

VEOLIA WATER PROJECTS LIMITED

DROUGHT MANAGEMENT PLAN

DRAFT 2020

1 EXECUTIVE SUMMARY

1.1 Introduction

Thames Water Utilities Limited (TWUL) operated the water supply and sewerage function of this small water resource on the edge of Salisbury Plain in Southern England under an Inset Appointment since 1998.

The Inset was acquired by Veolia Water in 2007, who are now responsible for the management of the water resource during the 25 year planning period. Veolia Water Projects (VWP) provides water services (clean and waste) for over 2,000 civilian properties and over 120 commercial properties in Tidworth and the surrounding areas in Wiltshire on the edge of the Salisbury Plain.

The PFI agreement with the Ministry of Defence (MoD) means VWP also services a large garrison that can house up to 6,000 personnel on the site at any one time together with some 1300 Service Families Accommodation [SFAs] properties in the town and community.

All of the supply comes from groundwater, drawn from a supply of robust unconfined chalk aquifer boreholes. These water sources provide sufficient water to meet all the needs of the customers as well as providing neighbouring company Wessex Water (WW) with a number of bulk supplies.

1.2 Current Situation

No significant problems have been encountered during the previous groundwater drought period in the South of England, 2006-2007 or during peak demands of hot and dry weather (including the recent high demand period of July 2017).

As the Company's supply/demand balance has remained in a very stable and comfortable position, the likelihood of any problems due to drought is very low (calculated to be a one in 200 year event).

Any drought in the future would have to be much more severe in intensity or duration than experienced hitherto to require the implementation of demand management measures provided in this plan.

1.3 DMP Requirements

Drought management plans are a statutory requirement for all water companies as prescribed under Section 39B of the Water Industry Act 1991 (WIA) and as introduced by the Water Act 2003.

The overall objective of this document is to establish a comprehensive set of plans and procedures that define the process for managing any potential drought conditions.

This will be achieved by;

- Being prepared for drought at any time and having a plan ready to deal with it via effective monitoring.
- Identifying the onset of drought and mobilising additional resources.
- Assessing drought duration and severity and the impact on water available to our customers.
- Minimising environmental impact of drought by optimising the use of our resources.
- Implementing measures to reduce the demand for water or increasing capacity of our assets to maintain security of supplies. The actions will become more strenuous as drought deepens and lengthens.
- Acting and communicating with customers and other stakeholders in partnership.

2. INTRODUCTION

2.1 Objectives

Drought management plans (DMP) are a statutory requirement for all water companies as prescribed under the Water Industry Act as introduced by the Water Act. The purpose of the DMP is to demonstrate how Veolia Water Projects (VWP) plans to monitor and manage future drought related events, restrain demand and mobilise extra resources. The plan is agreed with the Environment Agency (EA) and approved by the Secretary of State (SoS) following public consultation and provides a decision aid tool for use by the VWP Drought Management Group (DMG).

The DMP is subject to consultation both prior to and following the preparation of the draft plan. The pre-consultation process involved feedback from key stakeholders including the EA and Ofwat as well as other water companies. This document outlines VWP DMP in six main sections:

- (i) introduction to VWP supply area and water resources;
- (ii) a description of the drought scenarios;
- (iii) a description of drought management actions;
- (iv) an outline of the Environmental Monitoring Plan (EMP);
- (v) a description of our Communications Plan; and
- (vi) an outline of post-drought actions.

The overall objective for the DMP is to establish a comprehensive set of plans and procedures that define the process for managing drought conditions. The DMP includes action plans for how the company will manage any restrictions on non-essential use as well as provisions for environmental monitoring and communications.

VWP cannot envisage there to be a need for Drought Permitting in any of the scenarios described in this Plan and therefore will focus the narrative on processes which culminate with the issuing of Drought Orders only. Consequently the Plan will not detail actions around Strategic Environmental Assessments [SEAs].

The report has been assembled under the regulatory framework shown below in Figure 1

| PREVENTIVE December | REACTIVE October | MONITORING June |
|--|--|---|
| Water Resources Management Plan Supply over next 20 years Demand for next 20 years Supply / Demand Balance Works required to maintain the balance | Drought Management Plan Management Triggers and Scenarios Drought Action Plan Environmental Impacts Post Drought Actions | Small business Return/July Return Risk and Compliance statement Key Performance Indicators Customer experience Reliability and availability of supply Environmental impacts Finance Supply/Demand Table Production Import/exports Billing and leakage |
| INTERNAL REVIEW | | |
| Annual commentary and review Forecast of growth v production Update on capital works required Resubmit to regulators every 5 years | Annual review of the plan Resubmit to regulators every 5 years | Submitted annually to the regulators |
| EXTERNAL REGULATORS AND REVIEW | | |
| Department Environment Food Rural Affairs Drinking Water Inspectorate Water UK (working to deliver solutions) Market Operation Services Ltd (non-household) Environment Agency | Environment Agency Natural England | Environment Agency Natural England OFWAT (economic regulator) |

Figure 1: Key Components of a DMP

The Drought Management Plan forms part of a larger VWP strategy aimed at prevention of supply issues by monitoring performance and minimising risk through the implementation of the wider regulatory framework.

However it is possible that climate pressures can lead to a situation where reactive action is required. This drought management plan outlines the activities required to minimise the impact of such an emergency situation.

2.2 Background information

In November 2007, Veolia Water acquired the water and waste water services for Tidworth PFI and regulated business from Thames Water Utilities Ltd (TWUL). In this framework, Ofwat has granted VWP the appointment to provide water and sewerage services to domestic and commercial customers in the Tidworth and Perham Down areas. Through a novated PFI Contract with the MoD Veolia now also delivers water services to the MoD Tidworth Military Garrison. Veolia Water also provides water services expertise to private industrial and commercial customers through its outsourcing wing.

“Veolia Water is the world's leading operator of water services, providing among the highest quality drinking water and wastewater services in the world. Veolia Water is a global company and we take pride in providing excellent customer service around the world. We will continue to draw on our expertise to deal with all customer needs and queries locally.”

Within the Tidworth Inset Appointment VWP provides water services for over 2000 civilian properties (and this figure will increase by around 400 properties by 2024 as a new development started) and over 120 commercial properties. The PFI agreement with the MoD involves VWP servicing a garrison that can accommodate some 6,000 personnel on the military site at any one time. A further 1,300 Service Families Accommodation (SFA) properties are located in the local community and town environs.

