

VEOLIA WATER PROJECTS LTD

DRAFT WATER RESOURCE MANAGEMENT PLAN 2024

ANNEX FOUR - THE ENVIRONMENT AND PREVENTION

OF DETERIORATION

'A Green Future: Our 25 year plan to improve the Environment' was issued by HM Government in 2019 and states their ambition to leave the environment in a better state. This plan will deliver a significant difference to the environment including the West Country region so that it is healthy, rich and vibrant for future generations.

The government ambition spans both delivering against strategic national needs as well as local improvements. It is likely that within some areas of the country, the improvement works will be down to a single water company. However, many areas may require joint delivery of different water companies.

This annex describes how VWPL will aim to manage the potential risk from deterioration to the environment within the VWPL operated WRZ and the wider Wessex Basin.

1. Veolia's Sustainability

VWPL is part of the Veolia group; Veolia is passionate about leading change and taking actions for sustainability by integrating strategies that protect the planet and communities. Veolia's purpose is Ecological Transformation, which includes finding innovative solutions for water and wastewater management to prevent pollution, improve biodiversity and reduce carbon emissions.

Veolia's Environmental Sustainability Policy Statement, signed by the Executive Vice-President UK & Ireland, defines Veolia's commitment to a sustainable future by protecting and conserving the natural environment. Veolia is the environmental partner helping our customers achieve sustainability targets, developing low carbon and closed-loop solutions in the circular economy.

Veolia's suppliers must abide by Corporate and Social Responsibility (CSR) commitments and new Suppliers' Charter as part of the process of being approved as a Veolia supplier. The Charter forms part of any invitation to tender and it binds our suppliers to respecting and following the principles that guide Veolia's procurement process - including sustainable development requirements.

As a leader in environmental solutions, Veolia is committed to drive emissions reductions and achieve Net Zero across its business operations by 2050.

2. Water Industry Strategic Environmental Requirement

To ensure VWPL fulfils its responsibilities to the wider environment and water bodies, VWPL produced a Water Industry Strategic Environmental Requirement report (WISER). The WISER report covers all environmental aspects in relation to daily operations of the VWPL network from water abstraction to distribution and wastewater collection to discharge.

In accordance with regulatory guidance, VWPL has produced a WISER report as part of the PR19 process and an updated WISER report is being completed for the PR24 submission.

