

PR24 WINEP driver guidance – Drinking Water Protected Areas

Driver code	Description	Legal obligation	Tier 1 outcome
DrWPA_INV	Investigations for 'at risk' DrWPAs or groundwater safeguard zone to identify actions to prevent deterioration and/or to reduce treatment.	S	Water company actions to protect and improve the quality of water abstracted for water supply.
DrWPA_ND	Implementation of actions through a catchment scheme, or a wastewater treatment works, to prevent deterioration (or improve following a deterioration) in water quality to avoid an increase in the level of water purification treatment.	S	
DrWPA_IMP	Implementation of actions through a scheme to improve water quality so the level of purification treatment can be reduced over time.	S+	

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Introduction

The Environment Agency and Natural England translate legislation and UK government priorities which are set out in the Water Industry Strategic Environmental Requirement (WISER).

WISER describes the legal obligations, government targets and statutory (S or S+) requirements water companies must achieve during each 5 yearly price review.

It also sets out the non-statutory (NS) (with or without government support) requirements a water company should consider provided there is customer support for this action.

WISER underpins the government's Strategic Policy Statement which specifies the government's priorities for the water industry and the framework and policy priorities within which Ofwat should operate.

The process enabling water companies to develop, fund and implement sustainable solutions to address the problems is described in the Water Industry National Environment Programme (WINEP) methodology. The WINEP methodology sets out the overarching process for designing, developing, and delivering water company actions to protect and improve the environment.

Our objective for the price review in 2024 (PR24) is to create a WINEP that is efficient and affordable to deliver, legally compliant, and that increases overall benefit of water industry investments to customers, society, and the environment.

This WINEP driver guidance explains what water companies should do to establish the need for action under the Drinking Water Protected Area (DrWPA) drivers. When developing WINEP options the [WINEP methodology](#) and the [WINEP options development guidance](#) should be followed.

For PR24, actions should be included in the WINEP where progress is required over the next 5 years. WINEP driver guidance will identify where it is appropriate to profile actions beyond this as part of a long-term enhancement strategy.

Summary of driver objective

Water companies develop DrWPA actions using a weight of evidence approach to:

- prevent deterioration in water quality to avoid an increase in the level of water purification treatment; or
- improve water quality so the level of purification treatment can be reduced over time.

The DrWPA driver can be used on its own, or in combination with other drivers. Actions can be aimed at surface water quality and/or groundwater quality and should be location specific, have clear outcomes and delivery timescales. Actions should address substances with the potential to impact drinking water treatment including wholesomeness. Schedule 1 of the Water Supply (Water Quality) Regulations 2016 lists the parameters, and the concentration of those parameters, which would constitute a potential danger to human health.

A catchment management approach to secure wider catchment benefits and increase natural capital should be taken to:

- prevent deterioration of (or improve where deterioration has already occurred) the quality of raw water abstractions to avoid additional treatment in a cost effective manner; or

- improve the quality of raw water abstractions to reduce treatment levels in a cost beneficial manner.

Improvement at an upstream wastewater treatment works can be used to prevent deterioration or improve water quality to reduce purification treatment or prevent the need for additional purification treatment, respectively.

Water companies are encouraged to co-design and co-deliver in partnership with other stakeholders e.g. local catchment partnerships. Partnership working is encouraged with farmers and landowners to reduce concentrations of substances such as nitrate or pesticides through land management practices, or other innovative solutions, to achieve DrWPA objectives.

Important! Groundwater catchment actions: There are both good status objectives and DrWPA objectives for groundwater bodies. DrWPA actions will primarily meet protected area objectives and will have most benefit to an abstraction (i.e. those actions implemented in safeguard zones). However, these will contribute to meeting good status objectives in the wider groundwater body. Whilst there are mutual benefits, actions for groundwater DrWPA objectives must be cost effective in achieving the protected area objectives. Whereas groundwater actions for good status are subject to cost benefit analysis. Refer to the PR24 groundwater guidance for more information.

Important! Water companies can submit options outside of Groundwater Safeguard Zones using WFD drivers. Refer to the PR24 groundwater guidance for more information.