All water companies are required to produce a DMP to demonstrate the strategy to be followed and the measures to be taken to ensure that customers have sufficient water should a drought occur. Available data is studied to predict the onset of drought and the DMP outlines the actions to be taken to manage the various drought scenarios that could be encountered. We have developed a Communications Strategy (Section 5) to outline the key communications objectives and actions required in support of the DMP.

In preparing this Plan VWP have consulted widely across adjacent Water Companies, Local Authorities, the Military and other key environmental stakeholders and Consultees. Comments made in the formal responses have been taken into account in this the Final Report.

2.3 Water resources

VWP has had a healthy supply-demand balance, such that any drought in the future would have to be much more severe in intensity or duration than experienced hitherto to require the implementation of the special measures provided for in this plan. VWP has forecast a baseline situation with a surplus of supply over demand until beyond 2040, as shown in Figure 2.

A new water resources management plan (WRMP) has been produced that encompasses the expected change in demand and also considers the available supply of water. The DMP has been updated after the WRMP to ensure that the plan is realistic and aligns with the overall company supply / demand strategy.

The demand prediction is shown in orange compared to the Deployable Output (DO) and licence in blue. The assumption is a rapid increase in demand until 2022 when all the major developments within Tidworth have been completed. There is then a gradual increase in demand from 2022 to 2045 (assuming slow and gradual infill developments). The predicted demand growth will be reassessed for WRMP 2024 after the major developments have been completed. This will then provide improved confidence in the demand growth from 2024 onward.

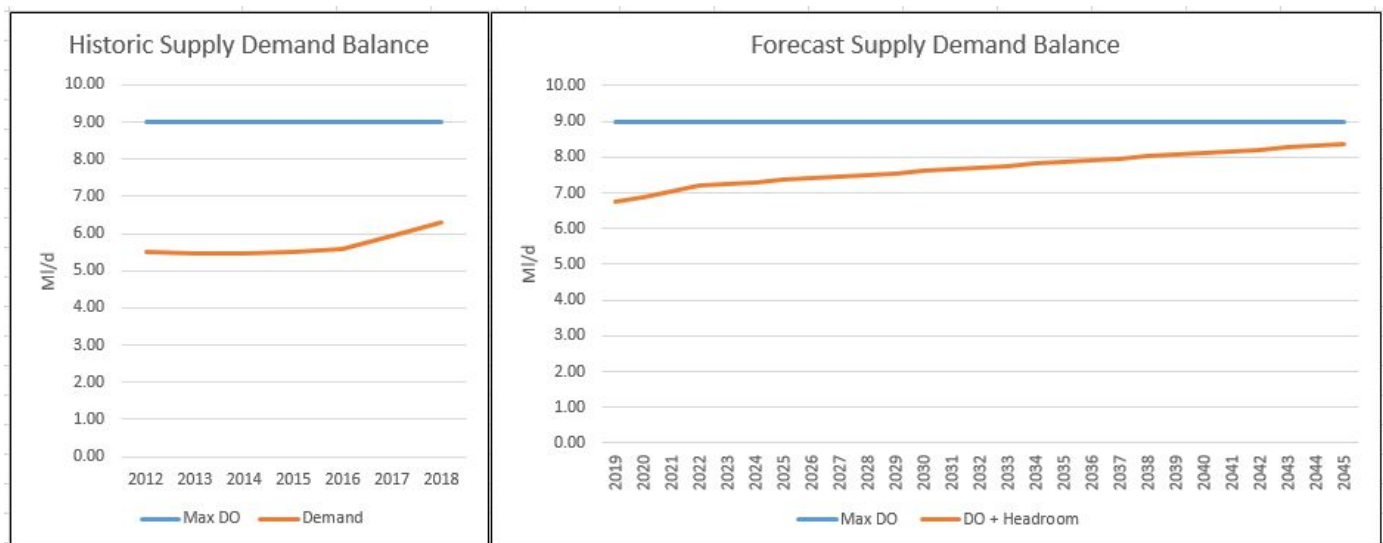


Figure 2: Annual peak supply – demand balance

2.3.1 Groundwater

100% of the raw water supply derives from groundwater sources from an unconfined chalk aquifer via boreholes. The boreholes have a long history of good bacteriological quality and have proved robust and reliable within TWUL and VWP operating history.

These sources provide sufficient water to meet the needs of VWP customers as well as providing bulk supplies to a neighbouring Water Company - Wessex Water (WW) via Leckford Bridge.

The diagram on the following page indicates the catchment area from which the boreholes draw their water. This is a strip of land called the 'Groundwater Safezone' that stretches 6 km due north from the boreholes with an approximate width of 1 km.



Figure 3 – Groundwater safezone

2.3.2 Distribution system

Two separately treated water sources feed the distribution network from one strategic reservoir and another secondary reservoir. The network being small is also highly flexible allowing for outages from either source to be met by the other source supplying the whole distribution network (during peak demand periods this would not be viable for multiple day outages depending on which source was not operating).



| Data | Tidworth No. 2 Daily Flow (Ml/d) | Chalkpit Daily Flow (Ml/d) | Tidworth No. 3 Daily Flow (Ml/d) | Tidworth Group Daily Flow (Ml/d) |
|----------------|--|-------------------------------|--|--|
| Output | | | | |
| Average | 2.23 | 1.98 | 2.31 | 6.52 |
| Peak Day | 2.78 | 3.42 | 2.79 | 8.20 |
| Licence | | | | |
| Average | 3.68 | 3.64 | 3.68 | 9.02 |
| Peak Day | 4.32 | 4.69 | 4.32 | 12 |

Figure 4 – Network layout, current production (2019 – 20) and available licence

Because of the need to meet Crown Fire-fighting Standards at the MoD sites the network has been designed to meet a very high instantaneous demand so capacity of the network is not an issue.

2.3.3 Water Resource Zone (WRZ)

A resource zone is the largest possible zone in which all resources, including external transfers can be shared and hence the zone in which all customers experience the same risk of supply failure from a resource shortfall. The supply of Tidworth network is highly integrated and the risk of supply failure is shared throughout the area so Tidworth network is classed as a single WRZ.

