

Triple Zero service outage Submission 16 - Attachment 1

Subject: Serious unintended consequences of the VoLTE transition from 3G now at criticality
From: Timothy Chant <[REDACTED]@[REDACTED]>
Date: 2024-10-30, 4:35 am
To: Minister.rowland@mo.communications.gov.au

Hon Michelle Rowland MP,

My name is Tim Chant, I am an electronics design engineer in Brisbane (Griffith electorate). For context as part of my professional employment I have developed and deployed systems that require custom 4G LTE/NB-IoT solutions and thus have dabbled in many of the specifications including low level modem configuration.

You have no doubt received a number of complaints about the **current artificial blocking of 4G and 5G devices** to force people to "upgrade" to a compatible device due to the very recently introduced and executed *Telecommunications (Emergency Call Service) Amendment Determination 2024 (No. 1)*. I did not contact you prior to the 3G shutdown as I did not think it could be possible for the industry to introduce such a **catastrophically unsafe** transition plan and did not know of it fully until last Friday's SMS (**2 1/2 days notice before the shutdown**) and did not believe the wording until seeing warnings from other members of industry. I must stress the 4G & 5G device blocking I did **not** know about, the GSM calling shutdown I did know about for several months as the wording on 3gclosure.com.au **still to this day** implied would have happened without device blocking but **I did not fully understand just how much was overlooked by industry and governance until now.**

What was widely communicated for several months prior to the shutdown:

- The **small number of remaining 3G only devices** will **lose all service including emergency calling**
- A **small number of older 4G devices** will lose all calling capabilities **but still be able to use SMS and data**
- Affected customers will be offered financial support and/or a replacement device
- Faster 4G and 5G speeds
- Improved call quality
- The same or better network coverage, particularly for rural areas

What the shutdown actually did, the bad:

- Approximately **39,000** 3G only devices lost all service including emergency calling
- Approximately **258,000** old **and brand new 4G and 5G** devices **lost all service including calling, SMS and data**
- An unknown number of old, brand new and future 4G and 5G devices will be directly negatively affected, this number is estimated to be **at least 740,000, but possibly more than 2,300,000** and will continue to increase, there is no upper bound estimate and **it is impossible to know** without individually testing every handset configuration what is affected
- An unknown number of old, brand new and future 4G and 5G devices **on Australian carriers supported devices lists** (eg. **2024** Samsung Galaxy S24 Ultra, but SM-S928W CA variant) **can no longer** use calling, SMS, data or **place a 000 emergency call** in areas of Australia that were previously served by 3G but have been replaced with 4G on the often unsupported LTE band 28
- An unknown number of old, brand new and future 4G and 5G devices **on Australian carriers supported devices lists** can still use VoLTE calling, SMS and data **but can no longer place a 000 emergency call** due to the limitations of carrier specific modem configurations and their **unknown** compatibility issues with **VoLTE emergency calling camp-on or roaming**
- An unknown number of old, brand new and future 4G and 5G devices not on carriers supported devices lists that **could previously make VoLTE calls and VoLTE 000 emergency calls are now artificially blocked from all networks** under the new legislation causing **significant and unnecessary financial hardship**
- An unknown number of old, brand new and future 4G and 5G critical infrastructure devices are **blocked from accessing the 4G and 5G networks** as carriers do not know what type of device they are apart from their TAC/IMEI modem information
- An unknown number of old, brand new and future 4G and 5G calling devices that are not phones (eg. a SOS help point on a highway or a 000 emergency call point) that are mis-configured to only place **GSM emergency calls by default for every other country** will **no longer be able to place a 000 emergency call or call to any privately monitored emergency number**
- An unknown number of old, brand new and future 4G and 5G devices will **unnecessarily become useless e-waste polluting Australia** and cause **significant and unnecessary financial hardship** on individuals and small/large businesses, likely in excess of **AU\$1 billion**
- Carriers now have a monopoly on device sales as customers are unable to purchase devices from overseas markets either online or in person or bring their existing device to Australia with any confidence they will continue to work without being artificially blocked or have limited coverage or have no calling capabilities - this will cause discriminatory pricing
- Carriers now have a new mechanism to prevent people from switching carriers on unlocked devices due to compatibility issues between Telstra and Vodafone/Optus modem configurations for VoLTE calling and all emergency calling
- Some affected customers were offered AU\$50 network locked 'feature phones' to replace their brand new artificially blocked >\$1,500 flagship smartphones
- People face a significantly increased risk of being misled or scammed when buying or selling second hand devices that are visually indistinguishable from ones affected by the artificial blocking legislation or that lack LTE n28
- Research and development for devices will be negatively affected due to reduced participation in enthusiast groups due to artificial blocking of modified devices and increased complexity and high barrier to entry for VoLTE calling that is regularly ignored by industry
- In my opinion there will likely be **at least one serious incident resulting in at least one death before 2025** in Australia of an Australian citizen or foreign traveler with the **premature and mishandled transition being a major or the primary contributing factor**

The good:

- Carriers are now able to improve 4G and 5G data speeds and maximum concurrent devices on a select number of remaining devices in major population areas during times of peak demand by reusing the 3G spectrum for additional data bandwidth (device must support LTE/NR bands n5, n8, n26)
- Carriers are now able to reduce/remove the cost of maintaining the 3G system
- Improved call quality for a "small number" of devices that received OTA updates to support VoLTE

There is a very good reason why all other countries are committed to supporting either 3G or 2G until the late 2020s or early 2030s.