25 Year Environment Plan

The 25 year environment plan sets a goal of achieving clean and plentiful water through ‘improving at least three quarters of our waters to be close to their natural state as soon as is practicable’. Achieving the goal includes:

- Reaching or exceeding objectives for rivers, lakes, coastal and groundwater that are specially protected, whether for biodiversity or drinking water as per our river basin management plans.

Driver codes & descriptions

Driver	Description
DrWPA_INV	Investigations for ‘at risk’ DrWPAs or groundwater safeguard zone to identify actions to prevent deterioration and/or to reduce treatment.
DrWPA_ND	Implementation of actions through a catchment scheme, or a wastewater treatment works, to prevent deterioration (or improve following a deterioration) in water quality to avoid an increase in the level of water purification treatment.

Driver	Description
DrWPA_IMP	Implementation of actions through a scheme to improve water quality so the level of purification treatment can be reduced over time.

Changes from PR19 and forward look

The Environment Agency Information Letter dated 4th November 2020 (Ref: EA/15/2020) set out that levels of metaldehyde in the environment are anticipated to decrease reducing the need for measures following the announcement of the metaldehyde restrictions on 18th September 2020.

The on-going reviews of 'at risk' substances in surface water DrWPAs, undertaken by the Environment Agency in conjunction with water companies, will confirm whether metaldehyde levels have declined. Water company raw water monitoring should provide evidence of changing metaldehyde levels in the environment.

Therese Coffey's letter to water companies in January 2018 indicated that, regardless of any restrictions imposed around the use of metaldehyde, catchment management is expected to continue to form the predominant means for water companies to protect consumers and mitigate risks to wholesomeness of water supplies.

Our Regulatory Information Letter (ref: EA/01/2019) states that metaldehyde measures must remain in the PR19 Water Industry National Environment Programme (WINEP) until the effectiveness of metaldehyde restrictions is known. This position has not changed for PR24. Metaldehyde catchment measures should be identified and delivered through the PR24 WINEP for Drinking Water Protected Area drivers (DrWPA_INV and DrWPA_ND) where these have not been funded in previous price review periods.

Where metaldehyde is no longer considered 'at risk' in a DrWPA, based on evidence, the need to further continue a metaldehyde scheme will be reviewed. This will be undertaken in consultation with the Drinking Water Inspectorate (DWI) regarding any relevant metaldehyde Undertakings.

Methodology

Water companies will lead on developing actions for DrWPAs.

Co-design and co-delivery should be done in collaboration with the Environment Agency and other stakeholders to achieve the WINEP outcome and wider environmental outcomes: natural environment; net zero; catchment resilience; and access, amenity and engagement.

Close collaboration across multiple stakeholders is needed to ensure the design of catchment schemes result in multiple environmental outcomes including future water use and drought planning, improvements to habitats and species, carbon storage, and managing flow through a Natural Flood Management type approach.

Water companies should develop options to achieve the WINEP outcome and wider environmental outcomes following the [WINEP options development guidance](#). An Action Specification Form should be completed for the preferred investigation or catchment scheme option.

Action Specification Form

An Action Specification Form (ASF) can be used to capture the detailed specification of the action. It should include a summary of the actions to deliver the environmental outcome. ASFs can refer to information set out by water companies in the Options Development Report and Options Assessment Report associated with the agreed action. The ASF enables agreement between the Environment Agency and the water companies, as well as other stakeholders, on the actions required to deliver the environmental outcomes. It also enables the WINEP action to be signed-off when complete.

DrWPA_INV

DrWPA investigations should be designed to:

- identify what is causing the water quality deterioration e.g. agriculture, industry, domestic etc
- understand the pathway(s) for the pollution to reach the raw water abstraction point (receptor)
- undertake monitoring to understand the issue, identify the action and better understand where to target actions. Water company data may be available to support this evidence
- fully characterise groundwater and surface water Safeguard Zones
- include feasibility studies
- undertake options development to identify best value actions for future prevent deterioration (DrWPA_ND) and improvement (DrWPA_IMP) actions in PR29
- include Water Supply (Water Quality) Regulation 27 risk assessments

DrWPA_ND

For a DrWPA_ND option to be identified the DrWPA must:

- be 'at risk' and
- have a Safeguard Zone established for the substance(s)

which means an environmentally significant upward trend; OR at risk of requiring an increase in purification; OR in a poor status groundwater body for the substance(s) concerned.