2.4 Level of service (LoS) - (Appendix 2 Sections 1 and 2)

VWP nor its predecessors have had occasion to resort to formal restrictions in over 15 years including through recent drought conditions in 2006/07 when many water companies' sources in Southern England were under extreme pressure.

There was an apparent high demand situation that occurred from 1st June to 19th June 2017 which corresponded with record breaking high temperatures. Clarendon reservoir level reduced as demand exceeded available supply. However the customer demand was continuously met during the event and VWP did not have to implement the drought management plan. Nevertheless lessons were learned from this event which have been incorporated into this drought plan.

A subsequent investigation revealed a number of reasons for this high demand event which are not attributed to normal peak demand conditions:

- Work was being carried out at Chalkpit WTW to improve the treatment facilities which impacted on the reliability of the output of the plant. That was resolved once the permanent upgraded treatment process was fully operational. Project work will not occur during periods of predicted high demand.
- Wessex Water took more water from the Leckford Bridge export than was being reported. Closer communications with Wessex Water have been organised to allow better management of the transfer of flow.
- A 6 inch wheel valve was subsequently discovered to be fully open on the network allowing in excess of 1 MI/d of water to escape in an uncontrolled fashion to a vehicle washing facility within the military complex. All such valves have been locked to prevent unauthorised and wasteful operation.
- Better monitoring of existing telemetry data will provide early warning of problems at water treatment facilities, increased Leckford Bridge export and significant non-legitimate demand occurring within the military facility.

Enquiries to MoD personnel who were in post pre-1998 indicate that there have probably been no Garrison-wide restrictions in the 20 years prior to that date.

Analysis indicates that VWP is resilient against four consecutive dry years and such an event has not been observed in the last 100 years of rainfall historical data and is not predicted in climate change modelling up to 2091. This will be reviewed as part of WRMP 2024.

| Consecutive dry years | Lowest borehole level observed | Number of events in 100 years |
|-----------------------|--------------------------------|-------------------------------|
| 1 | 92m | 5 |
| 2 | 87m | 7 |
| 3 | 82m | 5 |
| 4 | 77m | 0 |
| 5 | 72m | 0 |

VWP is involved in the Salisbury Hydrology Group and data is being provided to the Wessex Groundwater model that is being used to assess the combined impact of organisations such as the MoD, Wessex Water and Southern Water.

Given the small scale of VWP activities when compared to these companies and the close proximity of VWP abstraction to discharge points (only 5 km from each other) then impact on groundwater levels is likely to be limited.

There is a low probability of an adverse impact on levels of service to customers shown below. In line with 3 (c) of the WRMP direction the probability of a drought will not change during the WRMP planning horizon.

| Level | Situation | Impact to Customers | Probability | Historical Events |
|-------|------------------------|---|-----------------------|-------------------|
| 1 | High Demand | No restrictions | 1 in 5 years (20%) | 1 |
| 2 | 2 years of High Demand | Proactive approach to water efficiency | 1 in 10 years (10%) | 0 |
| 3 | Temporary Ban | Hosepipe Ban and non-essential business use | 1 in 50 years (2%) | 0 |
| 4 | Drought Order | Emergency drought order and Possible rota-cuts in worst case scenario | 1 in 200 years (0.5%) | 0 |

Table 1: Historical Level of Service - all customer groups

2.5 Security of supply measures

The two treated source waters are strongly linked in the distribution system such that the whole company area is one water resource zone. As mentioned in section 2.3.2 the distribution network can also cope with significant source outage events.

Audits of the asset management and maintenance processes occur on an annual basis. These audits ensure that the abstraction, treatment, storage and distribution infrastructures remain reliable and resilient.

Further a programme of work relating to the Security Emergency Measures Directive (SEMD) is being implemented.

A compliance audit in December 2018 by the Environment Agency did not raise concerns and production meters are calibrated on a regular basis to ensure accuracy of reporting.

Specific scenarios that impact on resilience of supply have been considered as part of the Water Resources Management Plan 2019:

- Deployable Output - Appendix 2 section 4.1 to 4.4
- Outage Assessments - Appendix 3 section 9.1
- Climate change and impact on supply - Appendix 3
- Flooding - Appendix 2 section 3
- Freeze Thaw - Appendix 2 section 5
- The Environment - Appendix 7
- Supply Chain Disruption - Appendix 2 section 6 to 8
- Resilience - Appendix 5

2.6 Responsibility for Management of Drought

Drought management will be overseen by relevant sectors of the business including;

1. **Water Operations** responsible for monitoring the state of available water resources and the prediction of likely impacts. With specific responsibility for ensuring that the company's water abstraction and production is at full capacity during months of low rainfall and high demand.
2. **Network Operatives** responsible for ensuring that the network is operating at its most efficient when demand is highest.
3. **Customer Services** responsible for producing the necessary communication materials and set in motion the agreed communications channels.
4. **Customer Services** responsible for responding to customers queries regarding the drought and restrictions.

All decisions on Drought Management are made by the DMG (see section 5.1 for all members). The Contract Manager will lead on technical functions and the drought communications strategy.

The supply/demand Balance is considered by the Company's Management Committee. The VWP and VWOL Boards can also be consulted if further escalation is needed and will be informed as routine practice.

2.7 Responsibility for key Actions under DMP

Responsibilities for actions are detailed in Table 2 below.

Table 2: Key Actions for Drought Management Plan responsibility table:

| Action | Delegation | Timescale |
|--------------------------------------|--------------------------------------|--|
| Drought Monitoring | Senior Operations Manager | Ongoing/Monthly. Enhanced during drought |
| Review Drought Management Plan | Contract Manager | Annually |
| Drought Triggers Breached | General Manager | Upon Level 1 breach |
| Convene Drought Management Group | South Region Director - Water | Upon Level 2 breach |
| Drought Records/Filing | Senior Operations Manager | Under direction of DMG |
| Communications | Contract Manager/ General Manager | Under direction of DMG |
| Customers, Group, Board | South Region Director - Water | Under direction of DMG |
| EA Liaison | Contract Manager/ General Manager | Under direction of DMG |
| MoD Liaison | Contract Manager/ General Manager | Under direction of DMG |
| OFWAT Liaison | Contract Manager/ General Manager | Under direction of DMG |
| DWI Liaison | General Manager | Under direction of DMG |
| Neighbouring Water Companies | Contract Manager/ General Manager | Under direction of DMG |
| Capex Programme identified | Asset Manager | Under direction of DMG |
| Opex monitoring system | Senior Operation Manager | Cost Centre set up |
| Capex Delivery | Head of PMO | Under direction of DMG |
| Water Quality | Water Quality Manager | Under direction of DMG |
| Drought Order or Restriction removal | South Region Director - Water | Under direction of DMG |
| Promoting efficient use of water | Contract Manager/ General Manager | Under direction of DMG |
| Appeals for Restraint | Contract Manager/ General Manager | Under direction of DMG |
| Restrictions on Supply | South Region Director - Water | Under direction of DMG |

| | | |
|--------------------|-------------------------------|--|
| Emergency Planning | South Region Director - Water | Under direction of DMG and VWP Board |
| Stand down of DMG | South Region Director - Water | Return to 'normal' hydrological conditions |

