South West Water
Bournemouth Water
BRISTOL WATER
Isles of Scilly Water

Draft Drought Plan

Appendix 4: Extreme Drought actions

Pennon

Appendix 4: Extreme Drought Actions

A4.1. Overview of extreme drought actions

This appendix provides a list of potential actions we could consider after normal level 3a actions had been implemented during an extreme drought. These extreme actions are at level 3b and we have listed both demand-side and supply-side actions, and we would endeavour to pursue demand-side actions ahead of supply-side actions where it is feasible and logical to do so.

A4.2. Demand-side extreme drought actions

Our demand-side activities will be a continuation of the demand-side activities during prolonged dry weather and drought but in addition we have measures of last resort mentioned below. These actions are very much last resort because they have major social and operational impacts on us, our customers, and our communities. Prior to these last resort demand-side actions we will carefully collaborate with our stakeholders and customer representative groups, particularly if our restrictions go beyond the national standard approach at the time to ensure fairness in proportion to the risks associated with the drought.

Below is a brief description of the actions the Pennon Group has for last resort demand-side actions during an extreme drought. These will only be executed if there is an emergency drought order from the Secretary of State of the UK Government (aside from the pressure management option). Likewise, all demand-side actions will be publicly advertised and allow for objections.

A4.2.1. TUBs and NEUBs with concessions and exemptions removed

During severe drought we will review the need to proportionately control water use by removing the statutory exemptions and concessions for TUBs and NEUBs as drought level 3b actions. As we head towards a level 4 trigger and implementation of the Emergency Plan for drought we expect that the government/Defra will take the lead on what permissible uses of water are and we will follow their lead as we prepare. If there are margins of discretion for water companies we will work very closely with our stakeholders (and retailers for NEUBs) to identify further actions that can be taken ahead of reaching drought level 4.

A4.2.2. Stricter enforcement on customer side leakage

As per this demand-side action in prolonged dry weather and drought stages we will have the ability to move our notification, action and enforcement triggers to suit individual WRZs. This would mean a much lower threshold for when we notify customers of a leak on their premises, and the timelines associated to enforce this. We will work with our data teams to review leakage data at DMA level to target premises to act by tackling the leak ourselves and reclaiming expense from customers. However, there are reputational risks on this, and we would need to be careful with the trigger levels so they are not objectively seen as unfair on our customers as we must keep our customers on our side during severe drought. For these reasons, our communications approach on this will be sensitive around this issue by informing customers on the environmental and operational need to tackle leakage on our own network and our customers home infrastructure.

A4.2.3. Pressure management

Here we will consider reducing network pressure to conserve water and minimise leakage out of our water network. To be effective we will need to balance pressure reduction with maintaining service for high-rise buildings and fire safety.

A4.2.4. Tariffs

Although far from a demand-side action at time of writing. In the future we may have the ability to enforce last resort tariffs on our customers in lieu of rotas and standpipes where customers pay more for water outside of allotted hours and allotted litres per day in the hope that customers are nudged to use water at certain times below a certain level. However, the water sector has a long way to go before this can be considered as more evidence is needed on their effectiveness, fairness, and understanding of timeframes for mobilising due to regulatory hurdles to navigate around changing prices of water outside of normal business as usual timeframes.

A4.3. Summary of our customer communication approach

As mentioned above in this appendix our approach for communications will be to follow the government's lead during severe drought as a baseline and add to it to suit local needs and risks in the affected water resource zones, and communities within them.

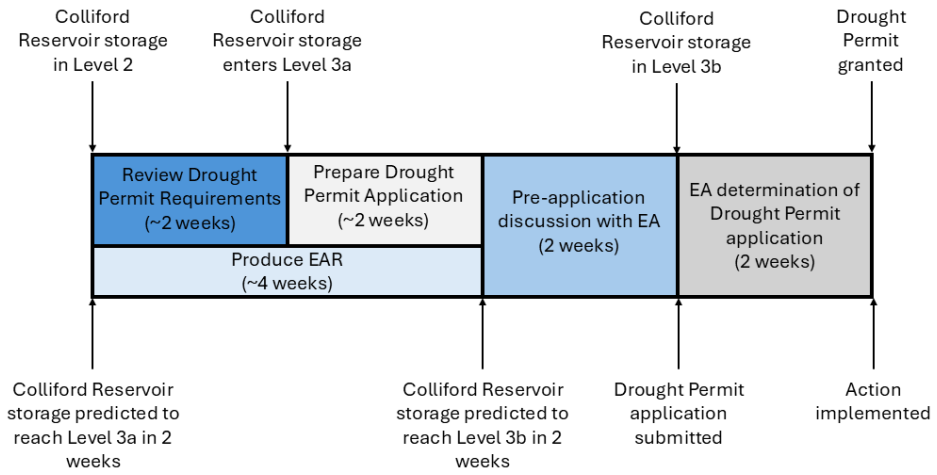
A communication campaign with be required and they key themes throughout it will be to inform our customers that we are all in this recovery together and that we are water companies depend on them as much as we will depend on us to manage this recover. A customer campaign around building a community will be tailored to suit the water resource zones from a baseline through the whole Pennon Group.