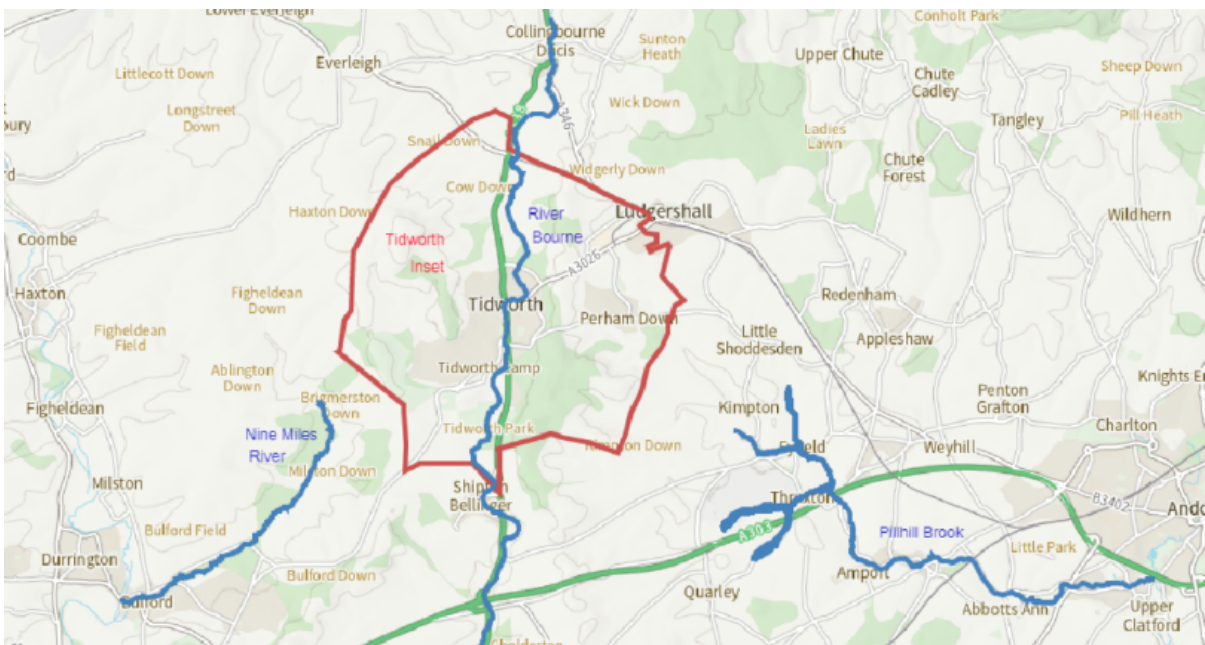
3. Deterioration risk to water bodies

All VWPL water supply is abstracted from groundwater sources within the underlying chalk aquifers. The main way that VWPL ensures that their daily operations do not present an unacceptable impact on the environment is through operating in accordance with the granted abstraction licence. The maximum volume of water that can be abstracted from the three borehole wells (Chalkpit, BH2 and BH3) is specified in licence SW/043/0024/006.

Within the wider Wessex Basin, three organisations operate groundwater abstraction boreholes: VWPL, the Ministry of Defence (MOD) and Wessex Water Ltd. The overall demand for these organisations has increased and the risk of deterioration within the wider environment supported by the groundwater sources of the Wessex Basin has also increased.

Historical vulnerability modelling and assessment using the Wessex Basin Groundwater model confirmed the risk of deterioration from abstraction boreholes operated by VWPL, the MOD and Wessex Water, on the River Bourne, the Nine Mile River and Pillhill Brook water bodies (Figure 1) .

Figure 1 - Water bodies at potential risk from abstraction activity within the Wessex Basin



In accordance with WISER and the Water Framework Directive (WFD), further assessment was considered necessary by the EA to establish an accurate extent of the impact on the underlying groundwater regime and wider environment and on the ability of the water bodies to meet their WFD targets. This assessment was completed as part of the PR19 AMP7 Hampshire Upper Avon Investigation.

The impact assessment of VWPL abstractions on the Nine Mile river and Pillhill brook is presented in the draft PR19 WINEP VWPL AMP7 Investigation report and the critical information is summarised below. It is recommended that this annex is read in conjunction with the draft PR19 WINEP VWPL AMP7 Investigation report.

3.1. PR19 WINEP VWPL AMP7 Investigation report

The Hampshire Upper Avon investigation confirmed that MOD, Wessex Water and VWPL abstractions have an impact on the river flow and the extent of the drying period on the referenced water bodies. A flow deficit of 0.42Ml/d was recorded for the Nine Mile River with VWPL apportionment being approximately 0.14Ml/d.

The option appraisal process for PR19 WINEP VWPL AMP7 highlighted that there were 5 potential schemes that could be implemented to reduce the impact on the water bodies as outlined in Table 1.

Table 1 - Summary of option appraisal

Option		Flow Gain Against FL		Impact for VWPL			Delivery Time scales
SI	Description	Nine Mile (Target- 0.42Ml/d with 0.14Ml/d for VWPL proportion)	Pillhill Brook	Financial (Capex)	Financial (Opex)	Operational	
1	Transferring Chalkpit abstraction to Tidworth Boreholes	0.01 Mld (7% of target)	-0.07 Mld	Not investigated	None	Loss of resilience to planned/ unplanned outage	5+ years
2	Revoking the Leckford Bridge Bulk Water supply	0.09 Mld (64% of target)	0.45 Mld	< £10K	Loss of 15% of the revenue	Minimal	> 5 years
3	Removing headroom on the licensed abstraction volume (based on actual)	Est. to be ~ 0.09 Mld (64% of target)	Est. to be ~ 0.45 Mld	Still to be confirmed	Still to be confirmed	Loss of resilience, Loss of level 3 drought supply options, Loss of spare capacity to support growth	> 5 years
4	Integrated solution- The revoking of the MOD groundwater abstraction at Bulford, the creation of a new	0.35 Mld (83% of target)	0.38 Mld	Still to be confirmed	Loss of 15% of the revenue	Minimal	10+ years

	abstraction point at a Wessex Water site (Amesbury) and the termination of the VWPL Leckford Bridge agreement.						
5	Capping licence to recent actuals and revoking Leckford Bridge Bulk Supply	0.14 Mld (100% of target)	0.77 Mld	Still to be confirmed	Loss of 15% of the revenue	Loss of resilience, Loss of level 3 drought supply options, Loss of spare capacity to support growth	> 5 years

The investigation highlighted that individual mitigation measures from either VWPL, Wessex Water or the MoD would not be sufficient to achieve the desired level of impact reduction due to the low efficiency of the abstractions. An integrated effort between all three parties would be the most effective approach with the best environmental outcome as it would restore flow levels close to compliance, with total compliance achieved with stream support. The integrated solution would comprise the revoking of the MoD abstraction at Bulford, the installation of a new groundwater abstraction borehole at a Wessex Water site in Amesbury and the termination of the VWPL Leckford Bridge export or the revoking of Wessex Water Leckford Bridge abstraction licence. But the implementation of such a solution represents a c. £28 million project which would take in excess of 10 years to complete.