Catchment actions must prevent deterioration, or improve following a deterioration, of water quality or improve water quality. Catchment actions can be identified through:

- previous AMP DrWPA investigations
- water company actions identified in the Safeguard Zone Action Plans
- modelling of the catchment using catchment models or SAGIS modelling for nutrients
- Water Supply (Water Quality) Regulation 27 risk assessments

DrWPA_IMP

DrWPA_IMP actions improve water quality in DrWPAs not 'at risk' and/or without a Safeguard Zone. Catchment actions can be identified through:

- previous AMP DrWPA investigations
- water company actions identified in Safeguard Zone Action Plans (if applicable)
- actions identified through other water company work
- modelling of the catchment using catchment models or SAGIS modelling for nutrients
- Water Supply (Water Quality) Regulation 27 risk assessments
- drought plans

Evidence and confidence levels required

Information on DrWPA risks and issues can be found on the Environment Agency's Price Review SharePoint under '[WINEP drafting](#)' in the Stage 2 folder for each water company.

A weight of evidence approach is used to support inclusion of DrWPA actions. Water companies should use the following evidence:

- Safeguard Zone Action Plans
- previous PR19 DrWPA investigation reports
- poor DrWPA status for groundwater bodies

- an environmentally significant upward trend at an abstraction point caused by anthropogenic activity
- a potential or actual drinking water standard failure caused by anthropogenic activity
- other evidence of water quality deterioration
- land use characteristics in the catchment
- catchment risk assessment e.g. through the water companies' water safety plan approach and Regulation 27 risk assessments
- DWI Notice or Undertaking
- source-pathway-receptor linkages
- risk of future additional purification treatment being required
- Wider benefits, including the WINEP wider environmental outcomes, the action may bring e.g. ecosystem benefits, recreation, eco-tourism and health benefits
- evidence the catchment action is 'best value' to meet WFD DrWPA requirements than end of pipe alternatives.
- Information on DrWPA risks and issues can be found on the Environment Agency's Price Review SharePoint under '[WINEP drafting](#)' site list under the Stage 2 folder for each water company.

WINEP options development

Water companies should develop actions for the DrWPA driver in line with the [WINEP options development guidance](#). The WINEP Options Development Report and WINEP Options Assessment Report written by the water company should clearly demonstrate the preferred option provides 'best value' to customers maximising the net present value of the whole life costs and benefits compared to other options. An option could be considered as a preferred option where it has close to the best whole life value (net present value of costs and benefits) but it provides significant advantages in terms of delivering the WINEP wider environmental outcomes.

WINEP options assessment

The Environment Agency will assess the preferred option in line with the [WINEP options assessment guidance](#). Where the option can 'proceed' the Environment Agency will transfer it to the 'agreed action' WINEP spreadsheet.

Solution types that can be considered

Water companies are encouraged to take a natural capital approach and consider catchment schemes. These can, include but are not limited to:

- reverse auctions for actions to reduce pollution - whereby the lowest bid that achieves the outcome wins
- payments for the production of clean water and ecosystem services
- long-term agreements with farmers on farming practices, such as which crops are grown, what pesticides are used etc.
- emissions trading

The [WINEP methodology](#) encourages water companies to explore and develop new ideas to deliver the WINEP outcome and WINEP wider environmental outcomes for PR24. For example a WINEP driver to reduce concentrations of an 'at risk' pesticide in a DrWPA could be designed to cover sustainable pesticide use in the wider SgZ thereby delivering wider benefits.

Catchment actions can also deliver social and environmental benefits providing cost effective alternatives to treatment, improving water companies deployable output and may provide wider benefits such as:

- reduced energy consumption and treatment costs
- reduced waste streams
- reduced traffic movements associated with the treatment and waste
- reduced carbon dioxide emissions/increased carbon capture and storage
- flood risk mitigation e.g. through natural flood management
- improved ecology
- wider ecosystem services

Environmental outcomes

The 3-tier outcome approach is explained in the WINEP methodology.

The WINEP DrWPA outcome is to reduce the level of purification needed in producing drinking water, or to prevent a future increase in purification being required. 2007/8 is the treatment baseline for measuring this outcome.