A4.4. Supply-side extreme drought actions

A4.4.1. Colliford WRZ

A4.4.1.1. C-10: Drift Reservoir – reduce compensation flow

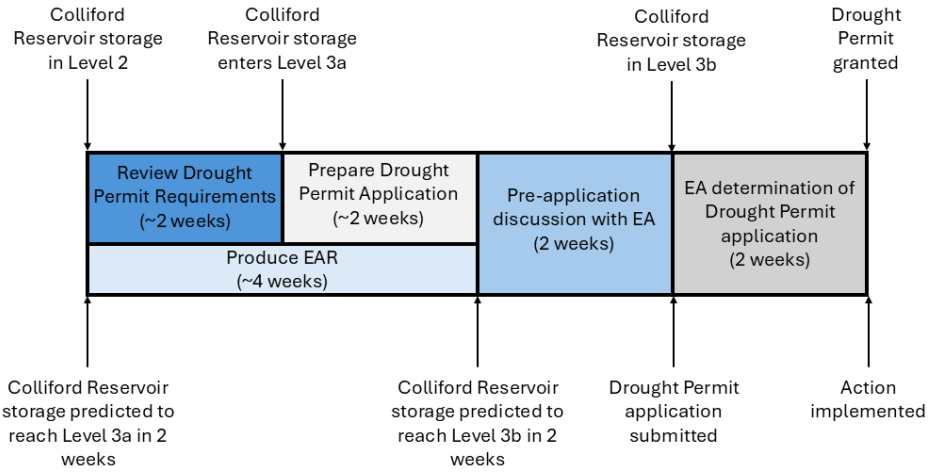
C-10: Drift Reservoir - reduce compensation flow	
Description	Reduce the compensation flow released from Drift Reservoir to the Newlyn Coombe River by 50%. Normal required compensation flow is 1.382 Ml/d. Abstraction from Drift Reservoir is transferred by pipe to Drift WTW. Drift Reservoir does not carry out supply releases for abstraction downstream.
Location	Colliford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	



Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	0.69 Ml/d direct benefit to Drift Reservoir storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for Drift WTW to be maintained, indirectly benefitting Colliford Reservoir storage as less support would be required from Restormel WTW to the Drift supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g.

	between June to November, but exact dates would vary year to year based on the hydrological conditions.	
Action Timing	This action will be effective whenever Drift Reservoir is not full, i.e. primarily during the summer. It is assumed this action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Local Authority: Cornwall Council • Cornwall Wildlife Trust due to Drift Reservoir County Wildlife Site	
Action Group	COL-L3B	Colliford Level 3b actions
Risks	**Environment**	No known significant risks
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Colliford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

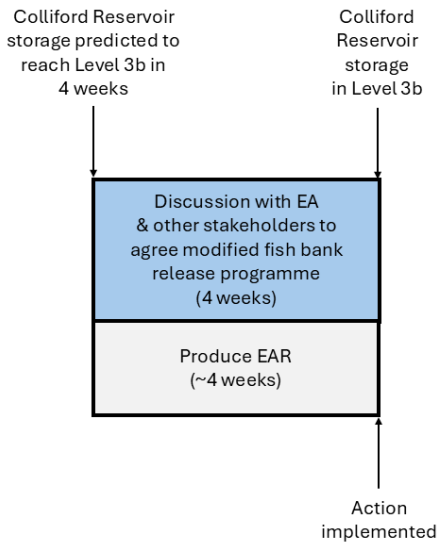
A4.4.1.2. C-17: Stithians Reservoir – reduce compensation flow

C-10: Stithians Reservoir - reduce compensation flow	
Description	Reduce the compensation flow released from Stithians Reservoir to a tributary of the River Kennall by 50%. Normal required compensation flow is 2.728 Ml/d. Abstraction from Stithians Reservoir is transferred by pipe to Stithians WTW or by pipe to the River Cober for abstraction downstream for Wendron WTW. Stithians Reservoir does not carry out supply releases for abstraction downstream.
Location	Colliford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
	
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	1.36 Ml/d direct benefit to Stithians Reservoir storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for Stithians WTW and to the River Cober to be maintained, indirectly benefitting Colliford Reservoir storage as less support would be required from Restormel WTW to the Stithians supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g. between June to November, but exact dates would vary year to year based on the hydrological conditions.

Action Timing	This action will be effective whenever Stithians Reservoir is not full, i.e. primarily during the summer. It is assumed this action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Local Authority: Cornwall Council • Cornwall Wildlife Trust due to Stithians Reservoir and Kennall Vale County Wildlife Sites	
Action Group	COL-L3B	Colliford Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for Stithians Reservoir underway, which may result in changes to reservoir release and abstraction profiles within the catchment
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Colliford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

A4.4.1.3. C-40: Colliford Reservoir - reduce fish bank releases

C-40: Colliford Reservoir - reduce fish bank releases	
Description	A volume of 909.2 Ml (3.2% of Colliford Reservoir storage) over three years is normally reserved for making fish bank releases into the St Neot River (a tributary of the River Fowey) and resets when the reservoir is full. These releases are for the benefit of the downstream environment, primarily to assist migration of fish up or downstream at relevant times of year. This is a requirement on the Company Undertaking and defined in the Colliford WRZ Operating Agreement as mitigation for the presence of Colliford Reservoir. Fish bank releases are made within operational constraints when requested by the EA via a formal process. The EA determine the preferred release date, rate and volume based on current river flow and weather forecast. Often these requests will originate from local riparian stakeholders, e.g. the Fowey Rivers Association. This action would involve getting local EA agreement that no fish bank releases would be made from Colliford Reservoir in the current season / for the duration of the drought. This would mean that no Colliford Reservoir storage would need to be reserved for making fish bank releases, so the fish bank volume could be made available for abstraction and/or supply releases. This action is not a Drought Permit because the requirement for a fish bank / releases is not stated on the impounding or abstraction licences.
Location	Colliford WRZ
Action Type	Local EA Agreement
Drought Level Implemented	Drought Level 3b
Implementation Timetable	



Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as agreement is made with local EA.	
Barriers to Implementation	Baseline data required to confirm environmental impacts. Stakeholder consultation requirements.	
Benefit Delivered	Immediate if river flows are low enough that a fish bank release would otherwise be likely to be requested.	
Duration	Postpone fish bank releases for up to one year	
Yield	303 Ml estimated from one third of the total fish bank being used each year over each of the three years of the fish bank cycle. It may be agreed with the EA to provide a reduced fish bank in a dry year, rather than no fish bank, depending on the water resource risk vs environmental risk in a specific drought. These discussions with the EA will continue throughout a drought, varying the agreement if needed as the situation develops. Assumes all other abstraction and release conditions will be in place as per existing licences. There have been no requests from the EA to make fish bank releases from Colliford in recent years. Therefore, the main benefit will be in not needing to reserve water in case fish bank releases are requested, there would be no change in downstream flow compared to recent actual flows.	
Action Timing	It is assumed this action is most likely to be implemented when fish bank releases would normally be made, but exact dates would vary year to year based on the hydrological conditions. Fish bank releases at other reservoirs to support the migration of fish at key stages in their lifecycle vary in timing. Wimbleball fish bank releases typically happen in May and September to December, and Roadford releases typically happen in June to August. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Local EA agreement	

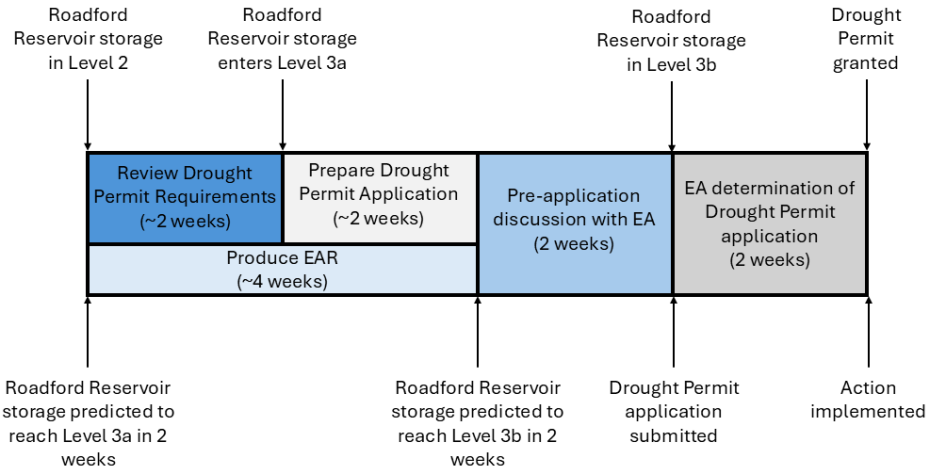
Interested Third Parties	• No impact on other Water Companies or NAVs.
	• Local Authority: Cornwall Council
	• Organisations who made representations regarding 2022 Restormel Drought Permit:
	  ○ Fowey Rivers Association
	  ○ South West Rivers Association
	  ○ Liskeard and District Angling Club
	  ○ Restormel Anglers Ltd	

Action Group	COL-L3B	Colliford Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for River Fowey underway, which may result in changes to reservoir release and abstraction profiles within the catchment

	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on when low river flows occur which would normally trigger requests for fish bank releases, which varies between years based on hydrological conditions.
	Interaction with other actions	Other actions relate to Colliford Reservoir and/or Restormel abstraction (C-03, C-06, C-11), but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.2 Protect and enhance ecology and biodiversity, including habitats and species of principal importance and water sensitive sites. • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

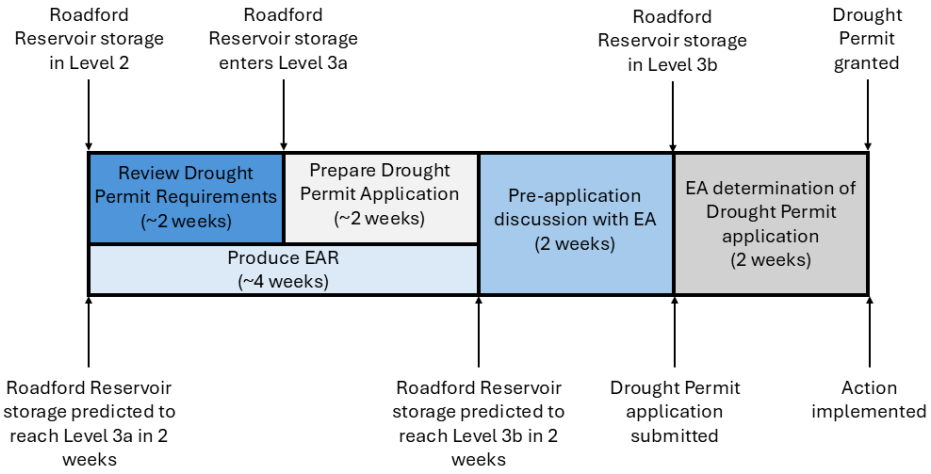
A4.4.2. Roadford WRZ

A4.4.2.1. R-20: Avon Reservoir - reduce compensation flow

R-20: Avon Reservoir - reduce compensation flow	
Description	Reduce the compensation flow released from Avon Reservoir to the River Avon by 50%. Normal required compensation flow is 5.875 Ml/d. Abstraction from Avon Reservoir is transferred by pipe to Avon WTW. Avon Reservoir does not carry out supply releases for abstraction downstream.
Location	Roadford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
	
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	2.94 Ml/d direct benefit to Avon Reservoir storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for Avon WTW to be maintained, indirectly benefitting Roadford Reservoir storage as less support would be required from Roadford to this supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g.

	between June to November, but exact dates would vary year to year based on the hydrological conditions.	
Action Timing	This action will be effective whenever Avon Reservoir is not full, i.e. primarily during the summer. It is assumed this action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Natural England due to nearby Dartmoor SAC & South Dartmoor SSSI. • Dartmoor National Park • Local Authority: Devon County Council	
Action Group	ROA-L3B	Roadford Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for Avon Reservoir underway, which may result in changes to reservoir release and abstraction profiles within the catchment
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Roadford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.1 Protect and enhance designated ecological sites. • 2.2 Provide a sustainable water supply in times of drought.	

