Appendix O
DWER correspondence regarding location and containment of fuel/gensets

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Your ref:
Our ref: RF7686
Enquiries: S Stratico, Ph 98410125

Matthew Bowman
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Asset Investment Planning Regional
Water Corporation
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Dear Matthew

WALPOLE SOURCE PLANNING OPTIONS AND GROUNDWATER TRIAL

Thank you for recently updating the Department of Water and Environmental Regulation (the department) on the source planning you are undertaking to confirm an appropriate future water source for Walpole. We understand you will be comparing two main options – groundwater abstraction near Swann Road or refurbishment of the existing Chatley surfacewater dam.

The department has an interest in the water supply planning process, as well as the assessment of the potential impacts of each option. We are often asked for independent advice by government and the community on large or significant proposals.

In this regard I refer to previous public documents that guide us, relevant to source planning in Walpole

- *Lower Great Southern water resource development strategy – helping to achieve a secure water supply of the south coast (Department of Water, June 2010),* that supported the Water Corporation's *Water Forever, Great Southern (2010)*, and
- The *Great Southern regional water supply strategy – a long term outlook of water demand and supply (Department of Water, 2014).*(Supply Strategy)

To support your current source planning process, the department would be keen to obtain more details on the rationale for prioritising the suggested options over those previously presented in *Water Forever* and the 2014 Supply Strategy

We would also be keen to receive an overview of your proposed community engagement strategy. We are happy to explore opportunities with you to support your

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community engagement process. We believe it will be important to bring the community up to date with the rationale for the changed priority of source options from those previously published.

Walpole groundwater trail 2022/23

Our feedback on the groundwater trial presented to department staff on 2 May 2002 is as follows.

The department understands you intend to implement a groundwater trial over the 2022/23 summer by pumping from three bores including 3/20, 5/09 and 5/20 near Swann Road. We understand the information from this trial will be used to validate the initial modelling, which will provide a better understanding of the potential drawdown impacts of pumping from the fractured rock aquifer, on the overlying superficial alluvial aquifer.

Thank you for providing:

- The *Walpole New Source Planning Summary* (provided in February this year as a follow up to a presentation provided in November 2021)
- The presentation *Walpole New Source – Borefield Trial DWER information Session (2 May 2022)*
- Your *Technical Advice - Walpole Conceptual Hydrogeology Report V2* (2 May 2022).
- the map of the proposed monitoring locations for the 6 month trial (5 May 2022).

The Department has reviewed the information provided and confirms the potential risks to include:

- Drawdown on groundwater dependent vegetation, wetlands and waterways in the local vicinity
- Potential for mobilisation of acidity from the oxidation of sulphide minerals in the lignitic coal seams that occur in Tertiary sediments beneath the area. These sulfidic minerals are likely to have a very high acidification risk if they are oxidised within a cone of depression of a pumping bore.

In order to assess these impacts we understand that the Water Corporation:

- has developed a conceptual model (to be confirmed/ updated by the pumping trial)
- will install 19 monitoring bores to a depth of 6m (1m below the existing watertable) and will take soil samples from these sites prior to the pumping trial. (sites provided in the proposed monitoring location map). The monitoring bores will have continuous loggers throughout the groundwater pumping trial.It would be beneficial to confirm if this is all bores or a selection (and if so which bores).
- will undertake surveys of the Environmentally Sensitive Areas (ESA), waterways and wetlands that fall in the vicinity of the modelled potential drawdown cones, using your initial model developed from the conceptual hydrogeology to identify these areas. The department confirms that all intact vegetation in the area is a potential ESA
- will survey the local vegetation communities for potential threatened and priority ecological communities in the vicinity of the potential drawdown areas
- will undertake surveys of aquatic fauna

- Will carry out sampling for potential sulfidic materials at the monitoring bore locations, and
- Will undertake Aboriginal heritage surveys in the vicinity of the potential drawdown area.