VWPL abstraction activity within the Wessex Basin has been categorised as having a moderate deterioration risk. This is due to the recent actual river flow scenario being below the EFI and the future predicted river flow scenario decreasing further below the EFI despite the ecology being good.

Therefore there is an expectation that as part of VWPL's abstraction licence renewal in 2025, the current approved volume of 12 Ml/d may be reduced in order to prevent deterioration within the wider environment. However, at the time of producing the draft WRMP, any reduction parameters had not yet been agreed with the EA. VWPL has therefore presented a recent-actual scenario for the licence reduction.

For the purpose of creating accurate supply/demand balance planning tables, VWPL has included two scenarios, one detailing the current abstraction licence and one detailing the adopted recent-actual situation. This scenario has been included as an option in the option appraisal aspect of the WRMP in annex 1.

3.2. VWPL PR24 WINEP Scheme

The objectives of the PR24 WINEP AMP8 schemes are not yet agreed, however, the proposed objectives outlined below are considered to reflect the pre-consultations held between the EA and VWPL.

Under the PR24 WINEP AMP8 and WRMP24 schemes, VWPL is planning to

- Lead on the completion of the option appraisal, the option selection for the Nine Mile River
While VWPL impact assessment has been completed under the AMP7 investigation, it is likely that further modelling work will be required as Wessex Water completes their assessment and option appraisal, before an option can be selected and developed. However as part of the licence renewal process, there is an expectation that the EA will require VWPL to implement short/medium term solutions to minimise the impact of its abstraction on the Nine Mile River and its associated epithermal ponds.
- Investigate the impact of its abstraction impact on other water bodies within the Wessex Basin such as the River Avon and the River Bourne.

The Hampshire Upper Avon investigation highlighted that VWPL abstraction is responsible for a proportion of the flow deterioration of the River Bourne and the Avon. Under the PR24 WINEP, Veolia will carry out an impact assessment and option appraisal for these two rivers.

- Carry out a phosphorus investigation on the River Bourne.

VWPL Tidworth Sewage Treatment Works discharges to groundwater through infiltration lagoons adjacent to the River Bourne. While as part of the Tidworth STW permit variation (completed in 2017), it was assessed that the discharge had a negligible impact on the river Bourne phosphorus concentrations, Natural England is requesting this to be re-investigated given the “nutrient neutral” requirement on the River Bourne.

Note: VWPL will not carry out further investigation on Pillhill Brook, as the AMP7 investigation successfully established the level of impact. However, Pillhill Brook will need to be considered within all other objectives to ensure any proposed works or modelling do not negatively impact the current level of flows.

4. Biodiversity and Invasive Non-Native Species

4.1. Invasive Non-Native Species (INNS)

Under the PR19 WINEP scheme, VWPL was requested to investigate operational land for any terrestrial invasive and non native (INNS). VWPL needed to establish and understand any potential pathways of introduction and spread of INNS within its operations and assets in order to reduce the potential risk to the wider environment.

In order to fully investigate the presence, extent and potential impact of any encountered INNS, including the potential risks from spreading of these non-native species down-hydraulic gradient within the catchment either through surface water pathways and/or by visitors to site/VWPL operations teams, VWPL commissioned ecologists to produce a series of ecological assessments of the following VWPL-operated sites.

The findings of the investigation were presented in PR19 WINEP-Catchment Investigation for INNS & Biodiversity Enhancement report and the critical information and findings that might influence the

deterioration risk of the VWPL-operated WRZ are summarised below. It is recommended that this annex is read in conjunction with the PR19 WINEP report.

The surveys did not record any INNS species of concern within any VWPL operated land. However, to ensure the potential risk is regularly managed by VWPL, biodiversity champions from both the clean water and wastewater operations teams have been appointed. These team members will have a watching brief on all VWPL operational sites. To ensure the biodiversity champions recognise commonly occurring invasive and/or non-native species, tool box training was provided by an ecologist. If the biodiversity champions record potential invasive and/or non-native species on VWPL operated land, specialist advice from a suitably qualified consultant will be sought.