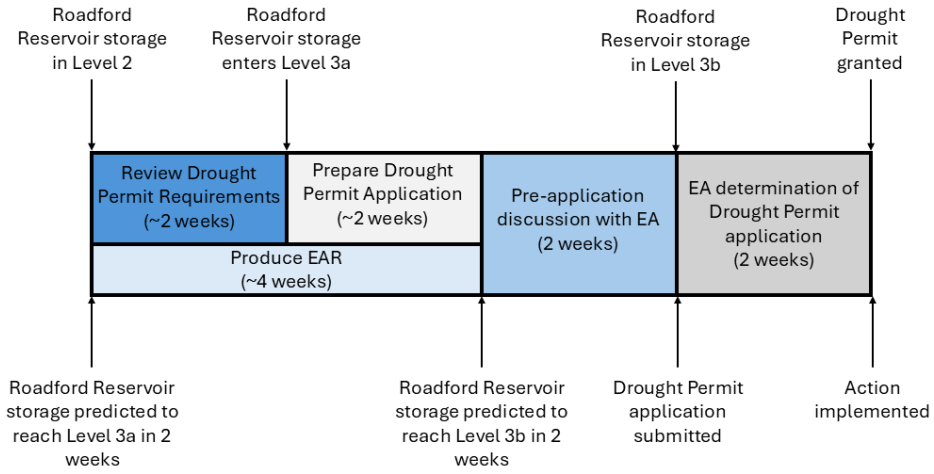
A4.4.2.2. R-21: Burrator Reservoir - reduce compensation flow

R-21: Burrator Reservoir - reduce compensation flow	
Description	Reduce the compensation flow released from Burrator Reservoir to the River Meavy by 50%. Normal required compensation flow is 2.592 Ml/d. Abstraction from Burrator Reservoir is transferred by pipe to Dousland and Mayflower WTWs. Burrator Reservoir does not carry out supply releases for abstraction downstream.
Location	Roadford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
	
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	1.30 Ml/d direct benefit to Burrator Reservoir storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for WTWs to be maintained, indirectly benefitting Roadford Reservoir storage as less support would be required from Roadford to this supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g. between June to November, but exact dates would vary year to year based on the hydrological conditions.

Action Timing	This action will be effective whenever Burrator Reservoir is not full, i.e. primarily during the summer. It is assumed this action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Dartmoor National Park • Local Authority: Devon County Council	
Action Group	ROA-L3B	Roadford Level 3b actions
Risks	**Environment**	No known significant risks
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Roadford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.1 Protect and enhance designated ecological sites. • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

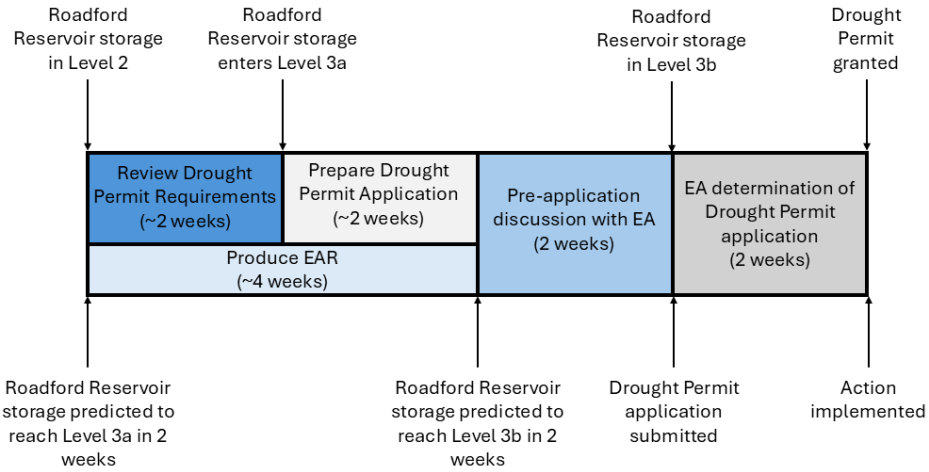
A4.4.2.3. R-22: Fernworthy Reservoir - reduce compensation flow

R-22: Fernworthy Reservoir - reduce compensation flow	
Description	Reduce the compensation flow released from Fernworthy Reservoir to the South Teign River by 50%. Normal required compensation flow is 5.702 Ml/d. Abstraction from Fernworthy Reservoir is transferred by pipe to KTT Reservoirs and Tottiford WTW. Fernworthy Reservoir does not carry out supply releases for abstraction downstream.
Location	Roadford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	2.85 Ml/d direct benefit to Fernworthy Reservoir storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for KTT Reservoirs and Tottiford WTW to be maintained, indirectly benefitting Roadford Reservoir storage as less support would be required from Roadford to this supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g. between June to November, but exact dates would vary year to year based on the hydrological conditions.



