Department of Primary Industries
and Regional Development

FE22/1135 C24/989

27 November 2024

Drew Anderson
Senior Planning Officer
NSW Department of Planning
Lodged via NSW Major Projects Planning Portal

Re: Billabong Creek Environmental Water Regulators (SSI-50831979) – Environmental Impact Statement

Dear Drew,

Thank you for the opportunity to review the Billabong Creek Environmental Water Regulators Environmental Impact Statement (EIS) and associated documents prepared by NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW).

NSW Department of Primary Industries and Regional Development (DPIRD) – Fisheries has reviewed the Billabong Creek Environmental Water Regulators (SSI-50831979) EIS exhibited to the public between 1 November 2024 and 28 November 2024 and provides the following submission in relation to the aquatic ecological implications of the project.

DPIRD Fisheries is responsible for ensuring that fish stocks are conserved and that there is "no net loss" of Key Fish Habitat (KFH) upon which they depend. To achieve this, the Department ensures that developments comply with the *Fisheries Management Act* 1994 (FM Act), namely the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A of the Act respectively, and the associated *Policy and Guidelines for Fish Habitat Conservation and Management* (Updated 2013) and *NSW Biodiversity Offsets Policy for Major Projects - Fact Sheet: Aquatic Biodiversity* (November 2014). In addition, DPIRD Fisheries is responsible for ensuring the sustainable management of commercial, recreational and Aboriginal cultural fishing within NSW.

NSW DCCEEW proposes to replace two existing weirs along Billabong Creek with new regulators. The construction of new weirs and the enlargement of existing weirs pose a significant threat to fish and fish habitats. The FM Act recognises the significant impact of weirs on fish, listing the '*Installation and Operation of In-stream Structures and Other Mechanisms that Alter Natural Flow*

Regimes of Rivers and Streams' as a key threatening process under Schedule 6 of the FM Act due to impacts on natural flow regimes, fish passage, fish breeding and fish recruitment.

Such works are also contrary to the *NSW Weirs Policy*, which adopts the management principle that *"The construction of new weirs, or enlargement of existing weirs, shall be discouraged".* This principle is reiterated in the Department's *Policy and Guidelines for Fish Habitat Conservation and Management* (Updated 2013) due to the significant impact weirs can have on aquatic ecology, the majority of which cannot be mitigated or require considerable design and operational requirements for partial mitigation.

The *Policy and Guidelines for Fish Habitat Conservation and Management* (Updated 2013) states that *"to ensure 'no net loss' of aquatic habitats, NSW DPIRD requires that proponents should, as a first priority, aim to avoid impacts upon Key Fish Habitat. Where avoidance is impossible or impractical, proponents should then aim to minimise impacts. Any remaining impacts should then be offset with compensatory works".* Proposed mitigation actions to protect KFH into the future are uncertain, and the residual risk of installing the proposed regulators is still likely to be significant, requiring appropriate actions to offset those impacts.

Key Issues

DPIRD Fisheries has reviewed the EIS and associated documents and provides the following comments relating to changes to KFH, fish passage, changes to hydraulic habitat, development of Offset and Aquatic Biodiversity strategies, and consideration of an Environmental Bond. Further details are provided in Attachment A – Summary of Issues.

Changes to Key Fish Habitat

Regulator and fishway footprint

The EIS has addressed direct Impacts of loss of KFH within the permanent construction footprint of the proposed new Hartwood regulator, (excluding fishway) which has been calculated as 1,400 m^2 (2,550 m^2 – 1,150 m^2). The impacts of direct loss of habitat within the permanent construction footprint of the proposed new Wanganella regulator, (excluding fishway) has been calculated as 3,225 m^2 (4,450 m^2 – 1,225 m^2).

This proposed approach of excluding the fishway footprint appears to be warranted as *Chapter 3.3.3. Policy and Guidelines for Fish Habitat Conservation and Management* (Update 2013) states *Environmental Compensation may include fishways; however,* ***costs associated with fish passage requirements will not*** *be allowed to form part of the offsetting calculation or supplementary measures* (NSW Biodiversity Offsets Policy for Major Projects, Fact sheet: Aquatic Biodiversity).

The construction footprint area will need to be confirmed upon finalised detailed design stage before calculations of any offsets required are provided, noting these are at a 2:1 compensation ratio and/or monetary payment of $114.40 m^2 (current July 2024).

Changes to Hydraulic Habitat (New Regulators)

The EIS states "a significant increase in water surface level is expected between the proposed and existing regulators as the new regulators lie slightly downstream of the current weirs, so some stream is proposed to become weir pool". Quantification of the proposed new weir pool area indicates changes to KFH upstream of the new proposed Wanganella regulator to the existing Wanganella weir, which will be operated at a minimum level of 80.75m (same height of existing sill level) and maximum height of 82.10 m, increases the maximum weir pool depth from 0.55 m to 1.90 m (Table 3.17 EIS) for 55 m distance.