The justification for the option should identify the actions to be undertaken and the volume of water abstracted protected or improved (Ml/yr). Water companies must provide evidence to support the option at the Tier 3 outcome level and the volume of water abstracted protected or improved (Ml/yr) should be inserted on the WINEP collaborative spreadsheet.

Annex 1 details how the volume of water abstracted protected or improved (Ml/yr) is calculated.

Tier	Description
Tier 1: Outcome	Water company actions to protect and improve the quality of water abstracted for water supply.
Tier 2: Goal	<p>Tier 2 goals should be agreed collaboratively between the water company, the Environment Agency and other stakeholders.</p> <p>Examples:</p> <p>[surface water]: [Prevent deterioration] [Reduce] raw water quality concentrations of [substance(s)] in [Safeguard Zone(s)] to remove 'at risk' status for that substance(s) in the surface water Drinking Water Protected Area(s).</p> <p>[groundwater]: [Prevent deterioration] [Reduce] raw water quality concentrations of [substance(s)] in [Safeguard Zone] to remove [named] groundwater Safeguard Zone.</p>
Tier 3: Outputs	<p>Tier 3 outputs are site or asset specific actions to deliver the Tier 1 outcome and/or Tier 2 goals.</p> <p>Outputs listed in the WINEP would be at a site specific level i.e.:</p> <ul style="list-style-type: none"> • Cover crop use in [location] to reduce [substance] concentration by [amount] • Change of land use from [land use A] to [land use B] which will reduce [substance] by [amount] • Source apportionment modelling to identify the main contributions of [substance] from [location] • Revised permit limits for nutrient [phosphorus or nitrogen] removal scheme

WINEP wider environmental outcomes

Water companies should take account of the wider environmental outcomes and the wider environmental metrics set out in the [WINEP options development guidance](#) in the design of actions. This will ensure the preferred option identified through the WINEP options development delivers 'best value'.

The wider environmental outcomes set out in the [WINEP methodology](#) are: natural environment; net zero; catchment resilience; and access, amenity, and engagement.

Accounting for climate change

Water companies should include climate change mitigation and adaptation measures so that long term integrated resilient solutions can be identified for their water treatment assets. The primary considerations in planning for climate change are:

- net zero (CO₂) aspirations
- adaptation and resilience.

The key environmental variables relevant to DrWPAs influenced by climate change are:

- river and groundwater flows
- temperature
- residence time in river
- land use management e.g. crop type; pesticide use
- abstraction rate

Through options development water companies should:

- identify and include schemes that deliver carbon sequestration benefits where possible e.g. through planting trees or restoring peatland
- ensure assets and the environmental outcomes of schemes are resilient to future changes in climate. This will assess risks to assets or scheme outcomes under a range of climate change scenarios and enable actions to be adapted where necessary
- use the latest climate projections: UKCP18 to understand the impact of future scenarios
- adopt an adaptive pathways management approach designing flexible and robust plans anticipating and effectively responding to uncertain future changes by combining low-regret, short-term actions (ones that are quick to implement and have benefits are well evidenced) with long-term options to adapt.
- assess what physical changes to the groundwater, surface waters and landscape may occur under different climate scenarios, how these are managed and/or opportunities utilised e.g. allowing space for rivers to adapt to the impacts of climate change
- identify schemes promoting natural recovery of habitats and reinstating natural form and function of the physical environment to support resilience to future climate impacts
- identify schemes that deliver improvements to flood and drought resilience through, for example, better surface and groundwater management.

Economic considerations

DrWPA_INV and DrWPA_ND actions are WFD 'must do' requirements (S) under the WFD. DrWPA_IMP actions, designed to reduce treatment levels, go beyond statutory obligations (S+).

Water companies should identify cost-effective actions – the best value action - as set out in the [WINEP options development guidance](#), to deliver the DrWPA WINEP outcome and the WINEP wider environmental outcomes.

Other considerations

What can be included in the WINEP?

