Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots

Version 03/2025

Queensland Government

Contents

Glossary of Terms

Building	A building is a fixed structure that is wholly or partly enclosed by walls or is roofed.
Structure	For this document refer to definition of a Building.
Fire Truck	A vehicle used to combat a fire. A typical fire truck (a pumper) is approximately 2.5m wide, 7.7m long and it is typically used in urban residential areas. Further specifications of fire trucks and larger trucks are available in the Appendix.
Hydrant	An assembly installed on a branch from a water pipeline, which provides a valved outlet to permit a supply of water to be taken from the pipeline for firefighting. These include above and below ground hydrants.
QFR	Queensland Fire and Rescue (part of the Queensland Fire Department).
Material Change of Use:	As per the *Planning Act 2016*
Reconfiguration of a Lot	As per the *Planning Act 2016*
Reticulated Water Supply	Is a permanent infrastructure provided to deliver treated water to lots from an Urban Utility Authority through a system of pipes, mains, control valves etc. for household or industrial use. It will supply uninterrupted water at a positive pressure for firefighting purposes.
Road or Carriageway	Construction which is specifically designed for all vehicle travel (may or may not include a sealed top surface layer).
A Constructed Road	For the purpose of defining widths, includes the part of the road reserve set aside for traffic and also includes roll-over kerbs but does not include the remaining part of the road reserve.
Trafficable Width	Refers to that width of the constructed road that is unimpeded by encroachments like street furniture or landscaping and is available for free movement of fire trucks.

1. Scope

For applications seeking development approval for material change of use or reconfiguring a lot for the purpose of building, where streets and common access ways are proposed regardless of building classification.

Where reticulated hydrant systems and vehicle access are not currently required under the *Planning Act 2016* (PA), the *Building Act 1975* or National Construction Code (NCC) the measures in this document should be adopted.

Australian Standard 2419.1 is a minimum standard of design and performance for the State of Queensland. In a local government authority where a local water authority specifies a design and performance criteria above the requirements of AS 2419.1, the local water authority requirements will be adopted, including any Local Council Planning Scheme Policies.

For the installed reticulated hydrant systems, the minimum water flow rate and pressure is to be 10L/S @ 200Kpa as per AS 2419.1 (for buildings with Class 2 - 9 only). In a local government authority where a local water authority specifies a flow rate and pressure above the requirements of AS 2419.1, the local water authority requirements will be adopted.

For fire truck access, a minimum width and height clearance for roadways is required. Constructed roads must comply with Government legislation such as the 'Road Planning and Design Manual'.

2. Introduction

The loss of life and property damage by fire in residential, commercial, and industrial premises is a major concern to QFR. For this reason, lot reconfigurations need to be designed to provide ready access for fire trucks, whilst providing a firefighting water supply from a hydrant system.

Water supply and access requirements for material change of use or reconfiguring a lot within this document are a planning tool and advice for building and developer applicants, it is not the intent of this document for land development applications to be referred to QFR. They outline fire safety requirements to enable QFR to efficiently manage fire incidents.

This document reflects Queensland Government policy of promoting sustainable development that achieves economic, social, and environmental objectives, including safety. The provisions are flexible allowing planners and designers to economically achieve safety objectives without compromising aesthetics or amenity.

3. Where These Guidelines Apply

These guidelines apply to all material change of use or reconfiguration of a lot that will include streets and common access ways within a common private title in areas serviced by reticulated water within Queensland, for residential buildings (including Gated Community Developments), both attached and detached commercial or industrial buildings that are not covered in other legislation or planning provisions.

For example, this would apply to planned townships or reconfigurations regardless of current fire service intervention. A Private Gated Community Development would be a development where the local water authority has provided a water connection where a backflow device has been installed at the

boundary of the property.

4. Water Supply Specification

Installed reticulated hydrant systems are to be located on roadways or access ways for all material change of use and reconfigured lots for firefighting purposes as per AS 2419.1 that provides a minimum standard for hydrant intervals. In a Local Government Authority where a local water authority specifies a design and performance criteria above the requirements of AS 2419.1, the local water authority requirements will be adopted.

For the installed reticulated hydrant systems, the minimum water flow rate and pressure is to be 10L/S @ 200Kpa as per AS 2419.1 (for building Class 2-9 only). In a Local Government Authority where a local water authority specifies a flow rate and pressure above the requirements of AS 2419.1, the local water authority requirements will be adopted.