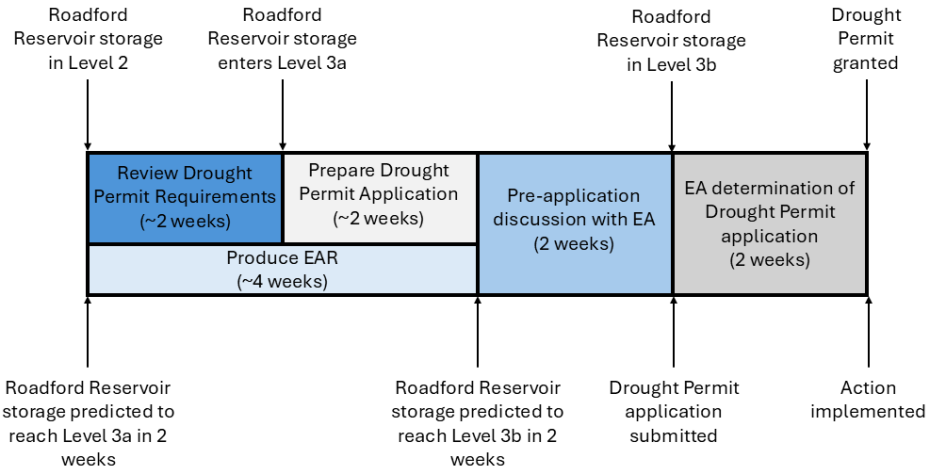
Action Timing	This action will be effective whenever Fernworthy Reservoir is not full, i.e. primarily during the summer. It is assumed this action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Natural England due to nearby Dartmoor SAC & East Dartmoor SSSI. • Dartmoor National Park • Local Authority: Devon County Council • South West Rivers Association	
Action Group	ROA-L3B	Roadford Level 3b actions
Risks	**Environment**	No known significant risks
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Roadford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.1 Protect and enhance designated ecological sites. • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

A4.4.2.4. R-23: Trenchford Reservoir - reduce compensation flow

R-23: Trenchford Reservoir - reduce compensation flow	
Description	Reduce the compensation flow released from Trenchford Reservoir to the Beadon Brook by 50%. Normal required compensation flow is 2.160 Ml/d. Abstraction from Trenchford Reservoir is transferred by pipe to Tottiford WTW. Trenchford Reservoir does not carry out supply releases for abstraction downstream.
Location	Roadford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
	
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	1.08 Ml/d direct benefit to Trenchford Reservoir storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for Tottiford WTW to be maintained, indirectly benefitting Roadford Reservoir storage as less support would be required from Roadford to this supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g. between June to November, but exact dates would vary year to year based on the hydrological conditions.
Action Timing	This action will be effective whenever Trenchford Reservoir is not full, i.e. primarily during the summer. It is assumed

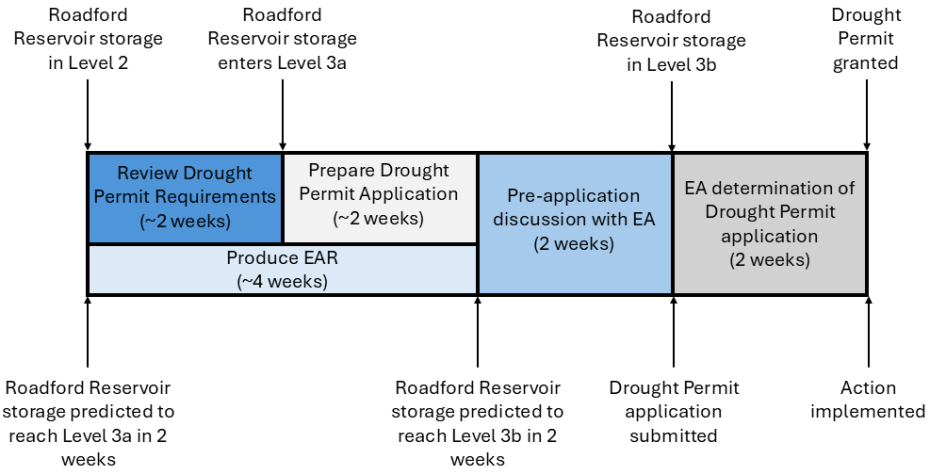
	this action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Dartmoor National Park • Local Authority: Devon County Council • South West Rivers Association	
Action Group	ROA-L3B	Roadford Level 3b actions
Risks	**Environment**	No known significant risks
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Roadford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.1 Protect and enhance designated ecological sites. • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought. • 6.1 Maintain and enhance the health and wellbeing of the local community, including recreation and visual amenity.	

A4.4.2.5. R-24: Meldon Reservoir - reduce compensation flow

R-24: Meldon Reservoir - reduce compensation flow	
Description	Reduce the compensation flow released from Meldon Reservoir to the West Okement River by 50%. Normal required compensation flow is 7.690 Ml/d. Abstraction from Meldon Reservoir is transferred by pipe to Prewley WTW. Meldon Reservoir does not carry out supply releases for abstraction downstream.
Location	Roadford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
	
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	3.84 Ml/d direct benefit to Meldon Reservoir storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for Prewley WTW to be maintained, indirectly benefitting Roadford Reservoir storage as less support would be required from Roadford to this supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g. between June to November, but exact dates would vary year to year based on the hydrological conditions.
Action Timing	This action will be effective whenever Meldon Reservoir is not full, i.e. primarily during the summer. It is assumed this

	action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Natural England due to nearby Dartmoor SAC & North Dartmoor SSSI. • Dartmoor National Park • Local Authority: Devon County Council	
Action Group	ROA-L3B	Roadford Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for Meldon underway, which may result in changes to reservoir release and abstraction profiles within the catchment
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Roadford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.1 Protect and enhance designated ecological sites. • 1.2 Protect and enhance ecology and biodiversity, including habitats and species of principal importance and water sensitive sites. • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