The department provides the following feedback on the proposed investigations::

- The estimated and assumed hydrogeological parameters used in the conceptual hydrogeological report are reasonable. As there is a lot of uncertainty around the vertical conductivity of the saprolite layer (nominally an aquitard) between the two aquifers, the modelling results can only be used as a rough guide. Typically, sediments show 1:10 ratio in vertical to horizontal conductivity so using horizontal conductivity in the calculations may overpredict the impact.
- There may be some degree of interconnectivity between the two aquifers. This may take place in part due to the effects of tree roots, with research in Jarrah forests showing that tree roots can form preferential channels through saprolite into deeper bedrock aquifers that greatly influence recharge (Dell, B., Bartle, J.R. and Tacey, W.H., 1983). Root occupation and root channels of Jarrah forest subsoils. *Australian Journal of Botany*, 31, 615-627).
- We acknowledge the water resource occurs in a fractured rock aquifer and it is very difficult to predict the impact of pumping (which makes the trial important)
- The proposed monitoring network looks to be comprehensive from the perspective that the bores form transects towards the environmental receptors (i.e., intact vegetation and wetland/waterway areas). Following the environmental surveys and the pumping trial, the key at-risk environmental receptors should be confirmed. It may be appropriate to add monitoring bores within these areas as well as in the adjacent cleared areas. It is recommended Water Corporation check whether their statewide clearing permit supports monitoring bore location improvements in vegetated areas.
- We recommend water quality monitoring prior to and during the trial. This should include field parameters (pH, EC, Oxidation-Reduction Potential), the basic suite of major ions (Na, K, Ca, Mg, Cl, HCO_3, SO_4), nutrients (particularly NH_4 which is released from oxidising coal) and iron, aluminium, acidity and alkalinity in selected wells. Trends of increasing sulfate, calcium and magnesium ions and decreasing alkalinity are typical signs that pyrite oxidation is taking place.
- It is possible that some further Acid Sulphate Soil (ASS) investigations will be warranted once the nature and extent of possible groundwater drawdown is better understood following the trial. i.e,. more targeted ASS risk characterisation in areas where greater drawdown is observed during, or more reliably modelled after, the trial.
- The department has some aquatic sampling sites directly downstream of this area which have been sampled as part of the Healthy Rivers WA - South West program . We would be happy to provide the relevant information.
- We would appreciate receiving the results of environmental surveys, the bore logs and the initial water levels and water quality parameters found in the bores prior to the pumping trial commencing

We recommend the following inclusions in the monitoring program for the trial:

- water level and water quality monitoring to commence at selected wells three months prior to commencement of the pumping trial, to obtain baseline data which is not pump effected.
- water quality sampling at two monthly intervals, the department to be notified of any signs of pyrite oxidation.
- Continuous water level monitoring with dataloggers
- If water levels fall by 0.25-0.5 m within monitoring bores located within or adjacent to vegetation recognised as the Kordabup vegetation community, that pumping at the associated bores is reduced and the department notified.

Yours sincerely

Brett Ward

REGIONAL MANAGER, SOUTH COAST REGION
26 May 2022

From: Cydney Williamson-Smith <Cydney.Williamson-Smith@dwer.wa.gov.au>
Sent: Thursday, 9 March 2023 2:11 PM
To: Michelle Phoenix
Cc: Drinking Water; Christa Loos
Subject: RE: For information: Walpole New Source - Bore trial - Location & containment of fuel/gensets

Hello Michelle,

Thank you for sending this through to Water Source Protection Planning for advice on water quality impacts in relation to current PDWSA policy and guidelines.

According to the WQPN 25: Land use compatibility tables for public drinking water source areas, chemical and fuel storage is compatible in a P2 public drinking water source, unless it is within a wellhead protection zone. However, we understand the generator and chemical storage is required for investigating a new drinking water source (i.e., groundwater source in an existing PDWSA) and running a groundwater trial over a period of 6 months. Under our department's WQPN 25, special circumstances can be considered when the recommendations in the LUCT table differ from what land uses and activities are approved in PDWSAs and where no alternative locations outside a PDWSA exist. Our recommended best management practices are provided in:

- WQPN 10: Contaminant spills – emergency response plan
- WQPN 56: Tanks for fuel and chemical storage near sensitive water resources
- WQPN 65: Toxic and hazardous substances

If you have any queries in relation to the above, please feel free to contact me.

Regards,

Cydney Williamson-Smith
Environmental Officer
Water Source Protection Planning

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From: Michelle Phoenix <Michelle.Phoenix@watercorporation.com.au>
Sent: Tuesday, 21 February 2023 4:14 PM
To: Christa Loos <christa.loos@dwer.wa.gov.au>
Cc: Jamie Burgess <Jamie.Burgess@watercorporation.com.au>; Cameron Gordon <Cameron.Gordon@watercorporation.com.au>; Cheryl Delport <Cheryl.Delport@watercorporation.com.au>; Drinking Water <drinkingwater@dwer.wa.gov.au>; Source Protection <source.protection@watercorporation.com.au>
Subject: For information: Walpole New Source - Bore trial - Location & containment of fuel/gensets

Hi Christa,

As discussed at the last ACPOW Source Protection subcommittee meeting, planning is currently underway to develop a new source at Walpole. One of the new source options is a groundwater source obtained from Bores 1/20, 3/20, 5/20 and 5/09 near the Swann Rd area (located within the existing Priority 2 area of Walpole PDWSA). Water Corporation has done extensive investigations on this source and formally liaised with DWER on 1) the new source options for Walpole, and 2) a groundwater trial run (see DWER ref RF7686, contact is S Stratico from the DWER Albany office).