2.8 Environment Agency Liaison

VWPL is liaising with the Environment Agency on water resources, environmental impact and water quality issues on a regular basis. During a drought the Contract Manager will be the primary point of contact with the Environment Agency including their Drought Co-ordinators.

3. Drought triggers and scenarios (Appendix 2 Section 1)

In order to identify when drought triggers are reached, the following data is collected and monitored:

- Local rainfall data at Tidworth STW
- Groundwater levels at five observation boreholes within the Tidworth catchment
- Met Office data is also available providing significant historical evidence

3.1 Scenarios/Historical droughts

Historically the Tidworth area has had a very reliable set of historical rainfall data validated by the Met Office, which dates back to 1920. As part of a data share agreement with the EA, VWP records and submits rainfall data from a gauge at the STW. This data is then used to help VWP to assess on a month by month basis the water resources situation. A number of statistical and graphical analyses have been used on this data to help VWP understand the hydrometric trends that impact this most essential resource.

Groundwater receives a yearly 'top up' which in Tidworth occurs when the soil moisture and evaporation levels are at their most conducive (October to April).

3.2 Groundwater triggers

The groundwater triggers used are based on two different observation boreholes (OBH) which are associated with the main water supply boreholes. Both include the LTA trace for an initial sign to show if the groundwater levels are in deficit or surplus.

Table 3: Probability of ground water deficit and likely impact:

| Drought Level | Probability | Impact and response |
|---------------|--|---|
| 1 | 1 in 5 years | None, one year of low rainfall does not impact on groundwater levels. Monitoring will commence in case low rainfall event extends into following years |
| 2 | 1 in 10 years | None. Two years of low rainfall has no impact on sources |
| 3 | 1 in 50 years | Chalkpit is not able to deliver Deployable Output (DO) due to low groundwater levels as a result of three years of low rainfall. BH2 and 3 can increase their output to compensate, but requires operational intervention |
| 4 | 1 in 200 years (never observed but still a risk) | Sources cannot provide sufficient output to meet demand |

4. Drought management action

4.1 Introduction

Specific drought actions will be carried out under the supervision and management of the DMG. Details of internal roles and responsibilities concerning drought are contained within sections 2.6 and 2.7 and the Communications Plan in Section 6. VWP plans to follow a twin track approach using both Demand Management and Supply Side options as tools to manage the drought based on risk assessment of severity. The range of options to be considered are summarised in section 4.2 and 4.3.

4.2 Demand-side actions

Table 4 and 5 show a summary of how the company has outlined the priority, order, timing and combination of demand side actions it will take in a drought. These have been linked to specific groundwater trigger levels. Each level and associated demand measure will be discussed in more specifics below. Noting that where a ban has been requested this refers to the powers VWP hold as a statutory water company. Any actions requested of the MoD would be as co-operation in good faith between client and service provider.

Previous experience indicates that the Garrison Commander will co-operate fully and frequently requests water resources updates to keep abreast of developments.

4.2.1 Level 1

4.2.1.1 Water Operations

Lead-in times: the outcomes from Level 1 activities are immediate, on-going and advisory in nature. Therefore the actions at this level are designed to set the scene for the need for future restrictions.

- Leakage – Continue to monitor leakage and ensure it is maintained at a sustainable and cost efficient level.
- Pressure – Continue to maintain pressure management as a tool for minimising leakage
- Water use at operational sites – Carry out water audits at operational sites and set targets for water use
- Developing water efficient culture – Develop water awareness programmes for employees and expect them to become water efficiency ambassadors for VWP
- Monitor the Leckford Bridge export to Wessex Water – while at level 1 there is no need to limit this export on a litre by litre basis
- Ensure that there are no planned capital works occurring during the peak demand period that may impact on deployable output of the sources

4.2.1.2 Water Efficiency

Metering currently sits at 83% penetration of domestic homes; this is expected to increase to 86% by 2020/2021 after the completion of the new developments.

Wessex Water trials showed that metered customers used on average 17% less water than unmetered. Using the water balance and known consumption values, metered customers in Tidworth use over 5% less water than unmetered. This shows water efficiency should slightly improve with the new developments and population increase as all new properties will be metered.

- Encourage metering of domestic homes using an opt-in arrangement
- Reducing VWP own use of water and promotion of water efficiency within the Company

4.2.2 Level 2

Lead-in times: the need for level 2 actions set out below will have been rehearsed previously by VWPL and will be rolled out within a week of the DMG deciding that the event has escalated. The communications to the MoD will commence on day 1 of the declaration of the level 2 status and experience tells us that any requirements for water saving will be promulgated across the Garrison within 24 hours and will be effective soon thereafter.

- Public Relations Campaign – Customer awareness focusing on drought implications e.g. customer information point[s] at a key location[s] in Tidworth town to reach the maximum number of civilian customers.
- Liaison with the MoD to spread good water efficiency practices as they are the major water user.
- Enhanced Leakage Reduction – Unlikely to yield a significant increase in savings, but important to rapidly fix bursts and visible leaks and supply pipes to maintain customer support.
- Real time monitoring of telemetry data to ensure that demands within the military areas and Wessex enclaves are not excessive.
- An increased level of communication with WW, Cholderton Water Company [advisory only] and the Military, the latter through the regular Garrison Commander's meetings will keep all key parties advised on the water resource situation leading to the more formal Restrictions scenarios.
- Approaches will be made to WW - To utilise a clause in the LB Agreement relating to a "litre for litre" reduction in water supplied during a drought situation. It is anticipated that up to 1 Mld may be made available to the Tidworth Service Area through this route. However such discussions will also need to consider security of supply to WW customers.