Can the current most popular phones in [country] with [carrier's] modem configuration make a VoLTE emergency call in Australia?

I have not seen any information anywhere that could answer this question with any confidence. All I have seen is misinformation, half-truths and inadequate testing. What testing I have seen points to **the majority of roaming devices being unable to call Triple Zero without 3G.**

Product Safety Risk Assessment Methodology (PRISM)

Table 4: Level of risk (all items)				
Estimated number of items in use	Risk associated with single item (derived from Table 3)			
	Low	Medium	High	Serious
>1m	High	Serious	Serious	Serious
500k – 1m	Medium	High	Serious	Serious
100k – 500k	Medium	High	High	Serious
50k – 100k	Low	Medium	High	Serious
10k – 50k	Low	Medium	High	Serious
1k – 10k	Low	Medium	High	Serious
<1k	Low	Medium	High	Serious

Australia's no fallback un-standardised n28 dependant 4G emergency calling implementation goes somewhere here

This **risk is intolerable** there **must be rapid intervention of the highest priority and urgency to mitigate this.**

What should be done?

- Immediately **delay the 3G shutdown** of at **least one MNO's 3G network** (likely Telstra) at bare minimum in high risk areas until:
 - market penetration of LTE band 28 for devices used by Australians and international roamers visiting Australia (not just those sold by carriers) reaches the vast majority of devices **AND**
 - Telstra is forced to fully support an open market VoLTE standard or other global calling standard that fixes current issues with incompatible modem configurations for emergency calling **AND**
 - current devices that do not support VoLTE roaming reach the end of their reasonably expected life and no longer account for a significant percentage of roaming devices in Australia **AND**
 - an emergency calling test system is implemented for device manufacturers and the public to use to test their device capabilities (not just the existing IGN 020 and 12722 123) **AND**
 - a better media package detailing the complexities of switching from GSM to VoLTE that can affect current and future 4G and 5G devices to avoid the false and misleading information that this just a 3G shutdown that only affects "a small number of older 4G devices" leading to complacency
- Immediately reverse the *Telecommunications (Emergency Call Service) Amendment Determination 2024 (No. 1)* **unlocking all devices** and revise it to:
 - only notify existing customers with an affected or potentially affected device via a recorded voice announcement, SMS or other point of contact (eg. physical mail) as carriers have already been doing (I would say this is already complete)
 - accurately notify new or existing customers with an affected or potentially affected device with the reason why their device may be affected (very important for tourists). Not just "identified as affected by the 3G shutdown" but examples like:
 - "identified as not being capable of VoLTE emergency calling. Find out more: here"
 - "identified as not having band 28 coverage. Find out more: here"
 - "identified as an unknown device with unknown calling capabilities. Find out more: here"
 - implement a system for customers to have this message removed if they can demonstrate VoLTE 000 calling to a test system (devices must call the real 000, load spreading must be done, customers should be asked to call at certain times by invitation or done at a carrier store)
 - implement a system for customers to formally acknowledge they understand this warning and continue using their device with limited or unconfirmed calling, SMS and data without being blocked (not everyone's device is their primary phone they actually use for calling, would be similar to NBN fixed line waiver)
 - not artificially block any device from calling, SMS or data unless the carrier can demonstrate it is a non-critical calling device and the registered service owner has not requested the above device waiver (may be useful to notify certain device user groups with non-phone calling devices)
 - not artificially block any device from emergency calling

Disclosure:
I have three 4G and 5G devices affected by the shutdown.

- 2021 Sony Xperia 1 III - 5G - artificially blocked, supports VoLTE 000 emergency calling (tested as working), supports all AU bands, has Telstra modem configuration
- 2023 Samsung Galaxy A11 - 4G - artificially blocked, supports VoLTE 000 emergency calling but unknown if it could do a roaming emergency call, but not LTE band 28, has a Canada modem configuration
- 2024 custom pieces of farming infrastructure - 4G - artificially blocked, you physically can't make a phone call on it, it's not a phone, but uses the same 4G data modem as some public emergency call points that are configured for GSM calling

Thank you for your time and attention,
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