Similarly, quantification of the proposed new weir pool area indicates changes of KFH upstream of the new Hartwood regulator to existing Hartwood weir, which will be operated at a minimum level of 95.28 m (same height of existing fixed crest weir) and maximum height of 95.74 m, increases weir pool depth from 2.58 m to 3.04 m (Table 3.16 EIS) for 70 m distance.

These changes will result in permanent loss of TYPE 1 habitat changing to TYPE 2 habitat. This change to KFH needs to be calculated and offsets provided at 2:1 compensation and/or monetary payment of $114.40 m^2 (current July 2024).

Changes to other KFH features

The Aquatic Ecology Assessment notes that a report by NSW DPI (2024) of KFH features concludes "*As the Hartwood and Wanganella weir pool heights and areas are expected to increase at the full supply level relative to the current levels, there is expected to be a net gain in Large Woody Habitat, rootballs, submerged wetland entry/exits, and inundated in-channel benches upstream of the proposed regulators at the full supply level upstream of the proposed regulators. No impacts were expected for the other surveyed habitat features (e.g. refuge pools, vegetation, riffles)".* It is unclear what this last statement regarding no impacts on refuge pools, vegetation and riffles means, as DPIRD Fisheries would expect that an increase in Full Supply Level (FSL) would result in potentially increased size of refuge pools, and potentially negative impacts on riffles and aquatic vegetation as a result of inundating both of these features at new FSL.

In addition, whilst there may be a net gain in some KFH features, the true value of these features may not be realised if located within lentic (non-flowing) habitats or within a weir pool experiencing large fluctuations in water levels.

For this reason, overlaying aquatic habitat mapping of KFH features with the detailed spatial hydraulic mapping is required to obtain a clearer spatial view of the potential implications of this project on KFH at various flow scenarios.

DPIRD Fisheries notes that the proportional increase in area of lotic habitat at FSL is outweighed by the enormous proportional increase in lentic habitat at FSL, particularly within the extended Wanganella weir pool which is likely to result in favourable conditions for introduced species such as Carp. The ecological implications of the inundation duration at FSL will be exacerbated given the 11-day minimum draw down rate from 82.1 m FSL to 80.99 m (top of green zone) (at the minimum

draw down rate of 100 mm/day) may be extended to a much longer timeframe due to a range of complex operational factors including stream flows and system demands for both environmental water and irrigation orders. The potential implications of this on KFH features needs to be assessed and discussed in more detail.

Fish Passage

In addition to the proposed replacement of the two weirs with regulators, the Billabong Creek Environmental Water Regulators Project proposes to replace the Forest Creek block bank and raise the existing structure by 0.6 m. These works trigger s218 of the FM Act (*Fishways to be provided in construction of dams and weirs)*.

Section 4.8 of the *NSW Policy and guidelines for fish habitat conservation and management* (Updated 2013) provides provisions for transferring s218 fish passage requirements to an alternative priority fish passage site. DPIRD Fisheries recommend incorporating an offset strategy that considers a fish passage trade off ensuring equal or more cost beneficial fish passage outcomes, through transferring fish passage works. The offset strategy should link with the other components of the Yanco Creek Modernisation project that also trigger s218 of the FM Act and require fish passage offsets (Part 1b: Wanganella Swamp, Part 3: Wilsons Anabranch, Part 4: Forest Creek Return Flows, and Part 5b: Cheverells Creek Offtake).

Note that offsets relating to fish passage are separate to offsets required for KFH implications.

Development of an Offset Strategy

The EIS analysis does not acknowledge the potential full implications of the project on aquatic habitat, considering the changes to hydraulic conditions and loss of high-quality lotic habitat conditions. DPIRD Fisheries recommends the development of an Offsets Strategy that evaluates the full implications of the proposal be undertaken, with special considerations for threatened fish species.

The EIS suggests that downstream implications from the proposed project will not require offsetting; however, based on the documentation provided, DPIRD Fisheries suggest that it is yet to be concluded that no offset is required for downstream areas impacted by altered flows and reduced flow variability as a result of capturing unregulated flows in the weir pools. There is also limited consideration of system wide implications of the lower and upper reaches of the Yanco/Billabong Creek system with respect to flows entering the system and the related flow variability.

Chapter 3 of the *Policy and Guidelines for Fish Habitat Conservation and Management* (Updated 2013) outlines the requirements for environmental compensation to ensure there is ‘no net loss’ of Key Fish Habitat. The policy and guidelines allows for both site-based offsets to compensate for the loss of each aquatic habitat type or the payment of an amount to compensate for the value of the aquatic habitat being lost to be considered. The project proponent is responsible for calculating

offset figures; however, DPIRD Fisheries requests to see the detailed working underpinning this calculation.

