



WATER SERVICES
ASSOCIATION OF AUSTRALIA



WSAA SUBMISSION

Consultation Paper for Review of the
Guidelines and Essential Users Determination
under the Liquid Fuel Emergency Act 1984



13 September 2018

Emergency Management and Preparedness Section
Department of the Environment and Energy
GPO Box 787
CANBERRA ACT 2601

SUBMISSION: Consultation Paper for Review of the Guidelines and Essential Users
Determination under the Liquid Fuel Emergency Act 1984

Adam Lovell

Executive Director
Water Services Association of Australia
Level 9, 420 George Street
SYDNEY NSW 2000

Ph: (02) 8397 7291

Email: adam.lovell@wsaa.asn.au

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About WSAA

The Water Services Association of Australia (WSAA) is the peak body that supports the Australian urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises. WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. The collegiate approach of its members has led to industry wide advances to national water issues.

WSAA welcomes the opportunity to provide a submission to the Department of Environment and Energy on the Communications Alliance on the Consultation Paper for Review of the Guidelines and Essential Users Determination under the Liquid Fuel Emergency Act 1984, August 2018 (The Consultation Paper).

Summary of the water industry position

The Liquid Fuel Emergency (Activities – Essential Users) Determination 2008 provides a predetermined list of Essential User activities in relation to a Liquid Fuel Emergency (LFE). The Australian water industry supports the primary objectives of the Determination and the National Liquid Fuel Emergency Response Plan (NLFERP) Framework. However, we believe that the Essential User activities listed in the determination are too narrow and do not consider the critical nature of water utility activities.

The 1984 guideline to section 11 of the LFE Act defines an 'Essential User' of liquid fuels as needing to fit one of three categories. The first of these is that the user provides goods and services essential for the preservation of the health, safety and general welfare of the community. We believe that the services provided by water utilities, which rely on liquid fuels for their delivery, fit firmly into this category.

The NLFERP objectives approach to Essential Users states three principles. This paper aims to demonstrate how water utilities are compliant with each of these principles, namely:

- 1) the provision of goods or services which, if reduced in supply or availability, would be likely to seriously damage the health, safety or welfare of the community;
- 2) Essential User fuel supply is to be restricted to those cases in which the fuel allocation is essential for providing the service. Fuel will be essential to the provision of the service where there is a direct connection between the supply of service being provided and the supply of fuel;' and
- 3) Only vehicles that are readily identifiable as belonging to an essential User category will be entitled to fuel as an Essential User during a period of retail rationing.

It is the intention of this paper to show that maintaining liquid fuel supplies to water utilities is essential to the functioning of urban and regional towns in the event of an LFE. In doing this we will outline changes that have occurred with the running of urban water utilities and also recent external factors such as climate which exacerbate the need for water utilities to be classified as an Essential User in an LFE.

Background

Water utilities supply drinking water and remove sewage from properties. They also undertake treatment of drinking water and sewage to ensure protection of public health and the environment. The majority of water and sewage treatment plants, along with water and sewer supply infrastructure operate using power supplied by electricity and in some cases gas from the grid.

However, it is in the operation and maintenance of the infrastructure to ensure quality of product and continuity of supply that liquid fuels such as petrol and diesel are critical. The primary issue is that both water and sewerage pipes fail on a daily basis in urban areas. The number, location and nature of these failures is typically unable to be predicted. The industry terms the response to these failures 'unplanned maintenance'.

The response is generally to have a crew attend the issue. Typically, the crew uses a branded truck from the water utility to attend the site, which can be anywhere from 1km to many hundreds of km (in regional areas) from the depot. It is estimated that between 10 to 30% of the vehicle fleet (depending on the size, nature and maintenance practices of the utility) would be involved in these unplanned activities.

Should a water utility be unable to source liquid fuels to address the unplanned water and sewerage pipe failures then the pipe remains broken. For water, over time a small leak will almost always increase to a large break. Such breaks are capable of destruction of homes, roads and other infrastructure if left unchecked. For sewage, a leak doesn't always worsen over time. However, the leakage of raw sewage into properties, median strips, gutters and groundwater can create significant health and environmental risks.

The complete failure of a drinking water pipe means that people will be without water until that pipe is fixed. This means that alternate drinking water must be provided to affected homes. In more complex cases people on dialysis cannot use the water for home dialysis and must now make their way to a hospital. In addition, in a short time houses become unable to flush their toilets. In such circumstances, faecal waste must either be buried or the home rapidly becomes uninhabitable.