4.1 Hydrant Provision

Expectation	Acceptable Outcomes
Where reticulated water is available, operable hydrants are to be provided.	Hydrants above or below ground should be provided and maintained to the minimum required performance standard as per AS 2419.1, including requirements of QDC MP 6.1 - Maintenance of Fire Safety Installations. Note: QFR recommends pillar hydrants be installed, for safe operational needs, ongoing maintenance requirements, and finding hydrants in emergencies. Note: Where the NCC requires a Class 2 - 9 building to have a hydrant system installed on-site hydrants shall be above ground pillar hydrants as per AS 2419.1.

Rationale:

Firefighters use water as a prime extinguishing medium for structure fires. Reticulated water mains have hydrants placed at regular intervals to enable firefighters to connect into the reticulated system. The water is pressurised by pumps in the fire truck and delivered via hoses to the fire.

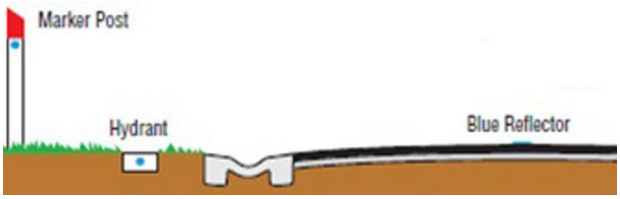
Hydrant locations on reticulated water mains.

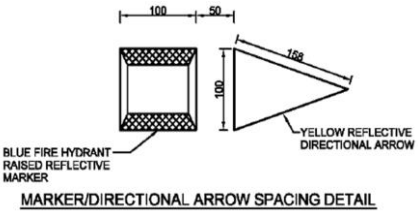
4.2 Hydrant Markers

Expectation	Acceptable Outcomes
Hydrants are suitably identified so that firefighters can locate them at all hours	Blue cat's eyes are preferred for sealed roads. Marker posts at the fence line should be used to identify hydrants where there is an unsealed road as road (HR) or path (HP) hydrants. Below are examples of marker locations.

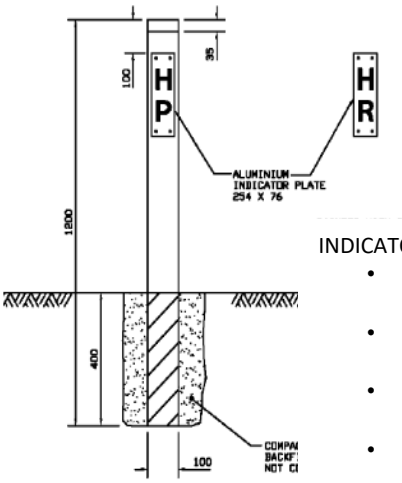
Rationale:

Firefighters need to quickly locate water supplies in emergencies. Hydrant indicators need to be visually identifiable from both directions by the approaching fire truck crews and must identify the location of the hydrant.





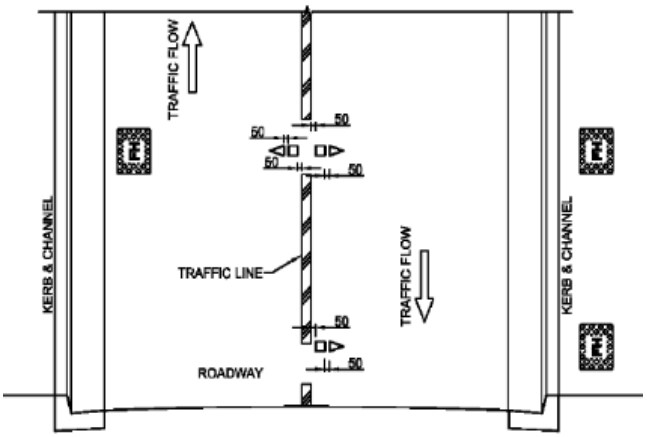
MARKER/DIRECTIONAL ARROW SPACING DETAIL



FRONT ELEVATION

INDICATOR PLATES

- 254 x 76 aluminium indicator plate.
- Fix top and bottom with galvanised clouts.
- HP indicates hydrant located in footpath.
- HR indicate hydrant located in road carriageway.



