

**Appendix B Coarse Screening**

Infrastructure Options	Option Description	Feasibility	Maintainability	Effectiveness for Fighting Fires							Comments	Conclusion
				Meets Fire Code	Water supply	Ease of Connection	Security	Visibility/Accessibility	Robustness/Reliability	Resourcing		
<b>CBD</b>												
Fire wells	Replace existing fire wells with improved but essentially similar fire wells as those presently in place	😊	😞	😞	😞	😞	😞	😊	😞	😞	Unreliability and in-effectiveness for fighting fires makes this option unacceptable. Fire service cannot effectively contain fires using such fire wells, will only use as part of a mop up phase for fires using non critical equipment	Discount
High Capacity Fire Wells	Replace existing fire wells with significantly higher quality fire wells - larger diameter, concentric rings, to depth and screened.	😊	😞	😞	😞	😊	😊	😊	😞	😞	Similar to the existing fire wells but constructed to a higher standard which means a more secure and easily used system. Is still subject to fluctuation of water level in the wells during the summer period and water may not always be available.	Consider
Pumped Fire Wells	Replace fire wells with deep bores, submersible pumps and electrical control system that will allow pumping from groundwater into the fire appliance	😊	😞	😞	😊	😊	😊	😊	😞	😊	Requires high capital works to install wells with pumps and electrical supply and control equipment for each well. Siting of wells in CBD not easy and maintenance will be difficult.	Consider
Distributed Storage	Site storage tanks at strategic locations around the community and install pipework from each tank to hydrant in road.	😊	😞	😞	😊	😊	😊	😊	😊	😊	Requires significant no. of tanks located in CBD. Filling needs to be either via wells or tankering which will be onerous. Could be subject to vandalism and requires monitoring.	Discount
Tankering to Fire	Provide tanker and tanker filling facilities and transport water to fire	😊	😊	😞	😞	😞	😊	😊	😊	😞	For a fire in CBD will not supply sufficient water to fight fire on multiple fronts. Will require a number of fire fighters to get tanker to site before fire fighting can even be started. Unable to rely on having tanker at fire in time to contain fire from spreading.	Discount
Building Sprinkler Systems - commercial	Individual property owners install internal sprinkler systems in commercial buildings (CBD)	😞	😞	😞	😊	😊	😊	😊	😞	😊	Relies on individual owners installing and maintaining water supply. Each building system will be expensive to install and maintain - especially given present practice of single wells serving multiple buildings. Any one property owner failing to keep their system fit for purpose could compromise all other buildings in CBD. Fire service will have no facility to do anything to fight fires other than present facilities. Considered a great individual property owner protection measure but not recommended as sufficient protection for entire community.	Discount
Low-pressurised Fire Main (Pipeline)	Fire main with water at low pressure to allow fire services to suck from a main	😊	😊	😞	😊	😊	😊	😊	😞	😞	Provides a suitable source of water but relies still on pumping of water into fire truck from wells. This means delays in connection and is demanding on resources.	Discount
Water Tower and Fire Main (Pipeline)	Water Tower connected to fire main. Includes Well and pumps to get water up tower	😞	😊	😊	😊	😊	😊	😊	😊	😊	Is probably not feasible due to the design and construction issues for a large top heavy tower. To meet fire service standard - need residual water pressure at hydrant of 10m and 45 m3 storage. To achieve this, water tower would need to be 15m to 20 m high. This would be a major construction.	Discount
Pressurised Fire Main (pipeline)	Fire main with pumps and pressure cylinders to provide a pressurised main	😊	😊	😞	😊	😊	😊	😊	😊	😊	Good system, provides good supply of water. There will be some delay with achieving full supply immediately. Relies on mechanical & electrical equipment to meet flow demands which slightly reduces reliability. Doesn't meet fire code because no storage provided.	Consider
Pressurised Fire Main Pipeline) with Reservoir Storage	Fire main and reservoir at elevation to pressurise system and provide water volume at height	😊	😊	😊	😊	😊	😊	😊	😊	😊	Best system meets all requirements for simplicity, ease of use, security and fire fighting capability	Consider

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				Meets Fire Code	Water supply	Ease of Connection	Security	Visibility/Accessibility	Robustness/Reliability	Resourcing		
<b>Outside CBD</b>												
Fire wells	Replace existing fire wells with improved by essentially similar fire wells as presently deployed	😊	😞	😞	😞	😞	😞	😞	😞	😞	Unreliability and in-effectiveness for fighting fires makes this option unacceptable. Fire service cannot rely on fire wells working due to groundwater and security issues. Will only use as part of mop phase for fire using non critical equipment	Discount
High Capacity Fire Wells	Replace existing fire wells with significantly higher quality fire wells - larger diameter, concentric rings, to depth, screened.	😊	😞	😞	😞	😊	😊	😊	😞	😞	Similar to the existing fire wells but constructed to a higher standard which means a more secure and easily used system. Is still subject to fluctuation of water level in the wells during the summer period and water may not always be available. Requires a large number of wells to be put in to cover the wider community.	Consider
Pumped Fire Wells	Replace fire wells with deep bores, submersible pumps and electrical control system that will allow pumping from groundwater into the fire appliance	😞	😞	😞	😊	😊	😊	😊	😞	😊	Requires high capital works to install wells with pumps and electrical supply and control equipment for each well. Unfeasible across the residential area at 90 m centers.	Discount
Building Sprinkler Systems - dwellings	Individual property owners installing internal sprinkler systems in every dwelling	😊	😞	😞	😊	😊	😊	😊	😞	😊	Is practical and recommended for individual property owners and would save houses in case of fire. Requires high set up costs for each premises. Will be difficult to enforce, fire service would become by-stander, with no facility to fight fires where sprinkler systems fail or aren't installed.	Discount
Distributed Storage	Sitting storage at strategic locations around the community	😞	😞	😞	😊	😊	😊	😊	😊	😊	Not practical for a large scale deployments in residential area.	Discount
Tankering to Fire	Providing facilities for fire trucks to fill storage and port water to fire	😊	😊	😞	😊	😊	😊	😊	😊	😞	Is practical for residential dwellings where not having to fight fire on multiple fronts. High demand of resources and will take time to bring water to bear on fire. However for residential building as opposed to CBD building, could provide an interim measure until a more robust system could be afforded. Community would have to accept this as a less than ideal solution.	Consider
Low-pressurised Fire Main	Fire main with water at low pressure to allow fire services to suck from a main	😞	😊	😞	😞	😊	😊	😊	😊	😞	Impractical on a large scale due to friction loss over distances involved which would make it impossible to get the required flows from the main.	Discount
Water Tower and Fire Main	Water Tower with elevation connected to fire main	😞	😊	😊	😊	😊	😊	😊	😊	😊	Unfeasible due to design and construction of a large tower. Would either need very high tower or multiple towers across the community to provide adequate coverage.	Discount
Pressurised Fire Main	Fire main with pumps and pressure cylinders to provide a pressurised main	😞	😊	😞	😊	😊	😊	😊	😊	😊	Good system, provides good supply of water. There will be some delay with achieving full supply immediately. Relies on mechanical & electrical equipment to meet flow demands which slightly reduces reliability. Doesn't meet fire code because no storage provided.	Consider
Pressurised Fire Main with Reservoir Storage	Fire main and reservoir at elevation to pressurise system and provide water volume at height	😊	😊	😊	😊	😊	😊	😊	😊	😊	Best system meets all requirements for simplicity, ease of use, security and fire fighting capability	Consider