The long-term failure of a sewer pipe is less obvious. The sewage typically will leak underground then bubble to the surface to cause a health risk. It is only when there is a sewer blockage that sewage is likely to overflow into people's homes, or in large volume through sewerage pump stations. Such blockages occur at least weekly in larger cities. However, they are typically removed with minor inconvenience to customers.

Another consideration is that the majority of secondary incidents have associated issues such as power outage. In these cases, the water utility relies on liquid fuels for backup generators. The absence of these was most acutely felt during the South Australian power outage, where the Port Lincoln Sewage Treatment Plant was unable to process sewage for a period of several months in the absence of an available power generator (noting that this plant required a 300 KVA generator which needed to be refuelled every 12-15 hours to run in an intermittent capacity during an emergency).

It is for these reasons that the water industry believes that the inability to provide vehicles that service these supply interruptions constitutes the provision of goods or services which, if

reduced in supply or availability, would be likely to seriously damage the health, safety or welfare of the community.

Impact of a fuel shortage on water utility activities

A summary of the typical course of a fuel shortage for a water utility is provided in Table 1.

Table 1: Overview of the typical business continuity approach applicable to water utilities

Time Period	Activities	Impact
3-5 days	<ul style="list-style-type: none"> • Delay non-essential travel • Fill any available portable tanks • Liaison for assistance under state emergency arrangements • Maintain all fleet vehicle fuel levels at 75% or higher • Consider water restrictions • Maintain fuel levels in generators at all times. • Assess likely industry impacts • Engage with state agencies 	<ul style="list-style-type: none"> • Depleted urban fuel stocks, due to panic buying and competition for stocks, delayed centralised control. • Reduced ability to maintain and refuel active generator sets, plant and equipment at worksites. • Reducing ability to access contractors and staff due to transport restrictions. • Dynamic operations attendance, and pumping and generation equipment is reduced
5-10 days	<ul style="list-style-type: none"> • Enact fuel conservation options - ride sharing, only essential staff travelling, work from home for majority of staff. • Strategically place staff at operational sites to undertake work. • Increase customer service staff to manage increasing enquiries. • Maintenance activities become 'run to fail' • No proactive maintenance or meter reading. 	<ul style="list-style-type: none"> • Critical interdependent supplier impacts (fuel and chemical replenishments) • Reduced access to critical sub-contractor skills and trades/equipment for operations and maintenance • Environmental overflows and extended community disruptions, from water and waste water services infrastructure failures. • Issuing of official water usage restrictions to some regional areas. • Security risk to on-site fuel stocks (Fleet, plant and Gen Sets) • Environmental and community impacts as assets start to fail with increasing numbers of unplanned supply disruptions

		<ul style="list-style-type: none"> • Critical customers and critical services now impacted • Request for “emergency situation” declarations
10-15 days	<ul style="list-style-type: none"> • Seek assistance under state emergency access requirements to liquid fuels. • Consider boil water notices for supplies where drinking water safety cannot be guaranteed. • Minimal sampling to verify drinking water quality. 	<ul style="list-style-type: none"> • Extension of the above situation • Difficulty in confirming the quality of drinking water provided to consumers. • Some areas may have issues with sewerage removal.
>15 days	<ul style="list-style-type: none"> • Triage of water and sewerage emergency works, only most urgent work attended to. • Issue water restrictions, water conservation and boil water notices if water treatment plants are unable to be maintained effectively or there is a risk of illness. 	<ul style="list-style-type: none"> • Depletion of all “on-board” fuel stocks, and ability for staff and contractors to attend work and use fleet/plant/equipment • Critical plant and supplier disruptions and failures • Serious remote and regional water services community impacts with emergency situations declared • Emergency situation with no guarantee of basic water services systems operations • Reducing guarantee of sewerage services

Fuel reserves

Water utilities nationally would be severely affected by any fuel disruption or imposition of rationing for an extended period. The level of fuel reserves varies with each state. For example:

- Victoria has stated storage capacity of over 100,000L designed to account for relatively short periods of up to two weeks.
- The ACT is completely dependent on supplies from interstate.
- Western Australia have virtually no storage capacity
- Note that for regional areas the issues are exacerbated as often the only way to reach these communities is via road, with up to several hundred kilometres between some locations.