4.2.3 Level 3 & 4

Lead-in times: notwithstanding the restrictions as they would relate to the Regulated Customer base require consultation and representation periods [see 4.2.3.2 below] before coming into force, VWPL anticipate that the MoD's responsibilities both in secure areas of the Garrison and in SFA estates would result in their imposing their own internal restrictions and promote the requirements in advance of the more formal process. This would lead to an earlier realisation of the anticipated demand side savings described in 4.2.4 below.

4.2.3.1 Temporary Water Use Restrictions

From the 1st October 2010 Section 36 of the FWMA, 2010 allows water companies a wider range of temporary water use restrictions that they can implement during a drought without requiring a drought order.

The Order provides detailed definitions of uses, exemptions and conditions in relation to these new powers. The Drought Direction 2011 sets out those uses that still require an ordinary drought order to restrict in a drought. These three pieces of

Legislation supplement each other and together they set out the categories of water use that can be restricted by a company and additionally with a Drought Order.

Climate change scenarios and historic information suggests a multi-year drought could occur once in every 20 years affecting various parts of the country. Such prolonged shortages of rain will require the implementation of restrictions on water use to conserve water supplies and protect the environment.

The changes introduced by the government have made the powers clearer and have enabled more effective and equitable restrictions during times of drought. It is hoped that through introducing these new powers better conservation of water earlier on in a drought will occur thus ensuring supplies are protected for essential domestic use.

Table 4 below sets out the restrictions VWP has chosen to enforce and at what trigger stage they will come into effect. These activities will be applicable to civilian customers in the supply area as well as SFA outside of the military sites.

Table 4: Demand management options using Temporary Ban powers and MoD co-operation

| Level | Civilian (Including SFAs and WW 'enclaves') | MoD (all 'behind the wire' activity) |
|---|---|--|
| Level 3 –Temporary Ban (FWMA 2010) measures introduced in single phase | <ul style="list-style-type: none"> • Watering a garden using a hosepipe • Cleaning a private motor vehicle using a hosepipe • Watering plants on domestic or other non-commercial premises using a hosepipe • Cleaning a private leisure boat using a hosepipe • Filling or maintaining a domestic swimming or paddling pool • Drawing water, using a hosepipe, for domestic recreational use • Filling or maintaining a domestic pond using a hosepipe; and | <ul style="list-style-type: none"> • Sensible use in mess catering activities • Vehicle washer restraint on non-essential use • Increased maintenance by Aspire (contractor for MoD) of all MoD assets that could be 'wasting water' e.g. sand/oil filters, taps in JRSLAs and canteens • Watering plants and lawn areas • Unnecessary workshop use • Suspension of wet hydrant testing relating to flow rate. |

| | | |
|---|---|---|
| | <ul style="list-style-type: none"> • Filling or maintaining an ornamental fountain • Cleaning walls, or windows, of domestic premises using a hosepipe • Cleaning paths or patios using a hosepipe • Cleaning other artificial outdoor surfaces using a hosepipe | |
| Level 4 –Drought Order measures introduced in single phase | <ul style="list-style-type: none"> • Cleaning non-domestic premises • Cleaning a window of a non-domestic building • Operating a mechanical vehicle-washer • Cleaning any vehicle, boat, aircraft or railway rolling stock • Cleaning industrial plant • Suppressing dust • Operating cisterns | <ul style="list-style-type: none"> • Watering sports pitches, e.g. Oval, cricket pitches and polo fields • No vehicle washing |

4.2.3.2 Representations and actions prior to implementation of restrictions

Before any restriction is implemented under these new provisions, VWP will provide the opportunity for representations to be made

Publicity Requirements

Section 76B of the WIA 1991 has enhanced previous publicity requirements with regard to imposing restrictions. Before any prohibitions can be applied, VWP must:

- Publish notice on the website at the same time as publishing notice in two local newspapers

- Provide details in the notice of how to make representations about proposed prohibition
- Give notice each time the scope of any prohibition imposed under section 76 of the WIA 1991 is altered in any way; and
- Give notice in relation to the lifting of any prohibitions on the website and in two local newspapers. (see section 6 for future details)

Whilst there will be a lead in time for the implementation of restrictions to allow for representations, there is no such lead in time necessary for the revocation of restrictions; the lifting of a ban will take effect as soon as notice is given by one of the required means.

Timescales;

Temporary Ban Notices – two weeks will be allowed for representations before implementation.

Subsequent Notices or Changes - one week will be allowed for representations before changes.

Making Representations

Before a restriction is implemented under these new provisions, VWP will provide the opportunity for representations to be made. The time allowed for representations will depend on the scale of the proposed restrictions. The proposed timescales are outlined above. Customers seeking to make a representation will be able to do so by a variety of means. The following forms of media will be available for customers to make such representations:

- Website:
 - A simple form will be available for download to be printed off and returned to the nominated VWP office. This form will be developed in the early phases of our drought response.
- Telephone:
 - A customer service advisor will be able to post a copy of the form to a customer address
 - A customer service advisor will be able to complete an e-copy of the form by taking customer details on the phone – it is anticipated that this will be the most common route for representations.

Although on-going communication with WW will have occurred as the prospect of Restrictions approaches [see above], discussions allowing WW to make a formal representation will be held around the need for WW to impose such Restrictions as

VWP deem appropriate for its own customers on to their WW “Enclave Customers” in the Tidworth Service Area.

Handling Representations

Representations received into the business will be collected and reviewed on a weekly basis. A panel of members from the DMG will convene to discuss the outcome of representations, with a final decision made by all representatives on the eligibility of the representation within 5 working days of the form being sent in by the customer. There will be no appeal process if the application for a concession or exemption is denied.

Concessions and Exemptions

The DMP only includes formal statutory exemptions outlined in the model code of practice. In order to conserve water and ensure a safe and secure supply during a drought, no other concessions will be granted by VWP (excluding MoD as a customer). A summary of these exemptions is listed below.

The FWMA, 2010 lists statutory exemptions which can be regarded as concessions.