4.2. Biodiversity Net Assessment

The Government's 25 year Environmental Plan places great importance on enhancing and protecting the biodiversity of the UK. As part of the PR19 WINEP scheme, VWPL commissioned an ecologist to undertake an assessment of the current biodiversity value for habitats and species at operational VWPL sites. This assessment enabled VWPL to set objectives that will help to enhance biodiversity on all operational sites with the intention of leaving the natural environment in a measurably better state than it is currently.

The following sections describe in detail the biodiversity net gain of the improvement objectives VWPL have set for its operational sites.

4.2.1. Suitable egress from lagoons

At Tidworth STW, Veolia noted that animals, including deer, were getting stuck around the banks of Lagoon 1. It was thought that the animals were unable to find suitable footing on the banks in order to free themselves due to the presence of the liner. Veolia therefore installed netting type ladders (Figures 2 and 3) on the northern and southern banks of Lagoon 1 that would act as a pathway and allow any trapped animals to escape. Since this feature was installed, no further animals have been reported within Lagoon 1.



Figure 2 (left) and Figure 3 (right): showing the installed netting ladder within Lagoon One at Tidworth STW.

4.2.2. Creation of habitats at Tidworth Sewage Treatment Works and Lagoons

Following on from ecological surveys undertaken between 2020 and 2022 and in accordance with the NERC 2006, Veolia has started to implement a number of measures recommended to improve the overall biodiversity of the surveyed areas. These are outlined below.

Figure 4 (left): shows installed duck houses along the banks of Lagoon 3 at Tidworth STW.



Figure 5 (right): shows a selection of bird and bat houses installed at the Tidworth STW.



Veolia has revised the habitat management schemes for all operational wastewater sites. This includes the reduction of mowing grassed areas, the installation of footpaths and the categorisation of all tasks that could be undertaken on the site, including in an emergency. The schemes will be reviewed by Veolia annually. In addition, all Veolia operatives have been briefed by the biodiversity champions on the improved ground maintenance schemes and on the importance of keeping sites tidy and the use of designated footpaths in order to prevent the disruption of habitats.

Veolia has installed two duck houses on the southern banks of Lagoon 3, as shown in Figure 4. Additional duck houses will be installed on the banks on Lagoon 4 in the upcoming months once Veolia has finished the redevelopment to the soakaway design.

Bat boxes, two owl boxes and bird boxes are being installed by Veolia within the Tidworth sewage treatment works and the lagoons. An example of the installed boxes is shown in Figure 5.

Veolia reduced willow trees in the vicinity of the operational aspects of the sewage treatment works by approximately 40%. This enabled safer working conditions for Veolia operatives and the surplus wood was used to create natural bat shelters and the chippings spread across the area to attract and host beetles and insects. Materials gathered from the reduction were also used in the construction of the reptile refugias in the vicinity of the Lagoon.

Finally, VWPL have planted approximately ~150 trees in disused areas of the Tidworth STW to counteract any negative impacts associated with the reduction of the willow trees. This work was undertaken by members of the wider VWPL team in July 2022.

4.2.3. Great Crested Newts Habitat



During maintenance activities, the presence of Great Crested Newt (GCN) was noticed by VWPL at the Aliwal Barracks Oil Water Interceptor (OWI) in Tidworth. The work was stopped and an Amphibian and Reptile Management Plan was developed and implemented with support of an ecologist.

Veolia installed netting around the vicinity of the soakaway feature to prevent Great Crested Newts from accessing it, as shown in Figure 6.

Veolia also cleared felled trees and overgrown vegetation and created reptile refugias on the adjoining land.

Veolia's wastewater biodiversity champion, regularly inspects the area for any signs of GCN and other reptile species of concern.

Figure 6: showing netting around the OWI to prevent access of GCN

4.3. Biodiversity Enhancement Programme

As part of the PR24 WINEP and WRMP24 schemes, VWPL is considering how habitats present on operational sites can connect to the habitats within the wider countryside and provide continuity for native species, including bats and birds. VWPL appreciates that this effort will require assistance from the members of the wider community, including the MoD and these discussions have already commenced. It is hoped that these efforts will strengthen the overall biodiversity of the local area.

The following sections present the biodiversity improvements VWPL proposed within its WRZ.