Water utilities have legislated requirements to conduct physical safety inspections on critical assets including daily dam inspections for those utilities with dams. Without access to liquid fuels these assessments cannot be conducted breaching, legislative obligations and creating a risk to public safety. Finally, a number of large water storage dams cannot be operated

remotely requiring operators to visit the dam to manually adjust extraction rates. If the extraction rate is not adjusted correctly there is an operational risk to the assets and the drinking water supply. i.e. water could be supplied that is unsafe for drinking.

In addition, some water utilities such as Icon Water in the Act rely on liquid fuel for incineration of de-watered solid waste from sewage treatment. Without liquid fuel (fuel oil) Icon Water is required to compost dewatered solids on-site before they can be removed from the site. The composting process normally takes 18 months. Any disruption greater than 1 month will exceed Icon Water's on-site storage capability creating threats to public health and the environment.

To comply with legislation and licence conditions, most water utilities hold minimal stocks of critical chemicals (most typically stock for a loss of supply of between 1 to 4 weeks). These chemicals are critical to water and sewage treatment processes but cannot be stockpiled on site without approvals to avoid undue risks and in some cases such storage would result in the plants being declared major hazard facilities. Consequently, the chemical supplies must be delivered to treatment plants via road transport under just-in-time arrangements.

Case Study - Goulburn Valley Water

For Goulburn Valley Water (GVW) the provision of liquid diesel fuel is essential to operations, as follows:

- Operating a vehicle fleet of approximately. 200 vehicles – (100+ of these are used as the sole method of transporting operators and technicians to manage and maintain GVW's 100+ water treatment plants and storages, 26 waste management facilities and 400+ pumping stations).
- Operating mobile plant and equipment – essential to the maintenance of our network distribution system – 3000km of pipework
- Operation of onsite as well as mobile back up power generation which may be called into service during a localised or more widespread power loss
- The operation of mobile pumping systems which are essential for transferring waste water for safe collection during a sewer main break or rupture to minimise serious health impacts to MOP's and associated environmental damage.

Case Study - Water Corporation

Water Corporation is the largest water utility in the country by geography. For normal and routine operations they annually use 6,000,000 litres of both Diesel (distillate) and Unleaded Petrol (ULP) this equals about 6,500 l/day (averaged out). Due to the geographic area covered by the utility at least 100% of this fuel requirement would be required during an LFE.

Case Study - Queensland Urban Utilities

Queensland Urban Utilities (QUU) consumes 1 million litres of liquid fuels each year, under business-as-usual (BAU) operation.

- ~95% of this consumption is used for fleet (diesel) purposes. i.e. Our maintenance, repair, and operation of our portfolio.
- ~5% is used for stationary purposes (generators, heating, etc). Note this is under BAU.

QUU has between 250 – 300 vehicles operating across internal staff and external providers carrying out day to day planned and reactive activities. In a liquid fuel shortage QUU would need to cease all non-essential works and focus on reactive / priority works, reducing the operating vehicle fleet by approximately 50 % using diesel and unleaded fuels

In the event of restricted liquid fuel availability, QUU's ability to respond to essential repair and maintenance (via our fleet) could compromise the provision of potable water and sewage services to the community.

Workplace access

Water storage dams, along with water and sewage treatment facilities are located in remote areas not serviced by public transport. Many plants are staffed and operate 24x7. Without access to fuel for transportation staff would be unable to access these worksites. The plants cannot operate without on-site operational and maintenance staff. While it would be possible to operate the water treatment plants more periodically in an emergency, sewage treatment plants must operate continuously to avoid creating a public health emergency from the release of untreated effluent to downstream communities and overflow of backed-up sewage from the collection network.

Links to Defence, national security and critical infrastructure

The water sector, as an essential service, supplies water and wastewater services directly to operational defence facilities and also disclosed and undisclosed properties with national security functions, in both urban and remote and regional locations. During an extended LFE, the services to these facilities will be disrupted if water services providers are unable to maintain and repair the normal operations of the water and wastewater network, or maintain source treatment and supply processes.

The water sector notes that advice from facility managers responsible for these properties indicate that few have business continuity and contingency plans for water and wastewater service disruptions. Therefore, any external water supply system disruptions can potentially have an immediate impact to their occupancy and operations.

In the view of the water industry the potential impact of water supply disruptions on critical infrastructure and emergency services extends to:

- Police and Emergency services;
- Prisons,
- Health services;
- Education and community facilities;

- Critical transports nodes (airports/ports/rail); and
- Fuel logistics nodes

Further highlighting interdependency of water and wastewater services with other critical services.