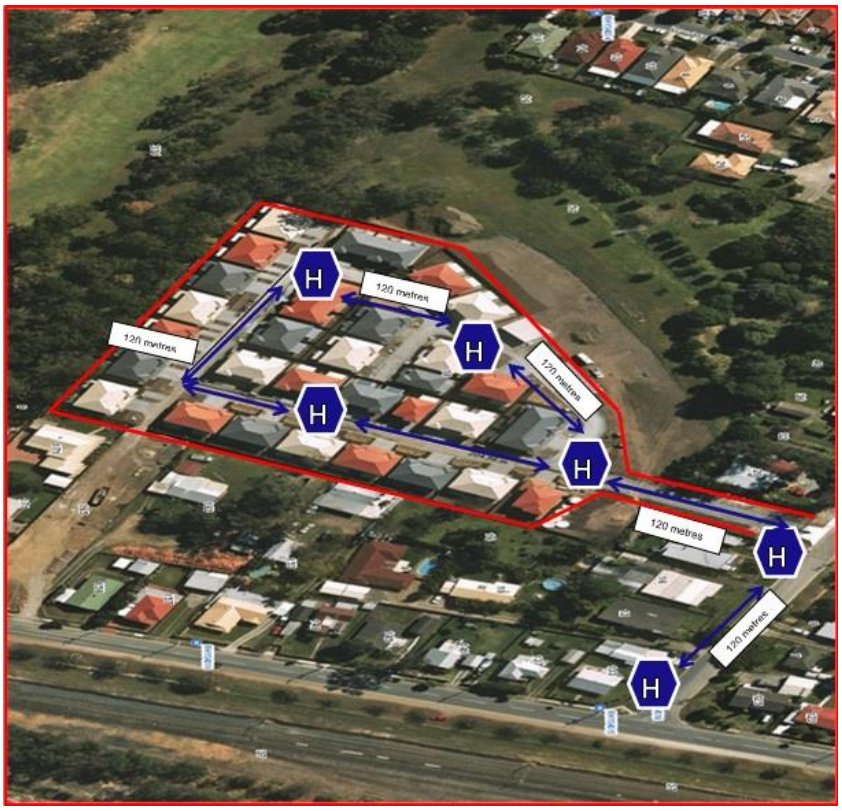
MARKER MOUNTING DETAIL 3
SINGLE CENTRE TRAFFIC LINE
FIRE HYDRANT IN FOOTPATH & ROADWAY

4.3 Hydrant Location

Expectation	Acceptable Outcomes
Hydrants are located in positions that will enable firefighters to access water safely, effectively, and efficiently.	Residential Streets and Accessways Above or below ground fire hydrants should be provided at not more than 120m intervals along residential streets and at each street intersection. Above ground fire hydrants may be single outlet. Commercial and Industrial Streets and Accessways Within streets serving commercial properties such as factories, warehouses, and offices (building classes 2 - 9 not requiring hydrants by NCC), above or below ground fire hydrants should be provided at not more than 90m intervals and at each street intersection. Above ground fire hydrants should have dual valved outlets.

Rationale:

Upon arriving at a structure fire, firefighters site the fire truck with considerations to safety, access to the fire, other responding trucks, and accessible water supply for firefighting purposes. Firefighters have an expectation that fire hydrants will be located on reticulated water systems no more than 120m apart as per AS 2419.1. QFR equipment, procedures and the training of personnel is based on this preferred standard of fire hydrant placement and associated access requirements.



Note: Hydrants should be located at each intersection.
With this in mind, hydrant interval distances should not exceed 120m.

5. Vehicle Access Requirements

Fire service vehicular access is to enable the service to intervene to fight the fire, assist with evacuation and stop the spread of fire to another building.

A minimum roadway clearance of 3.5m wide by 4.8m high is required for a fire truck. Constructed roads must comply with Government legislation as specified in the 'Road Planning and Design Manual'.

5.1 Road Width and Height

Performance Outcomes	QFR Acceptable Outcomes
Roads are wide enough for fire trucks to gain access to a safe working area close to dwellings and water supplies whether or not on-street parking spaces are occupied.	Constructed roads must be as specified in the 'Road Planning and Design Manual'.

5.2 Road Construction

Performance Outcomes	QFR Acceptable Outcomes
Roads must be constructed to facilitate the safe passage of a laden fire truck in all weather conditions.	Roads must be constructed to a standard so that they are accessible in all weather conditions and capable of accommodating a vehicle of 15 tonnes for the trafficable road width as specified in the 'Road Planning and Design Manual'.

For specific details on QFR fire trucks, please refer to the Appendix or contact QFR. Contact details for specific areas are available at www.fire.qld.gov.au/compliance-and-planning.

5.3 Road Grades

Performance Outcomes	QFR Acceptable Outcomes
Grades of roads must facilitate the safe passage of fire trucks.	The average grades, dips, and exit angles must be addressed as specified in the 'Road Planning and Design Manual'.

Rationale:

Steep slopes affect the free movement of trucks and hinder safe firefighting. Severe short dips may limit access due to the overhang of the body from the wheels.