4.3.1. Proposed Improvements Works at Chalkpit

The Chalkpit site area is located within the boundary of a single statutory wildlife site, the Sailsbury Plain SAC, SPA and SSSI. The Phase 1 survey undertaken as part of the WINEP investigation found that the Chalkpit site area comprised a mosaic of habitats, including dense scrub, calcareous, semi-improved grassland with scattered shrubs and bare ground. At the time of the survey, approximately 50% of the grassland habitats were unmowed with long swarded grass while the remaining areas comprised mowed grassland with short swarded grass.

The visiting ecologist suggested a number of recommendations that could be implemented to increase the overall biodiversity net gain of the site. Those recommendations were reviewed with the VWPL operation team but only a few biodiversity improvements were approved for implementation due to the regulatory restrictions on clean water and water treatments sites by the DWI and other regulatory bodies.

As part of the PR24 WINEP and WRMP24 cycles, VWPL is planning to install bat and bird boxes in suitable locations to provide habitats. The boxes will be placed equidistant and at different orientations (approximately 90 degree angles) to make allowances for seasonal changes in species behaviour.

This option would provide low to moderate biodiversity net gain on the site.

4.3.2. Proposed Improvements Works at Tidworth Abstraction Boreholes

The Phase 1 survey undertaken as part of the WINEP investigation found that the Tidworth Borehole site area comprised poor, semi-improved grassland and bare ground.

The visiting ecologist suggested there were a number of recommendations that could be implemented to increase the overall biodiversity net gain of the site. Those recommendations were reviewed with the VWPL operation team but only a few biodiversity improvements were approved for implementation due to the regulatory restrictions on clean water and water treatments sites by the DWI and other regulatory bodies.

As part of the PR24 WINEP and WRMP24 cycles, VWPL is planning to install bat and bird boxes in suitable locations to provide habitats. The boxes will be placed equidistant and at different orientations (approximately 90 degree angles) to make allowances for seasonal changes in species behaviour. VWPL will also plant native, species-rich hedgerows along one of the Tidworth abstraction borehole boundaries providing suitable habitats. VWPL will ensure that the new hedgerows are the same as is currently present within the immediate surrounding area to ensure there is connectivity and continuity for local species. It is also hoped that the implementation of this option would strengthen the hedgerow network within the local area and connect the VWPL operational sites with nearby woodlands.

This option would provide low to moderate biodiversity net gain on the site.

4.3.3. Proposed Improvements Works for Clarendon Reservoir

The phase 1 habitat survey found that the site area was predominantly neutral, semi-improved grassland with a shirt sward. Broadleaved, semi-natural woodland was present along all site boundaries.

The visiting ecologist suggested there were a number of recommendations that could be implemented to increase the overall biodiversity net gain of the site. Those recommendations were reviewed with the VWPL operation team but only a few biodiversity improvements were approved for implementation due to the regulatory restrictions on clean water service reservoir sites by the DWI and other regulatory bodies.

As part of the PR24 WINEP and WRMP24 cycles, VWPL is planning to install bat and bird boxes in suitable locations to provide habitats. The boxes will be placed equidistant and at different orientations (approximately 90 degree angles) to make allowances for seasonal changes in species behaviour.

This option would provide low to moderate biodiversity net gain on the site.

4.3.4. Proposed Improvements Works for Tidworth STW and Lagoons

The phase 1 habitat survey found that the sewage treatment site area was heavily developed and comprised man-made structures, bare ground, neutral, semi-improved grassland and broadleaved, semi-natural woodland with mixed plantation woodland on the eastern site boundary. In addition the southern site area comprised mixed semi-natural woodland.

As part of the PR24 WINEP and WRMP24 cycles, VWPL is planning to :

- Plant native, species-rich hedgerows along the site boundaries. The planting of these native species rich hedgerows would provide moderate biodiversity net gain as it would provide suitable habitats. VWPL will ensure that the new hedgerows are the same as what is currently present within the immediate surrounding area to ensure there is connectivity and continuity for local species. It is also hoped that the implementation of this option would strengthen the hedgerow network within the local area and connect the VWPL operational sites with nearby woodlands.
- Install bat and bird boxes in suitable locations to provide habitats, including on portacabin and generator buildings. If the bird and bat boxes are installed within the site, VWPL will ensure that the boxes are placed equidistant and at different orientations (approximately 90 degree angles) to make allowances for seasonal changes in species behaviour.