Water utility identification by State Government

The designation of water utility assets as critical infrastructure varies depending on the state and the nature of the assets. For example, Victoria identifies water utility assets as critical infrastructure, whereas Queensland defines a process for determining the provision of liquid fuels in an emergency but appears to be silent on an essential user list. Secondary risks - electricity failure

A separate issue not covered in The Consultation Paper is the event of a significant electricity mains failure during a LFE. Such an event could more than double the use of liquid fuel by water utilities, associated with:

- The immediate requirement for backup generation power at a large number of sites; and
- Increased requirements for vehicle/fleet movements to supply service and maintain the generation equipment.

At present the Act and Guidelines are silent on how such an emergency would be managed. Given the heightened interdependencies between all sectors as detailed in The Consultation Paper this contingency should be noted and the principles put in place to address such an occurrence. A failure to do so would be a significant omission given our current state of knowledge.

Specific responses to the consultation questions

- ***What changes to circumstance since the 2004 review might change the case for the inclusion of the activities listed in the determination as it stands?***

The Federal Government's approach to critical infrastructure resilience has matured significantly since 2004. In 2004 the policy focus was on infrastructure protection from physical damage, particularly terrorist attack. The adoption of an all-hazard approach to critical infrastructure policy combined with a greater understanding of supply chain interdependencies means that the criticality of end-to-end water supply and sewage treatment is now better understood by government. This is reflected in the fact that the Federal government is now regulating the water sector as nationally identified critical infrastructure. This is enshrined in the Security of Critical Infrastructure Legislation 2018 and the establishment of the Critical Infrastructure Centre. Both of these entities focus on water utilities in ways not considered in 2004.

In addition, jurisdictional-level security along with environmental and occupational health and safety legislation has evolved significantly. The focus is on reducing risks and vulnerabilities associated with holding large stocks of volatile chemicals, pollutants and

fuel, forcing the adoption of just-in-time arrangements. Separately, health and consumer legislation has strengthened protection of consumers. Imposing regulatory burdens on industry to rectify faults and emergencies within short timeframes. Consequently, the water industry is faced with a regulatory environment that requires a rapid response to faults and emergencies while concurrently reducing the utilities' ability to hold volumes of critical stores such as liquid fuels.

Consequently, the water sector's dependence on liquid fuels has become more apparent than it was in 2004.

- ***Is there a case for additional to the determination, in particular to include utilities and liquid-fuel fired power system generators as essential users?***

For the reasons outlined in this submission WSAA and its members believe that water utilities should be added as to the Determination as Essential Users.

- ***What are the pro's and con's of any change to the activities listed in the Determination?***

Adding water utilities to the activities listed in the Determination would ensure they are able to access fuel to undertake essential activities that protect human life, enable the functioning of emergency services and continued economic activity. An inability of water utilities to have priority in accessing liquid fuels means that fuel cannot be obtained in a timely manner. This is likely to produce an inability to address critical system failures as they occur, rather these become part of a backlog of issues which are likely to increase as the emergency progresses. At some point parts of the water supply will become undrinkable and parts of the sewage network non-functional. The most severe consequences would be raw sewage flooding people's homes, flowing down the streets or into creeks and waterways.

- ***How to the pros and cons of any potential new activities compare to those of activities currently included in or excluded from the Determination?***

There are no new activities that water utilities are undertaking since 2004. However, as outlined the regulatory environment and stakeholder expectations have fostered a move away from being able to hold significant stockpiles of liquid fuel. The absence of a major national liquid fuel shortage in the last 40 years has also fostered a move to just in time management of fuel stocks. Yet the work needed to keep the water and sewage networks operational during an event involves a significant reliance on liquid fuels to move staff to address infrastructure failures in a timely manner. Without timely intervention portions of the population can become exposed to raw sewage, posing an unsafe and unacceptable risk to human health.

- ***To what extent is the availability of liquid fuel essential to these potential new activities?***

Liquid fuel is essential to the operation of the water utility servicing fleet. Without liquid fuel repairs that are critical to the water and sewerage systems cannot be undertaken. In addition, the use of on-site equipment which is typically generator powered becomes infeasible, so emergency repairs cannot be undertaken.

- ***How is business continuity currently maintained in the event of a liquid supply disruption?***

As noted, there is a large degree of variation in the business continuity arrangements for water businesses. This means that they may have anywhere between 1 to 14 days of reserve fuel before there are likely to be significant impacts on the supply of water and wastewater which affect community health and wellbeing outcomes.