- All DrWPA_INV, DrWPA_ND and DrWPA_IMP actions, designed to meet WFD requirements, should be included in the WINEP. The WINEP should not be limited by a company's catchment management resource or land ownership.
- Water companies are able to do work outside of the WINEP.
- The outcome of previous AMP investigations, Water Supply (Water Quality) Regulation 27 risk assessments (where the risk is partially or wholly unmitigated) and any other relevant investigations should inform prevent deterioration (DrWPA_ND) or improvement (DrWPA_IMP) PR24 options.
- If an investigation has not been satisfactorily completed during PR19 it cannot be repeated in PR24 for the same substance(s) or area of land unless there is a material change in the catchment or substance use. Unsatisfactory PR19 investigations will not be signed off as completed and will be captured as part of Environmental Performance Assessment.
- Actions can be included where an upstream waste water treatment works (WwTW) is causing a water quality deterioration in a DrWPA which may lead to the need for additional purification treatment (DrWPA_ND) or lead to removal of purification treatment (DrWPA_IMP).

Repeat catchment actions for the same substance(s) in the same DrWPA

Where a DrWPA investigation or action has been completed in a previous AMP round the inclusion of an investigation or action for the same substance(s) in the same broad geographical area will not normally be supported.

Water companies need to fund the continuation of catchment actions from previous AMP periods from their revenue/maintenance budgets and included them in their business plans accordingly. They should not be included in the WINEP.

OFWAT have confirmed catchment actions will continue to be funded following completion of the 5-year AMP period. The move away from separate assessments of capital expenditure (CAPEX) and operational expenditure (OPEX), to a TOTEX approach, removed water company incentives towards new infrastructure solutions and took away barriers to the on-going funding of catchment actions.

Where the Environment Agency (or the DWI) believe ongoing catchment actions are effective in meeting the environmental obligation, their inclusion in water company business plans (outside of AMP) to enable the continuation of the catchment action will be supported. This could be through a letter of support provided by the Environment Agency.

There is an exception where the investigation or action may be funded for a second time, where it meets one of the following criteria (i.e. circumstances have changed):

- new or significantly different types of actions are proposed
- new policy objectives or outcomes have been agreed
- there is a significant expansion in either geographical scale or actions undertaken

Careful consideration, and discussions with the Environment Agency, will be needed to confirm that one or more of the criteria listed above has been met to support the inclusion of such actions.

The following questions will help guide this decision:

- Is there adequate evidence that changing the action scope and specification will effectively address the issue?
- Is there adequate evidence that new geographical areas are needed to deliver the DrWPA objectives?
- Is there adequate evidence that the sources of pollution have changed significantly and different actions are needed to effectively address the issue?

If the answer to any of the questions above is 'yes' then the 'repeat' catchment action should be considered for PR24. Water companies will need to record their justification for the 'repeat' catchment action in the WINEP Options Development Report and WINEP Options Assessment Report.

Nutrient removal from point source discharges

Actions targeting wastewater treatment works should be justified on the following evidence:

- good evidence of eutrophication in the water body from which the raw water is abstracted (e.g. 'certainty of eutrophication' confirmed in the river or lake WoE workbook as 'Very Certain')
- established link between eutrophication and a drinking water issue such as supply outages, water treatment issues, or risk of additional treatment needed. This could be evidenced by increased frequency or severity of algal blooms, and associated risk of taste and odour consumer contacts arising from algal breakdown substances including geosmin and 2-methylisoborneol (MIB).
- evidence to show the wastewater treatment works is making a significant contribution to the eutrophication issue (e.g. SAGIS modelling for phosphorus)
- show nutrient removal would have a beneficial impact e.g. through modelling confirm the method of nutrient removal (e.g. using iron/aluminium salts) would not adversely impact drinking water quality or environmental quality standards.
- strong evidence of surface water-groundwater interaction (e.g. groundwater modelling; evidence of transmission of river water through the riverbed) showing surface water discharges are impacting a groundwater abstraction
- impact of groundwater activity on an abstraction

What is not covered by the DrWPA driver

- Ongoing surveillance monitoring – this is covered by a water company's business as usual operations e.g. catchment monitoring for water safety plans.
- Guidance on dealing with the remediation of contaminated land (as defined in the Environmental Protection Act 1990 Part 2A) to protect drinking water supplies – this is covered in groundwater guidance.
- Guidance for groundwater DrWPA good status requirements and groundwater good status or habitat schemes – this is covered in groundwater guidance.

