Deputy John Young
Minister for the Environment
Howard Davis Farm
La Route de la Trinité
Trinity
JE3 5JP

14 January 2020 Our ref [redacted]

Dear Minister,

Application for Dispensation under Article 12 of the Water (Jersey) Law 1972

Further to the Minister granting the dispensation from the requirements of paragraph 2 to the schedule of the Water (Jersey) Law 1972 as amended (the Law) in respect of oxadixyl in their communication of 16 June 2016 Jersey Water is making an application for an extension of that dispensation but with a reduced level. This application for extension is made in accordance with the requirements of Article 12 of the Law.

Jersey Water is requesting that the limit set in the extension is reduced from the previously granted 0.3 µg/l to 0.2 µg/l based on operational and monitoring data.

1) Parameter

Parameter	Prescribed concentration or value (PCV)) (µg/l)	Requested adjustment to the dispensation concentration (µg/l)
oxadixyl	0.1	0.2

The proposed dispensation concentration poses no threat to human health.

2) Grounds for extension of the dispensation

Adopting the format set out in the law, the grounds for the dispensation are as follows:

a) The extension of the dispensation is necessary to maintain a supply of water for domestic purposes.

For the period 17 June 2016 to present monitoring data for oxadixyl in treated (drinking) water has identified the range of concentrations varied from 0.011 µg/l to 0.083 µg/l with an arithmetic mean value of 0.038 µg/l. The most impacted reservoir remained Val de la Mare with the range of concentrations varying from 0.058 µg/l to 0.145 µg/l with an arithmetic mean value of 0.091 µg/l during the period of the dispensation.

On this basis, under normal operating conditions and based on the historic data, oxadixyl concentrations in drinking water are anticipated to remain within the 0.1 µg/l limit for the majority of the time with the dispensation only being necessary after periods of heavy sustained rainfall resulting in raised ground water levels which will contribute a greater proportion of base flow to overall stream flows. Jersey Water will continue to

work towards achieving the 0.1 µg/l all year around wherever practicable and water resources permitting.

Jersey Water considers that the requested 0.2 µg/l dispensation will continue to be a requirement to cater for unforeseen events involving water shortage or pollution unrelated to oxadixyl. In these circumstances, normal blending options may be severely restricted and concentrations in supply could, *in extremis*, increase to levels approaching the proposed dispensation limit. Whilst there are four years of data available the effect of rainfall on the amount of oxadixyl present in stream flows is still not comprehensively understood so a further period of dispensation will allow for better knowledge to be gained.

Jersey Water's treatment process does remove some oxadixyl (using Powdered Activated Carbon (PAC) currently 'Norit W52 Grade'). Operational experience highlights that the effectiveness of PAC is variable and there continues to be insufficient evidence to confirm whether dilution, blending and PAC dosing will be sufficient to reduce oxadixyl concentrations to below 0.1 µg/l in all circumstances as periods of extreme challenge to the treatment process have been, thankfully, limited.

Jersey water is currently installing upgraded PAC dosing capability at Handois Water Treatment Works in which is scheduled for completion in early 2020 with similar work anticipated to be completed at Augres Water Treatment Works sometime in 2021. Once this work has been completed evaluation of the effectiveness of the 'new generation' of PAC for removal of Oxadixyl will commence (proposed to use 'Chemviron WP260-S'). A sufficient period will be required to complete these evaluations covering several years to allow data on a range of seasonal and weather effects to be evaluated. The temporal requirement for these evaluations has influenced the requested extension period of 60 months.

Since 2016 the company has been preferentially using water from eastern resources, where concentrations of oxadixyl have been lower, whenever possible under the prevailing water in storage conditions. The need to rebalance where water is being taken from in order to manage pollution risk resilience in both the east and west resources remains a concern for Jersey Water.

While water quality is always the primary concern for Jersey Water, the Company is also obliged to consider the sufficiency of water resources available for use. The Company operates a water resources model that considers storage, time of year and demand profiles to indicate at what point climate-independent resources are required (i.e. operation of the La Rosiere desalination facility). It is normal practice for the Company to begin production of water from the desalination facility if resources fall to the predetermined level for intervention – a situation which occurred during the winter of 2018/19. The impact of the introduction of the permeate from La Rosiere can be seen on the levels of oxadixyl in Val de la Mare accentuating the need to be able to restrict inflow of oxadixyl to the reservoir (Figure 1 green oval).

Figure 1 Val de la Mare Reservoir outlet Oxadixyl concentration (µg/l)

b) *The supply of water for domestic purposes cannot be maintained by any other reasonably practicable means*

Consideration of other means by which water quality may be maintained are considered below.

- Blending and dilution

  One of Jersey Water's water quality management tools is blending and dilution; selecting the best sources for treatment and diluting out unwanted substances where possible. This policy has proved challenging since the identification of oxadixyl and other substances but, to date, has meant no further breaches in drinking water.

  As water resources deplete they will be more susceptible to pollution risk due to diminishing dilution potential. Additionally, to maintain further pollution risk resilience in both the east and west resources, there is a need to balance where water is being taken from.

  The extent to which blending and dilution is effective depends entirely on the concentrations of pesticides, nitrates, ammonia and algae in the raw water. To reduce concentrations through blending one needs to dilute the high concentration source with a greater volume of low concentration water. This becomes increasingly challenging as water resources deplete over the summer, as concentrations of oxadixyl increases and where other substances are present.

Jersey Water will continue to operate its normal blending and dilution arrangements to ensure that the best water is taken for treatment. However, given the uncertainties, this process alone cannot be guaranteed to keep oxadixyl levels below 0.1 µg/l.