- ***Could services continue to be able to be provided without liquid fuel or with diminished fuel supply?***

Without liquid fuel water and sewage services cannot be provided to Defence, national security facilities, critical infrastructure and homes and businesses. The absence of both services, but particularly sewage removal, would make buildings unsuitable and unsafe for human habitation in a matter of days. Diminished fuel supply, if below the minimum threshold to allow effective operation would result in a system failure over time. The time to complete system failure would depend on the degree of fuel shortfall.

- ***If there is a case for changes, what scope of changes should be made?***

This submission outlines a clear case for changing the Determination to include water utilities because:

- they provide goods and services which, if reduced in supply or availability, would be likely to seriously damage the health, safety or welfare of the community; and
- the fuel allocation is essential for providing the service.

- ***Are there certain utilities with greater public benefits or detriments or with a greater dependence on liquid fuels than others? If so, why?***

WSAA cannot comment on the relative benefits or detriments in relation to other utilities.

- ***Are there any utilities that should not be included in any potential changes if so, why?***

Water utilities should be included for the reasons outlined in this submission.

- ***How might the Determination be best worded to capture desired changes?***

The addition of 'water utility' to the list of activities under Essential Users in the Determination.

- ***What would be an appropriate definition of a Large-Scale Liquid-Fuel Fired Power System Generator? Why?***

WSAA has no comment on this item.

- ***Should this definition include regional and remote towns using liquid-fuel fired power system generators as their primary and only source of electricity?***

WSAA supports this inclusion as the interdependency between energy and the water services is critical.

- ***What effects might these Determination changes have on the way fuel rationing is managed in an emergency?***

Water utilities comprise less than 1% of the total liquid fuel market nationally. The addition of them as an Essential User to the activities in the Definition should have minimal impact other than to add an additional category of user to be provided liquid fuel in an emergency.

- ***How much fuel would utilities and major liquid-fuel fired power system generators use in an emergency?***

For water utilities, nationally the fuel use per day is estimated to be in the order of 30 to 60,000L per day.

- ***What would this mean for management of remaining fuel supplies?***

The water industry would assume that given the relatively low proportion of the liquid fuel market that they would pose almost no impact.

- ***What business continuity arrangements to utilities and major liquid-fuel fired power system generators have to manage liquid fuel supply shortages?***

As outlined, there is a large degree of variation in the business continuity arrangements for water businesses. This means that they may have anywhere between 1 to 14 days of reserve fuel before there are likely to be significant impacts on the supply of water and wastewater which affect community health and wellbeing outcomes (Table 1 and the body of this submission).

- ***In particular, please advise of expected daily fuel use in an emergency and any contingency arrangements, including: typical onsite fuel storage and supplies and emergency fuel supply arrangements and any related arrangements in place by bulk fuel suppliers.***

During a typical LFE the usage is likely to be 50-80% of average daily fuel use. However, usage during a supply chain disruptive event impacting electricity or gas generation is assessed at a minimum *increase* of 100% to 200% on these normal usage rates. This increase in usage is based on:

- The immediate requirement for and use of, backup generation power
- Increased requirements for use of additional backup generator sets
- Increased requirements for vehicle/fleet movements to supply service and maintain the generation equipment
- The remote and regional community reliance upon remote/regional “off grid” energy providers who source their generation from liquid fuels and also use liquid fuel generation as basic backup to their alternate micro grid power supplies (solar/wind)

In a competitive situation for dwindling supplies of liquid fuels to remote regional energy grid providers are anticipated and therefore the 100-200% Liquid fuel dependency increase is a reliable minimum additional usage assessment

Additional complex competing risk factor/s:

- Competing for access to liquid fuels in remote regional communities, with very long logistic supply lines where there is a complete reliance upon road transport for all essential services (food/grocery etc) and therefore liquid fuels.

- ***What are the likely effects of such changes for key stakeholders (such as fuel suppliers and relevant utilities)?***

Based on the information in this submission, the impact of adding water utilities to the Determination should have minimal impact on fuel suppliers. However, for the water utilities, being on the register in a LFE would mean surety of supply and an ability to maintain water and sewerage services during a LFE.

WSAA supports the review of the Guidelines and Essential Users Determination under the Liquid Fuel Emergency Act 1984 but for the reasons outlined in this paper believes that the current definition of Essential User activities needs to be expanded to include water utility activities. For further information on this submission please contact Greg Ryan, greg.ryan@wsaa.asn.au or (03) 8605 7611.