This email is to advise you that the groundwater trial, which will run for approx. 6 months, requires generators and hydrocarbons to be stored in close proximity to the bores in order for the assets to operate during the trial period. Advice from the project team is that to try and locate generators more than 300m from all bores and still avoid other environmental constraints is impractical (e.g. includes river crossing) and would mean one of the cables runs back to the bores would be over 500m long which creates significant voltage drop issues. Note that this is a temporary trial run of the bores and not a permanent setup.

Please see Table 1 and Figures 1 and 2 below for more details.

Steps taken to mitigating risks include:

- Bunding of all fuel storage
- Location of fuel storage will be above flood levels
- The bores draw water from a semi-confined aquifer (to be confirmed via the trial)
- Project team and on-site staff adherence to Water Corporation's *Catchment checklist for clearance to work document*, which outlines the risks of working in a drinking water catchment and requires careful management of hydrocarbons, including the process for reporting hydrocarbon spills and other incidents
- Catchment rangers will conduct regular surveillance during the trial

If the trial is successful, Water Corporation will revisit power supply options if the groundwater source becomes permanent (most likely overhead power but TBC pending trial result).

Can you please let me know if you have any concerns or questions about this trial and the location of hydrocarbon storage within Walpole PDWSA.

Table 1. Proximity of bunded fuel storage to Swann Rd bores (groundwater trial)