This option would provide low to moderate biodiversity net gain on the site.

Also it was discussed with the EA that the lagoons would be the perfect location for floating ecosystems. These platforms could provide marginal habitats for a range of wildlife, including ducks, newts and otters. All of which have been targeted within VWPL biodiversity efforts to date. VWPL are currently liaising with the wastewater operational team to see if a floating ecosystem could be viable and would not negatively impact the technical process that occurs within the lagoons. VWPL will conclude this biodiversity improvement method with the EA in the PR24 WINEP report.

4.3.5. Proposed Improvements Works for Perham Down site

The phase 1 habitat survey found that the Perham Down site area comprised predominantly poor, semi-improved grassland with a short sward. The site area is surrounded by a mixed, semi-natural woodland habitat.

As part of the PR24 WINEP and WRMP24 cycles, VWPL is planning to :

- Plant native, species-rich hedgerows along the site boundaries. The planting of these native species rich hedgerows would provide moderate biodiversity net gain as it would provide suitable habitats. VWPL will ensure that the new hedgerows are the same as what is currently present within the immediate surrounding area to ensure there is connectivity and continuity for local species. It is also hoped that the implementation of this option would strengthen the hedgerow network within the local area and connect the VWPL operational sites with nearby woodlands.
- Install bat and bird boxes in suitable locations to provide habitats, including on portacabin and generator buildings. If the bird and bat boxes are installed within the site, VWPL will ensure that the boxes are placed equidistant and at different orientations (approximately 90 degree angles) to make allowances for seasonal changes in species behaviour.

This option would provide low to moderate biodiversity net gain on the site.

VWPL are also considering revising the habitat management for the Perham Down site area. Revision of the habitat management would provide moderate biodiversity net gain. It is likely that this will comprise the reduction of mowing and other gardening activities allowing some of the site

areas to naturalise.

The report also suggested that beehives could be installed within locations across the site to help increase bee populations within the local area. However, there are a lot of implications surrounding this option and as such, VWPL are currently investigating if this option is plausible and does not negatively impact daily operations.

4.3.6. Biosecurity within the Tidworth network

To ensure the security of all improvement works implemented on operational sites, VWPL will be producing a biosecurity management plan. This plan will detail how VWPL will manage activities/events that may impact biodiversity improvement works, for example how VWPL would manage the development of ash dieback within wooded areas and manage bee populations within the operational sites.

VWPL will also be producing habitat management plans for each individual operational and non-operational site, for example Chalkpit abstraction borehole. These plans will outline how VWPL intends to manage the conservation of certain habitats, such as semi-improved grassland.

4.4. Strategic Environmental and Habitats Regulations Assessment

VWPL has acknowledged their environmental responsibilities and is currently undertaking a Strategic Environmental and Habitats Regulation Assessment on all operational sites. The report will be included in the final draft of the WRMP.

5. Carbon Emissions

As a leader in environmental solutions, Veolia is committed to drive emissions reductions and achieve Net Zero across its business operations by 2050. Veolia has developed a reporting tool, Green Path, and set 2020 as a baseline year for the GHG footprint of Veolia UK. Our carbon measurement and targets are defined in line with the GHG Protocol Corporate Accounting and Reporting Standard, and align with the Department for Environment, Food and Rural Affairs (DEFRA) guidance on how to measure and report our GHG emissions. This reporting tool will be available to the VWPL team in order to report GHG footprint.

This includes all emissions under Scope 1 and 2, as well as a subset of Scope 3 emissions.

Scope 1: Direct GHGs from our operational sites, offices and vehicles.

Scope 2: Indirect GHGs from the electricity we consume.

Scope 3: Other indirect emissions across our value chain (upstream and downstream).

As the GHG Protocol Corporate Standard framework encourages a dual reporting methodology to account for Scope 2 electricity emissions, we have presented our Scope 2 emissions through a location-based method alongside a market-based method. GHGs are expressed in carbon dioxide

equivalent value (CO₂e), hence including the seven main GHGs covered by the Kyoto Protocol. Unless specified otherwise, all total GHGs are expressed in Gross tCO₂e.

UK Government emission conversion factors for company GHG reporting 2020 have also been adopted. Following external and internal consultation, we have developed an ambitious and achievable carbon reduction plan to drive us towards our Net Zero ambitions which will also be rolled out in the Tidworth Inset.

During the WRMP24 cycle, VWPL will continue to manage and reduce its carbon footprint in line with Veolia's overarching Impact 2023 strategy.