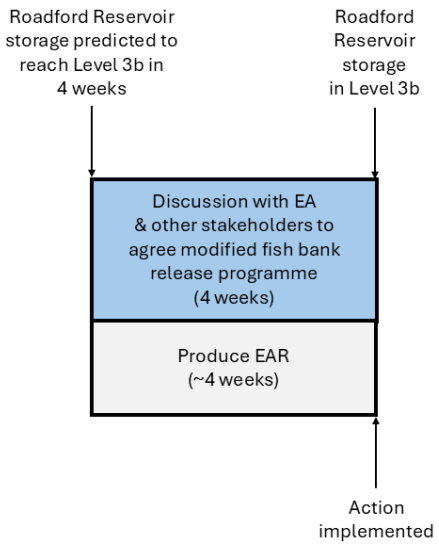
A4.4.2.6. R-26: Upper Tamar Lake - reduce compensation flow

R-26: Upper Tamar Lake - reduce compensation flow	
Description	Reduce the compensation flow released from Upper Tamar Lake to the River Tamar by 50%. Normal required compensation flow is 2.765 Ml/d. Abstraction from Upper Tamar Lake is transferred by pipe to Tamar WTW. Upper Tamar Lake does not carry out supply releases for abstraction downstream.
Location	Roadford WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
	
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.
Barriers to Implementation	Baseline data required to confirm environmental impacts. Stakeholder consultation requirements.
Benefit Delivered	Immediate.
Duration	Up to 6 months
Yield	1.38 Ml/d direct benefit to Upper Tamar Lake storage, retaining an additional volume equal to 50% of the compensation flow every day this action is active. This will enable the abstraction for Tamar WTW to be maintained, indirectly benefitting Roadford Reservoir storage as less support would be required from Roadford to this supply zone. In very severe droughts where the ability to sustain the normal compensation flow is forecast to be at risk, reducing the compensation flow required will also allow a compensation flow to be maintained for longer. It is assumed this action is most likely to be implemented during the summer months for up to 6 months, e.g. between June to November, but exact dates would vary year to year based on the hydrological conditions.
Action Timing	This action will be effective whenever Upper Tamar Lake is not full, i.e. primarily during the summer. It is assumed this

	action would be implemented later in a more severe drought, so most likely start between approximately June and November and remain in place until there is an end to the drought. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Local Authority: Devon County Council • Roadford Fisheries Liaison Committee (RFLC) • Tamar and Tributaries Fisheries Association • South West Rivers Association	
Action Group	ROA-L3B	Roadford Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for Upper Tamar Lake underway, which may result in changes to reservoir release and abstraction profiles within the catchment
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on reservoir storage, which varies between years based on hydrological conditions. Very low storages may cause difficulties with normal operation, for example due to water quality or siltation.
	Interaction with other actions	Other actions in the Roadford WRZ, but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.1 Protect and enhance designated ecological sites. • 1.2 Protect and enhance ecology and biodiversity, including habitats and species of principal importance and water sensitive sites. • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

A4.4.2.7. R-48: Roadford Reservoir - reduce fish bank releases

R-48: Roadford Reservoir - reduce fish bank releases	
Description	A volume of 2273 Ml (6.6% of Roadford Reservoir storage) over three years is normally reserved for making fish bank releases into the River Wolf (a tributary of the River Tamar) and resets when the reservoir is full. These releases are for the benefit of the downstream environment, primarily to assist migration of fish up or downstream at relevant times of year. This is a requirement on the Company Undertaking and defined in the Roadford WRZ Operating Agreement as mitigation for the presence of Roadford Reservoir. Fish bank releases are made within operational constraints when requested by the EA via a formal process. The EA determine the preferred release date, rate and volume based on current river flow and weather forecast. Often these requests will originate from local riparian stakeholders, e.g. the Tamar and Tributaries Fisheries Association. This action would involve getting local EA agreement that no fish bank releases would be made from Roadford Reservoir in the current season / for the duration of the drought. This would mean that no Roadford Reservoir storage would need to be reserved for making fish bank releases, so the fish bank volume could be made available for abstraction and/or supply releases. This action is not a Drought Permit because the requirement for a fish bank / releases is not stated on the impounding or abstraction licences.
Location	Roadford WRZ
Action Type	Local EA Agreement
Drought Level Implemented	Drought Level 3b
Implementation Timetable	