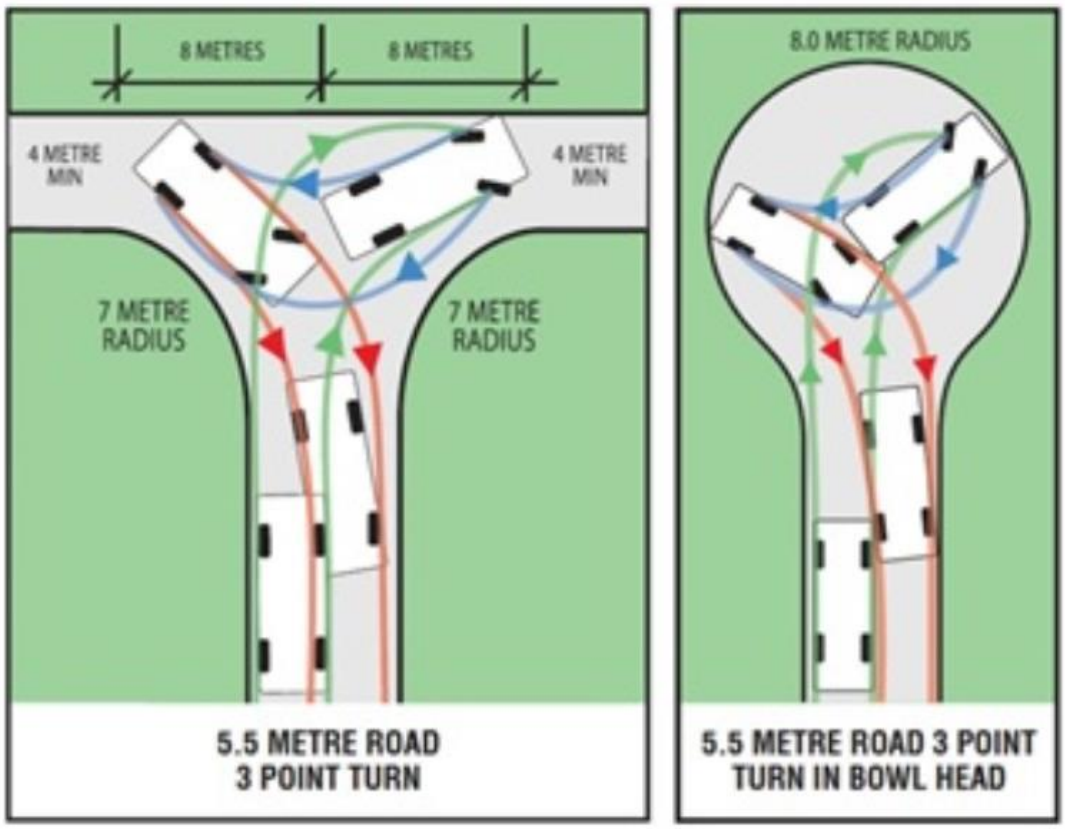
5.4 Turning Bays

Performance Outcomes	QFR Acceptable Outcomes
Provision is made for fire trucks to turn at the end of dead-end roads.	Constructed roads more than 60m in length from the nearest intersection must have a turning circle with a minimum radius of 8m (including roll-over kerbs if they are provided). Other solutions using T or Y heads of specified dimensions are also appropriate. See figure 2 in the 'Road Planning and Design Manual'.

Rationale:

It is dangerous for emergency vehicles to be required to reverse along roads for excessive distances in urban areas. Turning is normally carried out after the incident is under control when emergency movement is not required. Even then, large trucks reversing in residential areas create safety concerns.

Fire trucks occasionally need to seek an alternative route necessitating a 180˚ turn in emergency conditions. Using a three-point turn, fire trucks require a turning circle radius of 8m to turn safely. Alternative designs using specified T or Y heads are also appropriate. This area needs to be clear of obstructions.