1) On the grounds of health and safety:

- to clean the surfaces of a private leisure boat to prevent it from transferring invasive species to new waters.
- to clean the walls or windows of domestic premises.
- to clean paths or patios or other artificial outdoor surfaces
- to fill or maintain a domestic pond or ornamental fountain in which fish or other aquatic animals are being reared or kept in captivity.

2) To fill or maintain a domestic swimming or paddling pool:

- where necessary in the course of its construction.
- that is designed, constructed or adapted for use in the course of a programme of medical treatment.
- used for the purpose of decontaminating animals from infections or disease.
- used in the course of a programme of veterinary treatment.
- in which fish or other aquatic animals are being reared or kept in captivity.

4.2.3.3 Application for Concessions

The company will consider applications based on the grounds of health and safety and bio-security. Customers must do so by contacting VWP by one of the means outlined above. Details of how the company will handle representations received have been outlined in section 3.2.3.2.

The company will not consider any applications for compensation in the event that temporary bans on water usage are introduced. The company has to plan on the basis that it may have to impose restrictions during long periods of very dry weather or drought. This means that the bills customers pay already reflect the potential for restrictions. Further clarification on this matter can be found on the Ofwat website.

4.2.3.4 MoD Restraint – Secure Areas and Service Families Accommodation [SFAs]

Also summarised in Table 4 are the restraints the MoD would put in place and at the specific trigger points. These range from advising the mess catering facilities who are large users to cut back on unnecessary water use and wastage. Escalating to the cessation of vehicle washers and not watering sports pitches. Such prohibition may have significant effect on the Military Operational work up to deployment training and will be discussed with the Garrison Commander in advance, normally through the quarterly meetings, the frequency of which may move to monthly, fortnightly or even weekly if the situation is so demanded. What is beyond doubt given the close liaison that VWP maintains with the Military, both the Secure Area and SFA Estates responses to demand controls will be immediate and proportionate to the level of stress.

Table 4 Column 2, Civilians and SFAs - sets out the measures that not only would apply to Regulated domestic household customers but, insofar as they would apply to SFA occupants. Indeed, the MoD through the Defence Infrastructure Organisation [DIO], would be required to promulgate the same advice to the SFA occupants and ultimately the same restrictions through Levels 3 & 4. SFA occupants may even be subject to early restrictions to save water - instructed by DIO working in cooperation with VWP. From the early stages of the Drought, the DIO Housing Office Staff would be requested to oversee their particular estate's water demand and through peer pressure etc. and to encourage water savings.

4.2.4 Demand Savings

The demand savings associated with imposing restrictions on customer use can be difficult to quantify – there is little or no evidence of the savings associated with the majority of individual water uses covered by the FWMA, 2010. Using the UKWIR (2011) code of practice (CoP) we can estimate the savings (particularly associated with restricting the use of hosepipes for garden watering) in our region would amount to ~2.5% of the water we put into distribution. This would equate to a 0.16 MI/d at peak DI or 0.146 MI/d on average. This is lower than the savings suggested by the UKWIR guidance to reflect the higher proportion of metered customers in our region (83%) compared to the UK average. This data is based on tariff trials carried out by Wessex Water.

Savings from the MoD's activities could be significant when taken as a whole and could be worth up to 0.2 MI/d depending upon the prevailing overarching military need at the time. The savings anticipated from the SFA estates will be lower than

industry standards for regulated domestic customers due to their reduced leisure water use behaviours e.g. very little hose pipe use and no appreciable garden watering. A modest saving of some 0.1 MI/d could be anticipated from this sector.

Total demand savings due to the restrictions are estimated to be 0.45 MI/d.

4.3 Supply-side actions

(See Table 4 for timings and options summary)

4.3.1 Re-commissioning of Abandoned/Disused Sources

VWP has one abandoned borehole, the Licence volume for which has been revoked and incorporated into BH2 & BH3. Therefore this section is not expanded upon.

4.3.2 Source Abstraction & Network Management

As the level 3 trigger approaches Chalkpit source will start to come under threat of outage due to groundwater levels reaching the Deepest Advisable Pumping Water Level (DAPWL). In order to preserve this source if demand has not been sufficiently restrained, the source's outputs will be reduced - as the abstraction site does not have currently variable speed pumps, this will be done by reducing hours of usage. Such a measure will aim to reduce the drawdown (cone of depression) of the water table around the source and prevent complete source outage. Should this occur then the source's outputs of BH2 and BH3 would need to be increased to compensate for Chalkpit lost output and be run at peak capacity to meet the demand, hence DI.

Investigations have revealed that BH2 and BH3 can deliver a greater output by partially bypassing the GAC treatment process and adjusting the variable speed drives (VFD) of the pumps.

Water quality at the sources of BH2 and BH3 and post GAC will need to be closely monitored to ensure compliance whilst the GAC treatment is partially bypassed.

VWPL envisages that in such configuration, BH2 and BH3 will still be operating within their current abstraction limits so there will be no need for Drought Permitting.

VWPL has not seen a requirement to carry out a Strategic Environmental Assessment [SEA] in the preparation of this Plan.

Another short term operational solution would be to allow reservoir levels to fall below their lower level indicators (but within a controlled level to guarantee continuous water quality compliance) before borehole pumps begin to 'top-up'. Although this is not a sustainable solution it could help meet daily 'peaks' without increasing water abstraction and therefore drawdown of the water table.

4.3.3 Bulk Supply

VWP has a bulk supply in the form of inter-company transfer to Wessex Water (WW). This is known as the 'Leckford Bridge Agreement' (LBA).

The LBA states VWP will endeavour to provide up to a maximum of 3 MI/d, with a maximum instantaneous flow of 36 l/s. Currently, WW does not take its full allowance.

The LBA also states that, should the demand within the VWP area of supply exceed 5.4 MI/d (critical figure) - excluding the LBA volume, then VWP could instruct Wessex to reduce the 3MI/d on a 'litre by litre' basis. VWP has no operational experience of a 'true' or 'severe' drought in Tidworth to confirm the critical figure covers the Sources Reliable Output (SRO's). If this was not the case, then VWP would have to communicate effectively with WW and the EA (see communication plan section).

Note: the LBA may be subject to change as it is due to expire/be renewed in March 2021.