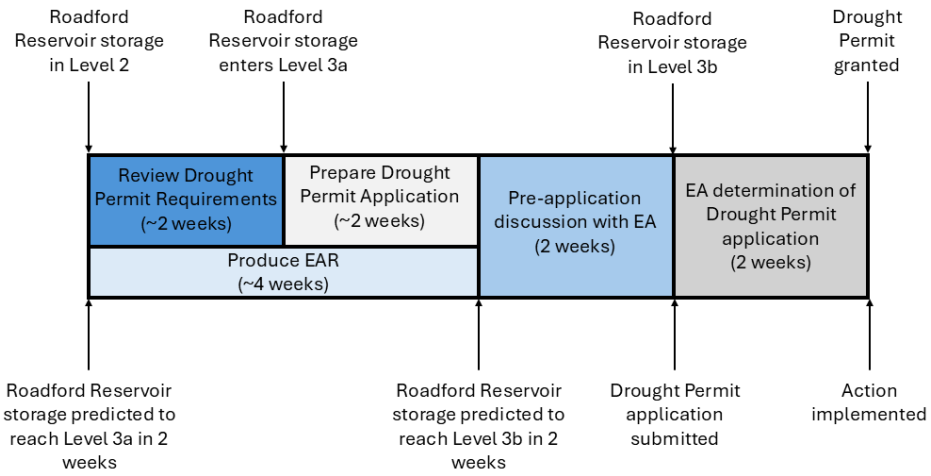
Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as agreement is made with local EA.	
Barriers to Implementation	Baseline data required to confirm environmental impacts. Stakeholder consultation requirements.	
Benefit Delivered	Immediate if river flows are low enough that a fish bank release would otherwise be likely to be requested.	
Duration	Postpone fish bank releases for up to one year	
Yield	757 Ml estimated from one third of the total fish bank being used each year over each of the three years of the fish bank cycle. It may be agreed with the EA to provide a reduced fish bank in a dry year, rather than no fish bank, depending on the water resource risk vs environmental risk in a specific drought. These discussions with the EA will continue throughout a drought, varying the agreement if needed as the situation develops. Assumes all other abstraction and release conditions will be in place as per existing licences.	
Action Timing	It is assumed this action is most likely to be implemented when fish bank releases would normally be made, but exact dates would vary year to year based on the hydrological conditions. Fish bank releases at Roadford typically happen during June to August to support the migration of fish at key stages in their lifecycle. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Local EA agreement	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Local Authority: Devon County Council • Roadford Fisheries Liaison Committee (RFLC) • Tamar and Tributaries Fisheries Association • South West Rivers Association	
Action Group	ROA-L3B	Roadford Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for Roadford, which may result in changes to reservoir releases and abstractions within the River Tamar catchment
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on when low river flows occur which would normally trigger requests for fish bank releases, which varies between years based on hydrological conditions.
	Interaction with other actions	Other actions relate to the River Tamar catchment (R-11, R-25, R-26), but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence

Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.2 Protect and enhance ecology and biodiversity, including habitats and species of principal importance and water sensitive sites. • 2.2 Provide a sustainable water supply in times of drought. • 6.1 Maintain and enhance the health and wellbeing of the local community, including recreation and visual amenity.

A4.4.3. Wimbleball WRZ

A4.4.3.1. W-22: Wimbleball Reservoir - reduce fish bank releases

W-22: Wimbleball Reservoir - reduce fish bank releases	
Description	A volume of 900 Ml (4.2% of Wimbleball Reservoir storage) per calendar year is normally reserved for making fish bank releases into the River Haddeo (a tributary of the River Exe) and resets when the reservoir is full. These releases are for the benefit of the downstream environment, primarily to assist migration of fish up or downstream at relevant times of year. This is a requirement on the River Exe abstraction licence (for Wimbleball pumped storage scheme) and defined in the Wimbleball WRZ Operating Agreement as mitigation for the presence of Wimbleball Reservoir. Fish bank releases are made within operational constraints when requested by the EA via a formal process. The EA determine the preferred release date, rate and volume based on current river flow and weather forecast. Often these requests will originate from local riparian stakeholders, e.g. the River Exe and Tributaries Association. This action is for no fish bank releases (or a reduced fish bank release volume) would be made from Wimbleball Reservoir in the current year. This would mean that no Wimbleball Reservoir storage would need to be reserved for making fish bank releases, so the fish bank volume could be made available for abstraction and/or supply releases.
Location	Wimbleball WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	



Implementation Details	Action does not require any infrastructure changes. Action can be implemented as soon as Drought Permit is granted.	
Barriers to Implementation	Environmental impact and regulator acceptability. Stakeholder consultation requirements.	
Benefit Delivered	Immediate if river flows are low enough that a fish bank release would otherwise be likely to be requested.	
Duration	Postpone fish bank releases for up to one year	
Yield	900 Ml per year assuming the full fish bank would have otherwise been used (which is not always the case). It may be agreed with the EA to provide a reduced fish bank in a dry year, rather than no fish bank, depending on the water resource risk vs environmental risk in a specific drought. Assumes all other abstraction and release conditions will be in place as per existing licences.	
Action Timing	It is assumed this action is most likely to be implemented when fish bank releases would normally be made, but exact dates would vary year to year based on the hydrological conditions. Fish bank releases at Wimbleball typically happen during May and September to December to support the migration of fish at key stages in their lifecycle. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• Wessex Water also abstract from Wimbleball Reservoir so this action to preserve storage will also benefit them. • No impact on NAVs. • Local Authority: Somerset Council & Devon County Council • Exmoor National Park • River Exe and Tributaries Association. • South West Rivers Association.	
Action Group	WIM-L3B	Wimbleball Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for River Exe, which may result in changes to reservoir releases and abstractions within the River Tamar catchment
	Social & Economic	No known significant risks
	Resource	Timing when action would be implemented depends on when low river flows occur which would normally trigger requests for fish bank releases, which varies between years based on hydrological conditions.
	Interaction with other actions	Other actions relate to Wimbleball Reservoir or River Exe (W-03, W-06, W-