Role of the Environment Agency, water companies and the Drinking Water Inspectorate

The Environment Agency is responsible for identifying 'at risk' DrWPAs and identifying actions to protect and improve the water quality of an 'at risk' DrWPA. This is done through the Safeguard Zone planning approach. The Environment Agency identifies, in conjunction with water companies, actions to investigate, protect and improve raw water quality. Water companies are responsible for carrying out catchment risk assessments and submitting the results to the DWI

under Regulation 27 and 28 of the Water Supply (Water Quality) Regulations 2016 as amended.

The DWI is responsible for the regulation of the Water Supply (Water Quality) Regulations 2016 as amended. The DWI may issue a Regulation 28 notice to address an unmitigated risk identified by the company. This may include catchment management or additional treatment, or a combination of actions to address the risk. The DWI will also issue a legal notice under AMP8 where there is a driver identified in the OFWAT methodology and supporting evidence from the company e.g. a deterioration in water quality requiring new treatment processes and catchment management work.

Water companies provide risk assessments (as required under Regulations 27 and 28 of the Water Supply (Water Quality) Regulations 2000 (amended), and the Welsh equivalent) to the DWI covering all aspects of the 'source to tap approach' - catchment, treatment, distribution and domestic. The risk assessments are categorised depending on whether action is needed, being investigated, being delivered or whether the risk is partially or fully mitigated. Any unmitigated catchment risk should be considered for catchment management and long term sustainability of water sources improved.

Drinking Water Inspectorate legal instruments

A catchment scheme may link to a DWI legal instrument (Undertaking or Notice). The Environment Agency shares the WINEP DrWPA proposals at a national level with the DWI to prevent duplication of actions in OFWAT submissions.

Additional treatment

Additional treatment includes all of the following situations where there is clear evidence that they are a result of deterioration in raw water quality. This is compared to the baseline treatment levels (2007/08) and includes but is not restricted to:

- construction and operation of new water treatment works
- early replacement of existing water treatment works
- development of new or existing blending scheme (new boreholes or new pipelines)
- increase in blending ratio (i.e. increase in amount of cleaner water from another source required to dilute less clean water) of existing blending scheme
- increase in use of chemicals in existing plant e.g. powdered activated carbon dosing
- additional modular treatment at existing plant e.g. more of the same type of treatment

- installation of completely new treatment process
- increase in maintenance of treatment process e.g. more frequent cleaning of sand filters, increased frequency of GAC regeneration
- move from duty/standby to duty/assist status of existing plant. Duty/standby is where there are two sets of treatment but only one of them is in use at any one time whilst the other is being cleaned, maintained, repaired. Duty/assist is where all treatment is online at the same time and there is no longer any plant on standby, therefore there is an increase in the use of the treatment
- Significant refurbishment and/or up-rating of existing plant
- Increase in costs (operational and/or capital) but only when linked to WQ deterioration

Links to technical documents

- [Water Industry National Environment Programme \(WINEP\) methodology](#) ('WINEP methodology')
- [Water Industry National Environment Programme \(WINEP\) options development guidance](#) ('WINEP options development guidance')
- [Water Industry National Environment Programme \(WINEP\) options assessment guidance](#) ('WINEP options assessment guidance')
- [Water Industry National Environment Programme \(WINEP\) wider environmental outcomes metrics](#) ('WINEP wider environmental outcomes metrics')
- [The Contribution of the Water Supply \(Water Quality\) Regulations to the implementation of the Water Framework Directive in England & Wales](#)
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Internal Environment Agency guidance on surface water DrWPAs

Note - these can be shared with water companies on request.

- [Surface Water Drinking Water Protected Areas: identification and risk assessment](#)
- [Surface Water Drinking Water Protected Areas: Safeguard Zones](#)
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Annex 1

Calculating volume of water abstracted protected or improved (MI/yr)

Water companies should complete the abstraction volumes in MI/year on the WINEP spreadsheet in **Column CH** on the WINEP spreadsheet.

The environmental outcomes for DrWPA drivers is measured as licensed abstraction volume:

- DrWPA_ND: Volume (Ml/yr) of drinking water protected by avoiding the need for additional treatment.
- DrWPA_IMP: Volume (Ml/yr) of drinking water protected by reducing the level of existing treatment.