Turning Examples

Appendix

QFD Vehicle Specifications

Vehicle	Dimensions (metres)					Turning Circle	
Vehicle Description	Height	Head Clearance	Total Length	Width	Gross Mass (kilograms)	Wall to Wall	Curb to Curb
Urban Pumper - Medium (**Type 3** -UPUMPM) Scania P280	**3.100**	**3.800**	**8.265**	**2.500**	**18600**	**16.5**	**15.2**
Urban Pumper - Medium (**Type 3** -UPUMPM) Scania P320/P360	3.100	3.800	8.443	2.500	18000	17.6	16.1
16m Telescopic Aerial Pump (**Type 4A** - UTAP16) Freightliner	3.700	4.100	9.045	2.450	16000	23.0	22.0
4x2 Pumper / Tanker - Light (**Type 1** - UPT4x2L) Mitsubishi FK417	3.000	3.200	7.500	2.440	11000	19.8	17.4
4x2 Pumper / Tanker - Medium (**Type 2** - UPT4x2M) Mitsubishi FM618	3.500	3.500	7.580	2.440	13500	22.1	19.6
4x2 Pumper Tanker - Medium (**Type 2** - UPT4X2M) Isuzu FTR900	3.226	3.500	8.184	2.450	15000		
4x2 Pumper Tanker - Medium (**Type 2** - UPT4X2M) Isuzu FTR900	2.910	3.500	8.300	2.470	15000	23.0	20.0
4x2 Pumper Tanker - Medium (**Type 2** - UPT4X2M) Isuzu FTR900	3.100	3.600	8.540	2.470	15000	18.1	16.0
4x4 Pumper Tanker - Medium (**Type 2** - UPT4X4M) Isuzu FTS 800 4x4 crew	3.300	3.600	8.600	2.500	13900	22.3	20.7
Hydraulic Platform Turntable Ladder (**Type 6L** - UALP40) Scania P1134 (8x4)	3.750	4.300	11.710	2.450	33000	30.7	29.1
Hydraulic Platform Turntable Ladder (**Type 6L** - UALP30) Scania P114G (6x4)	3.600	4.180	9.142	2.500	26100		
Hydraulic Platform Turntable Ladder (**Type 6L** - UALP44) Scania P380 (8x4)	3.700	4.180	11.005	2.500	40000	23.0	22.0
Urban Pumper - Light (**Type 3** - UPUMPL) Mercedes Atego	2.900	2.900	7.860	2.500	16000	19.4	17.1
Urban Pumper - Medium (**Type 4** - UPUMPM) Scania P94DB	2.960	3.150	8.350	2.500	18600	18.4	16.8
Urban Pumper Tanker - Heavy (**Type 4T** - UPTH) Scania P94GB (6x4)	3.064	3.150	9.757	2.450	26100	20.8	19.2
4x4 Pumper / Tanker Light (**Type 2[4x4]** - UPT4x4L)	2.700	3.129	5.900	2.450	10000	17.4	15.2
4x4 Pumper / Tanker Medium (**Type 2 [4x4]** - UPT4x4M)	3.300	3.900	7.600	2.460	13000	20.5	18.0
Hazmat Tender Light (**Type 8** - UHAZL) Mercedes Sprinter Van	2.610	2.800	6.589	1.988	4490	14.3	13.6
Hazmat Tender Heavy (**Type 8** - UHAZH)	3.500	3.550	10.755	2.440	26100	24.2	21.8
Hazmat Tender Medium (**Type 8** - UHAZM)	3.600	3.700	10.020	2.500	16000	24.2	21.8
Rescue Tender Light (**Type 5** - URTL)	2.640	2.800	6.600	2.400	8650	16.5	
Rescue Tender Medium (**Type 5** - URTM)	3.100	3.800	8.200	2.500	16000	16.5	15.2

QFD Vehicle Specifications

Vehicle	Dimensions (metres)					Turning Circle	
Vehicle Description	Height	Head Clearance	Total Length	Width	Gross Mass (kilograms)	Wall to Wall	Curb to Curb
Urban Incident Support Vehicle - Command	3.800	3.900	9.150	2.500	16000	19.4	17.1
Urban iZone medium	3300	3300	6670	2200	7500		
Urban iZone Light - Landcruiser	2900	2900	5410	2400	4200		
Urban iZone Light - Canter	2800	2800	5670	2150	6500		
4x2 Pumper Tanker - Medium (Type 2 - UPT4X2M) Isuzu FTR 150-260	3.1	3.1	8.46	2.4	15000	18.1	16.0
4x4 Pumper Tanker - Medium (Type 2 - UPT4X4M) Isuzu FTS 139-240 4x4 crew	3.3	3.3	8.44	2.4	13900	22.3	20.7
USAR- Prime Mover Scania R500	4.2	4.5	6711	2.5		9.1	8.6
Combined Aerial Pumping Appliance (CAPA)	3.900	4.200	10.050	2.500	26000	20.8	19.2
Hydraulic Platform (HP)	3.850	4.000	12.070	2.500	33200	23.0	22.0
UTank	3.020	3.300	8.628	2.450	26600		
Type 4 Heavy	3.200	3.400	9.736	2.450	19880		