There are three WW 'enclaves' which are seen by VWP as part of the main customer network as they are entrenched within VWP boundary. However, as the users are not VWP bill paying customers WW would be relied upon to legally enforce drought bans in conjunction with this plan to help restrain demand. Further details of this are mentioned in the communications section.

The table below is a summary of both the demand and supply side options VWP may implement in the event of a drought. It also shows the strategic sequence that VWP would consider when implementing these actions and the linked trigger points (groundwater observation borehole derived). These actions link to communication actions which are explained in their own section.

Table 5: Summary of drought Actions

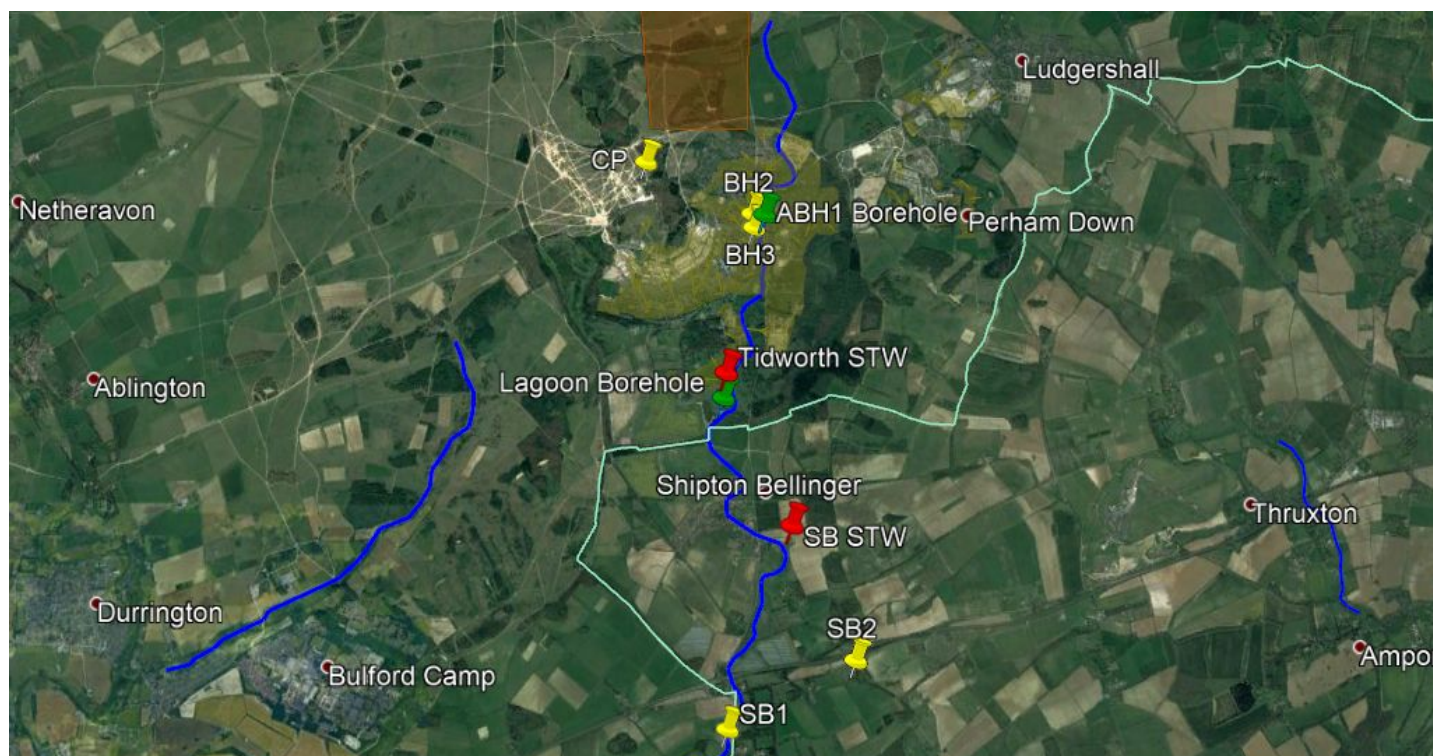
| Drought Band | Demand Side Options | Supply Side Options |
|---|--|--|
| Level 1 – Normal Operation (Levels below LTA) | <ul style="list-style-type: none"> Water Operations Water efficiency Informal liaising with EA and MoD | <ul style="list-style-type: none"> Normal supply activity Reporting of rainfall data and groundwater levels to operations managers |
| Level 2 – Initial Dry Weather (Significant reduction below LTA, probably second dry year) | <ul style="list-style-type: none"> Increased Water Operations High profile water efficiency to domestic customers and MoD Drought group formal meetings with EA and MoD Prepare Temporary Restriction Plans/Docs for representations | <ul style="list-style-type: none"> Increase BH 2+3 output to peak if no demand reduction |

| | | |
|--|---|---|
| Level 3 – Drought Actions (Levels cause average DO no longer possible) | <ul style="list-style-type: none"> • Website, local newspaper and radio announcements • Temporary Water Use Restrictions (As per table) • MoD ban on activities (not dependent on national security) • Veolia activity in the community | <ul style="list-style-type: none"> • Chalkpit DO now 0MI/d as DAPWL reached • Inform WW VWP can no longer meet critical figure for 'Leckford Bridge Agreement' • Allow reservoir depletion to below normal levels during peak periods before refilling • BH 2+3 maximum output • Discussion with EA on licence flexibility |
| Level 4 – Drought Emergency (Record low levels and civil emergency) | <ul style="list-style-type: none"> • Full Temporary Water use Restrictions (per table) • Drought emergency declared to EA and Ofwat | <ul style="list-style-type: none"> • BH2+3 unable to deliver DO as DAPWL reached • Lowering of borehole pumps (all sources) • Possible rota cuts and standpipe usage as last option |

5. Environmental Impacts

The following diagram indicates areas of potential environmental impact due to pumping at peak licence to meet the requirements of a drought situation.

Each environmental impact is covered in more detail in the sections below.



5.1 Nine Mile River

The supply side options included as drought management actions will not involve any environmental damage as all options are available within the operational limits of existing abstraction licences.

