected and highly automated vehicles (CAV). Digital infrastructure will need to be ready to support the growing volume of data and communications flowing between infrastructure, control centres and other connected vehicles. This includes provision of GPS or alternative location services in NSW tunnel network to support CAV.
- Modernisation of the infrastructure to capitalise on the opportunities that will emerge with 5G. Our IT, traffic management and control systems that manage network operations and prioritise traffic movements will need to be able incorporate new sources of data from connectivity technologies and make best use of this data to better manage infrastructure and optimise network planning and operations.

The main user groups relying in the location services are:

- General public for location and navigation services using vehicle or aftermarket devices or smartphones;
- Emergency services organisations (ESO) for location and dispatch services;
- Transport Operators - Fleet management telematics for job dispatch, trip tracking and route management, asset management, fatigue management, etc. Examples are Intelligent Access Program (IAP) managed by TCA and Electronic Work Diary (EWD) system approved by the NHVR.
- Freight and asset tracking (e.g. dangerous goods, high value, biomedical or other sensitive goods).

Standard modern vehicles are equipped with more than 50 sensors with additional aftermarket

fleet telematics and personal device sensors. These sensors generate data that is always referenced in time and in space to the specific location. The examples of the vehicle generated data include (refer NTC reports and Zhang, 2018):

- Movement/location data: Precise geographic location of vehicle (location, timestamp, heading).
- Events/actions: Operational functioning of the vehicle including, but not limited to, anti-lock braking systems (ABS), electronic stability control (ESC) sensor activation, windscreen wiper or hazard light activation.
- Driving behaviour: Information about either the physical state of the driver (for example, eye movement) or how a person drives a vehicle (speed, acceleration, seatbelt status, harsh braking, and lane departure events). This information may be directly from a vehicle's systems or derived information.
- Crash analysis: Data stored and recorded on either the event data recorder (EDR) or data storage system for automated driving (DSSAD) for road safety and user information purposes. This could also include other sensor data not currently stored on board but stored remotely by vehicle data servers.
- Crash response: Crash data messages triggered by airbag deployments and sent to public authorities for emergency crash response (eCall – or automated crash notification systems).
- Asset sensing: Data about how the car perceives its remote environment including infrastructure and other road users. For example, radar/LIDAR/machine vision, tyre pressure or information packets derived from this data. This could be used to indicate potholes or road surface deterioration.
- V2X messages: Data packets generated by vehicles in a structured format that can be consumed by other vehicles or devices, or infrastructure.
- Automated driving, including vehicle handover requests or data relating to the vehicle's operational design domain.

These rapid changes in technology demand accurate location data anywhere on the road network thus requiring immediate start of RNSS repeater deployments wherever the GPS signal is disrupted or not available. This has put pressure on the current prohibition and exemption framework.

TfNSW explored other technologies for location services including Bluetooth (i.e. Waze beacons), Wi-Fi and 5,9 GHz DSRC ITS band location solutions. However all these technologies require further integration with bespoke software development of proprietary additional third-party applications when the API is available (Note Google Waze API for integration with the government or other party systems is not available).

There is also a lot of activity in exploring 5G communications technologies by 5GAutomotive Association (5GAA), a global cross-industry organisation of companies from the automotive, technology, and telecommunications industries (ICT), developing Cellular-V2X using 5G-NR communications that does not require cellular network management in near-field. For example, 5G-MOBIX project will develop and test automated vehicle functionalities using 5G core technological innovations along multiple cross-border corridors and urban trial sites, under conditions of vehicular traffic, network coverage, service demand, as well as considering the inherently distinct legal, business and social local aspects. All these technologies need GNSS/ RNSS service to operate.

In summary, RNSS repeaters are the only solution that can seamlessly work with any RNSS receiver in environments without satellite visibility.

Issue for comment

2. In what ways is the prohibition regime not performing optimally?

3. Are there devices currently not prohibited that should be?

4. Are there devices currently prohibited that should not be?

TfNSW commends ACMA recognising the need to amend the prohibition declarations in order to facilitate the technologies, devices and applications described above.

The exponential technological changes in radiocommunication solutions and devices and evolving user demand for such technologies substantiate the need to review and where merited align Australian Radiocommunication Regulation with international regulations to support the legitimate importation, deployment and usage of new devices in Australia.