- Climate-independent source

  To cater for prolonged periods of drought or other water shortages, the company has a climate-independent source in the form of the standby desalination plant. The plant produces up to 10.8 Ml/day (approximately half of the Island's daily demand) and be capable of blending out pesticides transferred from Val de la Mare for treatment. The availability of this option will be for the life of the requested dispensation but it should be noted that operating the plant is prohibitive in terms of running costs (Approx £5,000 per day) and has a lead time to commence operations so is not instantly available as an abatement strategy.

- Reduce consumption to maintain resources

  The option exists to extend the period over which good quality water can be used by introducing measures to reduce non-essential demand, akin to hosepipe restrictions. Such a move would, in my view be disproportionate (given the absence of health-based risks), would likely end up with the need for dispensations in the longer term and would not deal with pollution risks to other raw water resources. It could also be damaging to the Island's international reputation.

c) *The supply of water in accordance with the dispensation does not constitute a potential danger to human health.*

- <u>Regulatory limits of 0.1 µg/l and cumulative 0.5 µg/l</u>

  The Water (Jersey) Law 1972, stipulates a limit of 0.1 µg/l for any pesticide and a cumulative total of 0.5 µg/l for the sum of all pesticide concentrations. These limits are not health-based and were based on EU regulations that imposed a surrogate zero as the regulatory limit, on the basis that it would be preferable for no pesticides to be present. The 0.1 µg/l was the approximate limit of detection when the parameters were set in 1984.

- <u>Health-based limits</u>

  Health-based limits for oxadixyl are significantly higher than the 0.1 µg/l regulatory limit.

  Health-based values for individual pesticides can be determined by examining the acceptable daily intakes (ADI) developed by various authorities such as the WHO/FAO Joint Meeting on Pesticide Residues (JMPR) or the European Food Standards Agency (EFSA).

  The approach developed by WHO for the Guidelines for Drinking Water Quality is to assume a 60kg adult drinking 2 litres of water per day (from all sources) and allocating a proportion of the ADI to drinking water. Generally the default used by WHO is 20% but for pesticides it will depend on the exposure from food. The allocation is then more likely to be 10% but in cases where there may be significant exposure from food it may be as low as 1%.

In respect of oxadixyl, advice provided to Jersey Water in 2016 was that, in the absence of data on levels in food, a preliminary allocation of 1% was conservative, leading to a health-based value of 3 µg/l. Subsequent evidence has shown that exposure from food is negligible. Professor [redacted] has advised Jersey Water[1] that an allocation of 10% of the ADI to drinking water in developing a health-based value would be more appropriate while remaining very conservative. On this basis the health-based value for oxadixyl would be 30 µg/L.

- Basis on which dispensation limits are determined

  In order to arrive at a revised dispensation concentration for oxadixyl, Jersey Water has considered the health-based values; our ability to dilute, blend and treat the water we supply; and our operational experience since the granting of the dispensation by the Minister in 2016.

  It is requested that the revised dispensation limit for Oxadixyl is set to:

Parameter	Health based value (µg/l)	Proposed dispensation concentration (µg/l)
Oxadixyl	30	0.2

  In addition, based upon the health advice received, it is requested that the calculation for the total pesticides limit of 0.5ug/l should not include any concentration of Oxadixyl whilst it is within the proposed dispensation limit of 0.2ug/l.

  In practice, Jersey Water will continue to work to complying with the 0.1 µg/l limits wherever practical. However, this will be balanced with the need to manage water resources over the remainder of the year.

3) Additional information

a) Requested duration of the dispensation extension period

As detailed below, much of the work required to investigate and control the impact of oxadixyl on raw water is beyond the control of Jersey Water. Given the length of time required for additional activities to be completed by third-parties (including the Government of Jersey) Jersey Water considers it is reasonable for the extension to be granted for a period of not less than sixty months to facilitate completion of such investigations within the period of the extension. It should be noted that if there is no suitable treatment process for oxadixyl or if the required steps set out below are not completed then there will be the need for a further dispensation period.

b) Summary of proposed steps which the Company proposes to take in order to secure that the supply to the specified area will at the end of the dispensation period fully satisfy the requirements of paragraph 2 of the Schedule;

[1] Jersey Water retains the service of a water quality expert, [redacted], to advise it on water quality matters. [redacted] is a member of the WHO expert committee on the guidelines for drinking water quality and a visiting professor at Cranfield University.

- Bypass Val de la Mare and Queen's Valley

  Jersey Water's plans to install bypass arrangements on the West Stream at Val de la Mare were rejected at a planning committee public meeting held on the 4th April 2019 and in light of this no further action has been taken to submit a similar proposal for Queen's Valley. Bypasses would have permitted water polluted with pesticides including oxadixyl, nitrates or other pollutants in the streams feeding the reservoirs to be diverted around the reservoirs. Absence of the bypass requires an extension of time to study the situation and develop alternative long-term solution options.

c) *Proposed scheme for monitoring the quality of water supplied during the dispensation period.*

- Treated water compliance for pesticides

  Fortnightly (one sample within each fourteen-day period) regulatory samples will be taken from the outlet of each treatment works for the duration of the dispensation.

  During the dispensation period we will continue to report all oxadixyl related water quality results to the Environment Department in a frequency and manner already established.

- Liaison with Minister of Health

  In order to facilitate public health messaging, it is proposed that the Environmental Health Team receives treated water quality results for the duration of the dispensation period in order to keep the Medical Officer of Health advised and, through her, the Minister of Health and Social Services.

I trust that this letter provides sufficient evidence to justify the granting of the extension to the dispensation for oxadixyl and satisfies you and other consultees that there are no health-based risks associated with doing so. If you do require additional information please let me know. Otherwise I look forward to receiving your decision in due course.

Yours sincerely

[redacted]

[redacted]