Each public water supply abstraction has a licenced abstraction volume. The licenced volumes have been adjusted according to the number of abstraction points and any licence aggregation.

In some cases an abstractor might not be able to physically abstract the quantities prescribed by a licence. Each water company will have calculated a deployable output for each of their sources (or group of sources). However, for the purpose of DrWPA environmental outcomes it is considered reasonable to use authorised licensed volumes.

Excel spreadsheets are shared in the PR24 SharePoint site under [WINEP drafting](#) for each water company in the Stage 3 folder. There are 4 worksheets: 'Read Me'; Surface Water; Groundwater; and 'CAMS AP to WBID'.

Each worksheet provides information on:

- Licence Number
- site name
- licence holder
- licence purpose code
- ledger file
- for surface water abstractions – river catchment WFD waterbody ID or a CAMS Assessment Point ID
- for groundwater abstractions - Columns F to O give surface water WFD waterbody IDs that have been assigned a percentage of groundwater impact. The waterbody with the largest impact has been highlighted green & red and copied into column Q.
- aggregated adjusted full licence annual point purpose limit (m3/year).
- aggregated adjusted full licence annual point purpose limit (Ml/year).

For each DrWPA option (DrWPA_ND or DrWPA_IMP) search on the abstraction licence number or site name using the ledger file name/catchment name to aid the search. The search can be adapted using a text filter.

How to calculate the DrWPA environmental outcome.

Example 1: One surface water abstraction point associated with the abstraction licence

Licence Number	WFD water body ID or CAMS Assessment Point	Aggregated adjusted full licence annual point purpose limit (MI/year)
A	GB107101006020	220

Environmental outcome = 16000 MI/yr.

Example 2: Multiple surface water abstractions points associated with an abstraction licence

The location of the DrWPA action is important when there is >1 abstraction point associated with the abstraction licence which are in different water bodies. The abstraction points that will benefit from the DrWPA action should be identified.

Licence Number	WFD water body ID or CAMS Assessment Point	Aggregated adjusted full licence annual point purpose limit (MI/year)
B	GB105036040942	10500
C	GB105036040942	19000
D	GB105036041000	9000
E	GB105036041000	24500

Scenario 1: Action improves GB105036040942 and GB105036041000

Environmental outcome = (10500 + 19000 + 9000 + 24500) = 63000 MI/yr.

Scenario 2: Action improves GB105036040942 only

Environmental outcome = (10500 + 19000) = 29,500 MI/yr.

Scenario 3: Action improves only Intake B (action is located downstream of Intake C and therefore does not improve this abstraction)

Environmental outcome = 10500 MI/yr.

Example 3: One groundwater abstraction point associated with the abstraction licence

For groundwater abstractions, schemes associated with the surface water body where the largest impact of groundwater abstraction is felt should be used.

Licence Number	WB With Largest Percentage of impact Assigned	Largest Percentage	Aggregated adjusted full licence annual point purpose limit (MI/year)
F	GB107101006020	100	220

Environmental outcome = 220 MI/yr.

Example 4: Groundwater (multiple abstraction point)

The location of the DrWPA action is important when there is >1 abstraction point associated with the abstraction licence. You need to identify the abstraction points that will benefit from the DrWPA action.

Licence Number	WB With Largest Percentage of impact Assigned	Largest Percentage	Aggregated adjusted full licence annual point purpose limit (MI/year)
G	GB206040024960	33	1533.0
H	GB206040024970	52	1533.0
J	GB206040024970	33	1533.0
K	GB106040024222	48	1533.0
L	GB206040024970	49	1533.0
M	GB206040024960	41	1533.0

Scenario 1: Action improves GB206040024960 only (Intakes G and M)

Environmental outcome = $(1533 \times 2) = 3066$ MI/yr.

Scenario 2: Action improves GB206040024960 and GB206040024970 (Intakes G, H, J, L and M)

Environmental outcome = $(1533 \times 5) = 7665$ MI/yr.

Scenario 3: Action improves GB206040024960, GB206040024970 and GB106040024222 (all intakes)

Environmental outcome = $(1533 \times 6) = 9198$ MI/yr.

The above examples have relatively low percentages (33 to 52%). Given the resource implications, there is no expectation of undertaking further detailed analysis to assign more accurate volumes.