ACMA has identified RNSS repeater and simulators as currently prohibited devices that should be allowed for legitimate use for public safety and benefit.

Accordingly TfNSW supports:

- The Draft Radiocommunications (Prohibited Device) (RNSS Jamming Devices) Amendment Declaration 2020 (No.1), which would exempt RNSS repeaters or simulator from the prohibitions and exemptions framework under the Act and allow RNSS signals to be transmitted within areas where RNSS would otherwise not be received (e.g. tunnels), and
- Notice of variation under s191 of the Radiocommunications Act 1992.

Issue for comment

6. How could the ACMA consider facilitating use of meritorious, low risk, and outlier devices and applications in lieu of exemption determinations?

In response to this issue, TFNSW provide the following commentary:

1. TfNSW supports an ACMA Scientific Licencing approach as the fastest way to facilitate the currently proposed RNSS repeater/simulator trials in Sydney road tunnels. Under the technical and operational conditions of the scientific licence the licensees will bear all the risk of trials. It would be beneficial if ACMA publishes the technical guidelines, operational conditions, licence term and associated fee structures for road authorities and operators to further explore the viable technology solutions and prepare for the trials.

2. The timeframe and cost associated with the process of acquiring the scientific licence for each tunnel project would not allow streamlined deployment in the long term. It would be beneficial for ACMA to establish a permanent licencing regime to ensure government and industry confidence in planning infrastructure and technology investments.

3. TfNSW acknowledges that the technical data obtained from the Australian trials would inform ACMA on the most appropriate permanent licencing regime including establishment of technical parameters to protect other radiocommunications services from interference. However, the studies of international trials and existing developments of RNSS repeaters in Europe and North America can provide early input in ACMA investigations. Industry and international regulatory bodies can be engaged to provide

their experience and considerations for both technical and regulatory options. For example, it is understood that FCC is currently determining licencing arrangements for RNSS repeaters.

4. Accordingly investigations into the permanent licencing regime can start immediately without waiting outcomes of the trial in road tunnels. This would allow major road tunnel projects like Western Harbour Tunnel, Beaches Link and M6, currently in planning stage, to introduce RNSS repeater requirements.

5. A long term licencing regime could consider either apparatus or class licences. The licence should provide confidence in investment for the Government or ESOs with long term and low or no cost due to the public benefit. TfNSW believes that the class licence would offer the best option similar to the ITS licence on 5,9 GHz band.

6. Similarly the radio rebroadcasting (AM/FM/DAB+ and 2Way) and Government Radio Network, used by NSW government and ESOs, rebroadcast services are currently deployed in all road tunnels under Class Licencing. The deployments of RNSS repeaters can leverage investment by utilising radio distribution system in the existing road tunnels.

7. Class licence can be geo-fenced to limit the use only in road tunnels with properly managed boundary conditions. More complex radio propagation environments with distortion of RNSS signals such as urban canyons can be explored further with alternative regulatory regime.
8. The long-term approach should not limit enabling RNSS repeaters for other RNSS-denied environments (such as railway tunnels and stations) to include support of emergency management activities.

Facilitating trials of RNSS repeater devices in road tunnels

TfNSW have formed a working group with NSW Telco Authority, Ambulance NSW, Fire and Rescue NSW, and NSW Police Force. The NSW working group sought to identify a solution path which is effective for the range of different emergency services organisations' technologies required to assist in asset dispatch and other emergency management activities that utilise location services. The working group identified that an RNSS repeater solution was appropriate to achieve this as it is non-proprietary, robust and compatible with mission-critical emergency services operational technologies.

TfNSW as part of the working group are supportive of the commencement of the RNSS repeater devices trials to occur as soon as practicable. TfNSW led the working group's development of a proposed three-stage trial of an RNSS simulator network involving input from Fire and Rescue NSW, NSW Police Force and NSW Ambulance. As progress on the delivery of the Sydney road tunnel network continues in stages, time is of the essence to complete the trials.

Thank you for your consideration.

Regards,

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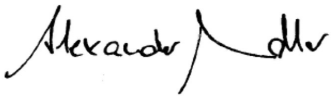 10/7/2020

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