The former National Rivers Authority (NRA) commissioned a study of the Upper Hampshire Avon catchment, which in 1993 reported indications that abstractions of water were to the detriment of the ecology of both the Bourne and Nine Mile (9MR) Rivers. The perception of a trend towards lower flows, particularly in the upper reaches of the rivers, was exacerbated by low rainfall and recharge experienced in 1992 and 1997. Other drivers such as the UK Biodiversity Action Plan identifying chalk stream habitats as a priority, and low flow complaints, led to a further study and assessment by the EA of the 9MR.

The conclusions from this study (River Bourne & Nine Mile River Conceptual Modelling Report, EA South West Region, 2001) were based on purely a conceptual understanding as no numerical, three-dimensional groundwater modelling was conducted. The effects of the Tidworth abstractions on the 9MR were summarised as very minor in comparison to abstractions in the Avon catchment and its depletion of flows.

“In wet years some groundwater flow may be induced from the Bourne surface water system and minimal through flow. Up-catchment effects will be to take flow from the Whiteway Rock (outcropping at Leckford Bridge), Chalk Rock (outcropping between Collingbourne Kingston and Collingbourne Ducis). The abstraction may extend the period when the river is dry, as well as the length of river that is dry”

This is compared to the impact of the Tidworth STW discharges back into the aquifer. “This discharge is via multiple lagoons which act as a soakaway. The water is thus returned directly into the aquifer albeit at a shallower level than the abstraction. 85-100% of Tidworth Abstraction is therefore likely to be discharged back to the surface system which will re-infiltrate into the Seaford Chalk and in wet months may flow south to the Bourne catchment.”

Source: River Bourne & Nine Mile River Conceptual Modelling Report, EA South West Region, 2001.

Ultimately, the EA were happy to grant the current abstraction licence for the Tidworth boreholes.

5.2 River Bourne

There is no impact on the River Bourne as a result of abstraction. Refer to section 5 above for details of the catchment area.

However, Tidworth STW discharges back into the aquifer at a set of lagoons adjacent to the River Bourne. The risk of impact on the River Bourne is most acute when water

table levels are high as lagoon infiltration can be negatively impacted. This means that the risk is during periods of high rainfall, not drought periods. This risk is being managed as part of the Tidworth STW discharge variation activities.

5.3 Pillhill Brook

Pillhill Brook is a 9.9km long tributary of the River Anton situated to the east of Tidworth. EA groundwater modelling indicates a possibility of a slight impact on the flow of this river if the Tidworth sources produce water at peak licence.

Further investigation is required over the coming 5 years to determine the scale of the impact.

5.4 Tidworth Network

Biodiversity has been indicated as a concern, particularly during drought conditions, by Natural England and the Environment Agency.

As part of good operating practice a system has been put in place by VWP to constantly review health and safety aspects during site visits. This will be extended to include environmental observations. Environmental awareness training has been delivered to operational staff.

Monitoring of environmental impact will continue during a drought condition as will other standard housekeeping activities.

6. Management and communications strategy

6.1 Management structure

The DMG would be made up of the following personnel;

- South Region Director - Water
- General Manager
- Contract Manager
- Senior Operations Manager
- Water Operation Manager
- Water Quality Manager
- Customer Services Manager

6.2 Roles and responsibilities

The Company's roles and responsibilities for a drought are shown in section 2.7. The communications plan in section 6.3 is a framework which would be fleshed out according to the severity and timing of a drought.

6.3 Communications plan

While VWP is a small water company, it is part of a large company and it has access to a Corporate PR department. Direct contact and local media are used to communicate with the public and other stakeholders such as the MoD (directly through the Garrison Commander).

VWP would also benefit from "drought" awareness initiated by other entities - having five enclaves in its supply zone, or from national media during dry periods.

Issues uniquely affecting Tidworth PFI are the WW enclaves, which are not VWP bill paying customers but are reliant on the same water source. When coordinating messages and potential temporary drought restrictions, VWP would expect them to impose the same bans to help reduce demand on their bulk supply taken from VWP.

The media outlets VWP would expect to use are listed below;

Radio – Spire FM (Salisbury radio station), Garrison Radio

Newspapers – Andover Advertiser and Salisbury Journal

Webpage

<https://www.veolia.co.uk/our-services/what-we-do/water-services/water-projects/tidworth-operations>

6.4 Monitoring of Demand

VWP will enhance its current monitoring activities with the assistance of its network consultants, who will interrogate all available telemetered meters, district, network and where fitted with telemetry, customer revenue meters to assess the effects of the various stages of the Temporary Restrictions from Level 2 onwards.

Such information will not only inform the event dialogue with the regulatory Authorities but will act as a barometer of MoD demand which will be high on the Garrison Commander's agenda at the regular update meetings.

7. Post drought actions

7.1 Identifying the end of a drought

The end of a drought can be defined as when the risk of impact from drought is no greater than during a normal year, and where normal conditions have continued for a period of time. The hydrological conditions as a drought recedes can be complex and identifying the end of a drought can be difficult to determine. VWP will confirm first

and foremost with the EA that the water resource situation has returned to normal before taking any action. The following stakeholders would also be notified before any actions are taken: DEFRA, Ofwat, Water UK, CCW, DWI, Environmental Groups, Board and Employees.

The end of a drought will be determined using the company's triggers, with all restrictions able to be removed when groundwater levels have moved out of Level 3. The lifting of the ban will first require notice in relation to the lifting of prohibitions to be published on the company website and in two local newspapers. Unlike the imposition of restrictions however, there is no such lead in time necessary; restrictions will be revoked instantly after the notice is given.

7.2 Post drought actions

Directly after a drought event, it will be the responsibility of the Senior Operations Manager to produce a "lessons identified" report that will enable future processes to be improved. This report will be produced within 3-6 months of a drought ending and will be followed up within a year with evidence that recommendations were acted upon. The report will include:

- A review of the environmental impact of the drought by analysing baseline, in-drought and post-drought data.
- Determining if the appropriate environmental monitoring of baseline, during and after a drought was carried out to measure the impact of any drought orders.
- A review of the effectiveness of any mitigation measures implemented.
- An assessment of how well individual sources delivered additional water and determine where any re-assessments of yields may be needed or invested to maintain yields of sources.
- An assessment of the estimates of demand reduction from the implementation of demand side drought management actions.
- An investigation into whether or not the company would need to make any changes to its demand forecast or longer term demand forecast

Additionally a drought workshop would be held to assess the efficacy of the management process and review whether any improvements or changes to the drought plan were required (involving ideally the entire DMG).