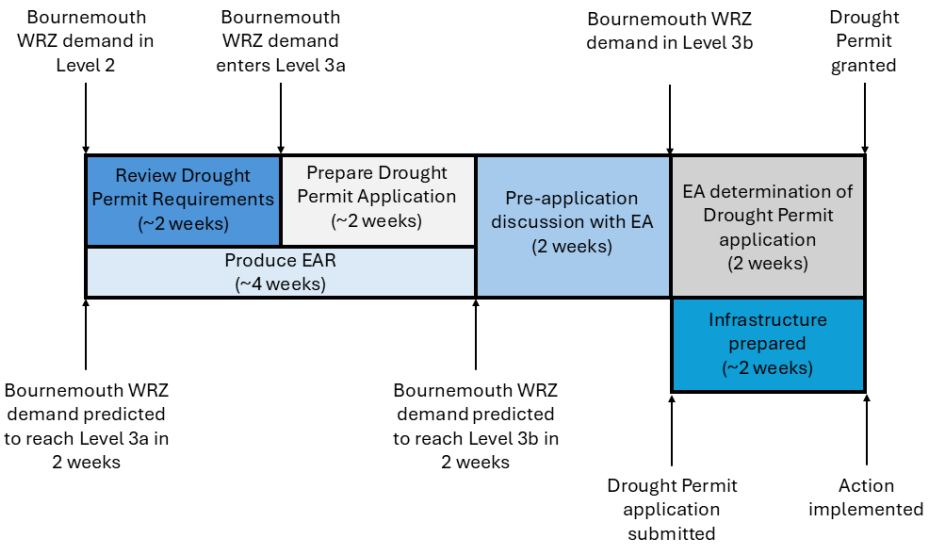
		09, W-26, W-27, W-28), but none should impact feasibility of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought. • 6.1 Maintain and enhance the health and wellbeing of the local community, including recreation and visual amenity.	

A4.4.4. Bristol WRZ

No additional extreme drought options have been identified at this time.

A4.4.5. Bournemouth WRZ

A4.4.5.1. BN-04: River Stour at Longham - remove low flow constraint

BN-04: River Stour at Longham - remove low flow constraint	
Description	Remove the low flow constraint condition on the River Stour at Longham abstraction licence. The current condition reduces the maximum daily abstraction from 68.18 Ml/d to 44.318 Ml/d when the River Stour flow at Throop gauging station is less than 3993 l/s. It is assumed that the Drought Level 3a action BN-12 to increase the weekly (and potentially yearly) abstraction limit has already been implemented, but that all other licence conditions remain the same. Installation of 2 to 3 temporary pumps and pipeline with flow meters would be required to pump additional abstraction into Longham Lakes, for subsequent transfer to Alderney WTW. It will be confirmed if any other consents or permissions in addition to the drought permit would be required to install the temporary pumps in the River Stour e.g. a Flood Risk Activity Permit.
Location	Bournemouth WRZ
Action Type	Drought Permit
Drought Level Implemented	Drought Level 3b
Implementation Timetable	
	
Implementation Details	Action requires installation of temporary additional pumps, pipeline and flow meters.

	Action can be implemented as soon as Drought Permit is granted.	
Barriers to Implementation	Baseline data to confirm environmental impacts will already be collected to support action BN-12 at the same location which is a Drought Level 3a action.	
Benefit Delivered	Immediate if River Stour flow is low enough to limit maximum daily abstraction	
Duration	Approximately 3 months	
Yield	Up to 24 Ml/d increase to River Stour available abstraction. Action BN-12 to increase weekly (and potentially yearly) abstraction limit will be required to be able to sustain an increased daily abstraction, particularly after these limits decrease in April 2028. It is assumed that the planned upgrade to Alderney WTW has been completed and has the increased capacity to be able to treat the additional daily abstraction. It is assumed by the time this action is implemented in a severe drought, it is likely to be active for approximately 3 months.	
Action Timing	This action will be effective when the WRZ demand increases above normal WTW operating output i.e. during summer peaks, particularly if sustained over more than a couple of days. The exact dates would vary year to year based on the hydrological conditions, but typically this would be between May and August. Given the lead in time to acquiring a Drought Permit it is likely that this action would be implemented for approximately 3 months in late summer. In recent dry years, the River Stour at Throop flow drops below the low flow constraint from June to October. More detailed environmental assessment will help indicate if there is significant variation in environmental impact of this action at different times of year.	
Permissions Required	Drought Permit issued by EA	
Interested Third Parties	• No impact on other Water Companies or NAVs. • Natural England due to River Avon SAC and Solent and Dorset Coast SPA. • Local Authority: Dorset Council & Bournemouth, Christchurch and Poole Council.	
Action Group	BNW-L3B	Bournemouth Level 3b actions
Risks	**Environment**	AMP8 WINEP investigation for River Stour underway, which may result in changes to abstractions within the River Stour catchment
	Social & Economic	No known significant risks
	Resource	Timing when action can be implemented depends on when demand peaks and

		River Stour flow drops below low flow constraint, which varies between years based on weather conditions. Assumes River Stour water quality and flow remains sufficient to maintain increased abstraction rates.
	Interaction with other actions	No other actions should impact feasibility of this action. BN-05 could be implemented further upstream on the River Stour at the same time as this action. BN-12 likely to have been implemented at Drought Level 3a to increase the weekly abstraction limit on the River Stour at Longham licence, which would be needed to maximise the benefit of this action.
Environmental Impact	Moderate	Low Confidence
Environmental Assessment Summary	SEA Objectives assessed as possible Moderate negative impact following Level 2 environmental assessment: • 1.3 Reduce the spread or presence of INNS. • 2.1 Protect and enhance the quality of the water environment and water resources. • 2.2 Provide a sustainable water supply in times of drought.	

A4.4.6. Isles of Scilly WRZ

No additional extreme drought options have been identified at this time.