Bore	**Distance of bunded fuel storage to bore**
3/20	50m
5/09	300m
5/20	130m

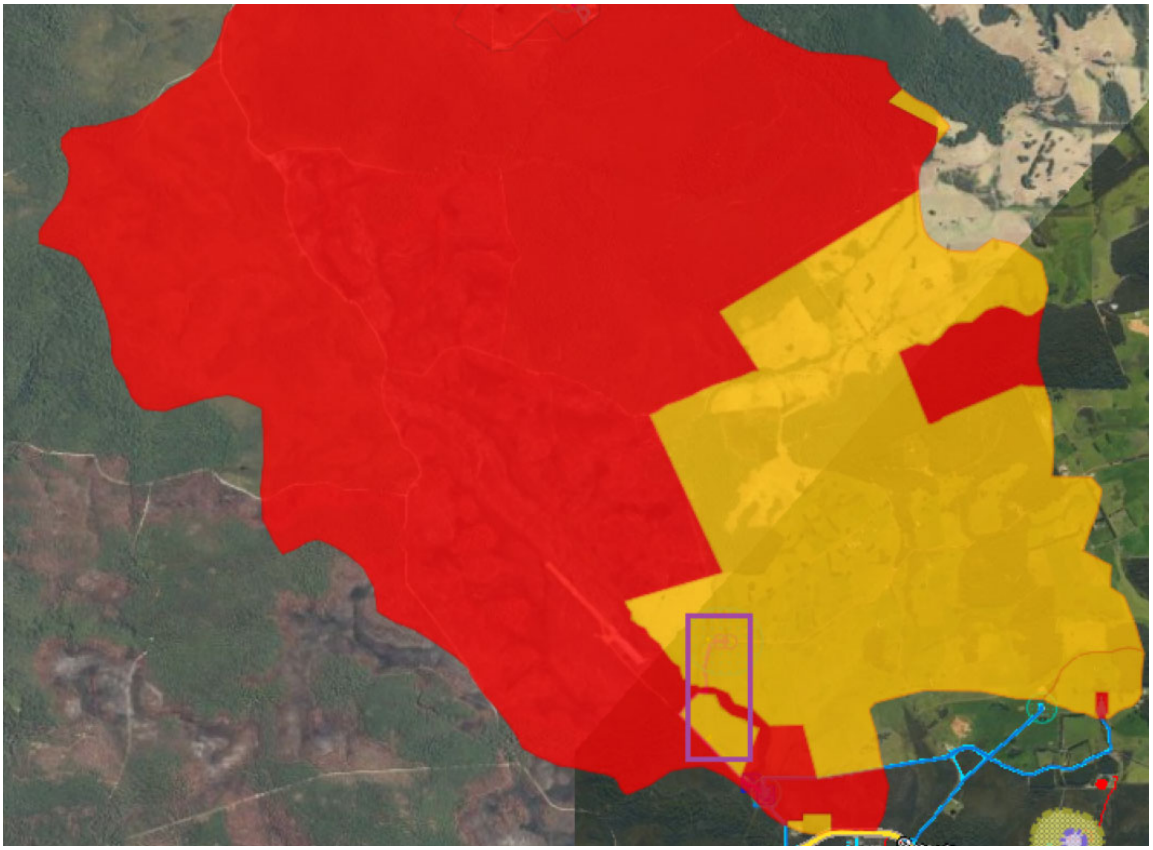

Figure 1. Walpole PDWSA and location of groundwater trial area (purple rectangle)

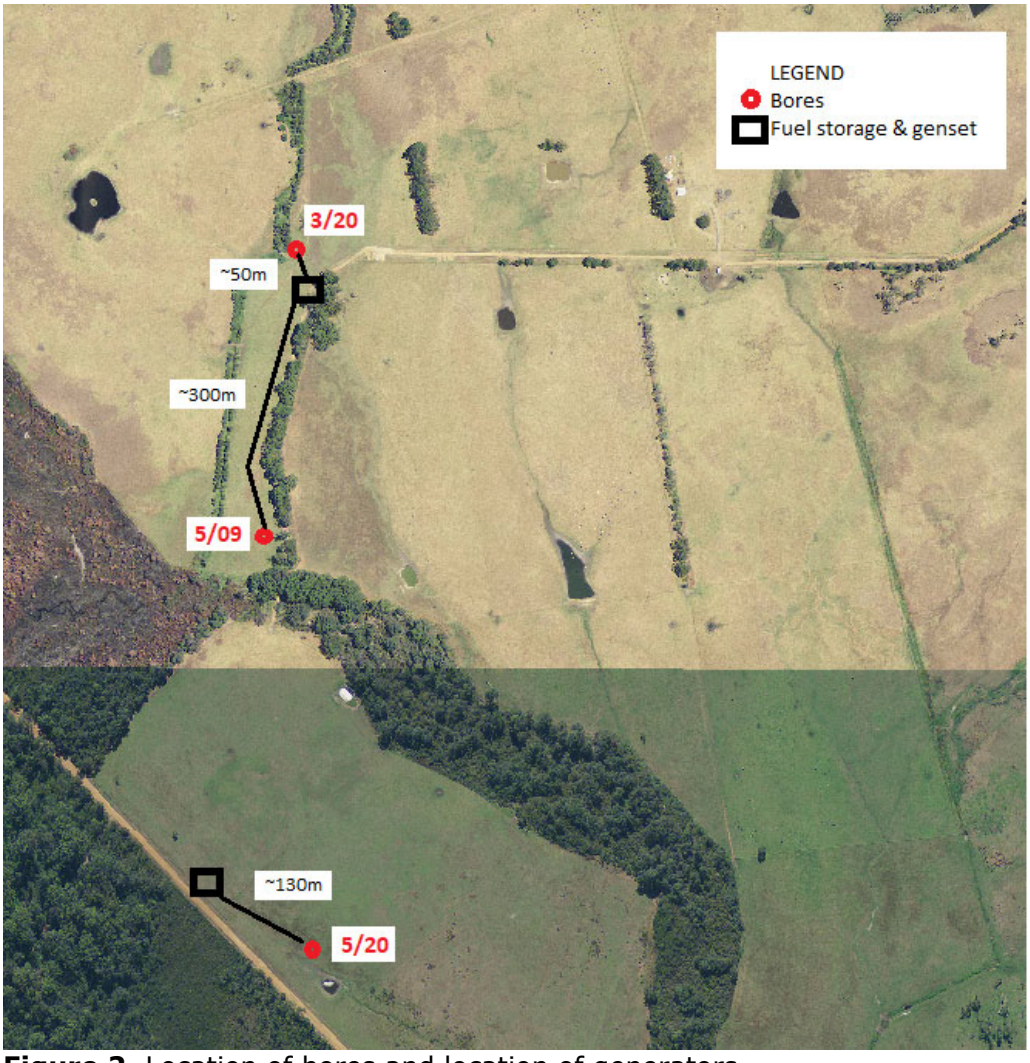

Figure 2. Location of bores and location of generators

Michelle Phoenix
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Water Corporation acknowledges the Traditional Owners throughout Western Australia and their continuing connection to the land, water and community. We pay our respects to all members of the Aboriginal communities and their cultures and to Elders past, present and emerging.