Development of an Aquatic Biodiversity Strategy

Given the importance of the Yanco Creek System Operations Plan in mitigating potential impacts should the Billabong Creek Environmental Water Regulators proposal be approved, DPIRD Fisheries would expect to see an Aquatic Biodiversity Strategy. This Strategy should be linked to the Offsets Strategy above, and include adequate post implementation (monitoring, evaluation, reporting – MER) of the operations and the efficacy of the mitigation measures in eliminating any impacts. The MER plan should be sufficient (in terms of the timeframes and types of conditions that are examined, as well as resources) to give an acceptable degree of certainty of the project mitigations. There should also be remedial actions identified if the ability to mitigate impacts of the project are less than projected in the final assessment, noting that additional offsets may be required if mitigation is not possible.

Consideration of an Environmental bond

Degradation of aquatic habitat through water quality or water regime changes through operation of the proposed project, which may lead to conditions that are unsuitable for native aquatic species is identified as a potential significant impact. The proposed mitigation actions for hydrological and hydraulic impacts on aquatic ecology rely heavily on the operating rules for the infrastructure and associated assumptions.

Due to the long-term uncertainties associated with potential impacts and effectiveness of mitigations of the proposal, DPIRD Fisheries recommend that a bank guarantee be provided to DPIRD Fisheries to offset KFH impacts in accordance with the DPIRD Fisheries *Policy and Guidelines for Fish Conservation and Management* (Updated 2013), and the *NSW Biodiversity Offsets Policy for Major Projects, Fact sheet: Aquatic Biodiversity*. This bank guarantee may be used to manage KFH, threatened species and/or populations if a monitoring and evaluation program indicates that full or partial effectiveness of proposed mitigations for this project are unsuccessful. Such an action would be consistent with Treasury Direction TD23:18 (October 2023).

DPIRD Fisheries acknowledges the considerable effort invested in the Billabong Creek Regulators Project to date, including actions to avoid and mitigate impacts where possible. DPIRD Fisheries looks forward to continuing to work with NSW DCCEEW post-public exhibition to address the issues raised in our submission, and further refine the assessment and related finalisation of associated documents including design features, and the operations and offsets plans.

To coordinate further discussion with DPIRD Fisheries on the Billabong Creek Regulators EIS please contact Nathan Reynoldson, Senior Fisheries Manager – Fish Passage on 0419 185 546 or Nathan.Reynoldson@dpird.nsw.gov.au.

Sincerely

Cameron Lay
Director, Freshwater Environment
DPIRD - Fisheries

ATTACHMENT A

Summary of Issues

Issue	Summary Issue	Detail of the Issue	Further Work Required
O1	Final weir and fishway design	DPIRD Fisheries understands that DCCEEW is yet to finalise the weir and fishway design. The EIS indicates that further refinement would be developed during the detailed design phase and consider submissions received on the EIS. s218(5) of the FM Act states that *A public authority that proposes to construct, alter or modify a dam, weir or reservoir on a waterway (or to approve of any such construction, alteration or modification)—* *(a) must notify the Minister of the proposal, and* *(b) must, if the Minister so requests, include as part of the works for the dam, weir or reservoir, or for its alteration or modification, a suitable fishway or fish by-pass.* Final designs will require s218 fishway suitability approval by the Minister for Primary Industries or his/her delegate.	1. DPIRD Fisheries are members of the Design Focus Group that are working through detailed design for Hartwood and Wanganella. If there are major designs alterations to the weir/weir gate/fishway configuration, related recalibration of any fishway assessment inputs (e.g. hydraulic modelling) will be required. 2. DCCEEW required to request acceptance from DPIRD Fisheries for final fishway designs to meet s218 FMA Act fishway suitability.
O2	Fish Passage offsets	The Billabong Creek Environmental Water Regulators Project proposes to replace the Forest Creek block bank and raise the existing structure by 0.6m. These works trigger s218 of the FM Act. Section 4.8 of the *NSW Policy and guidelines for fish habitat conservation and management* (Updated 2013) provides provisions for transferring s218 fish passage requirements to alternative priority sites. Fish passage trade-offs are required to be agreed upon in writing by the Minister for Primary Industries or their delegate.	1. DPIRD Fisheries request a detailed offset strategy that considers a fish passage trade off ensuring equal or more cost beneficial fish passage outcomes. In this instance and in conjunction with the broader Yanco Creek Modernisation Project, transferring fish passage works triggered under s218 FM Act is recommended to be directed to alternative priority sites. This should be linked with fish passage offsets associated with other

			projects within the Yanco Creek Modernisation Project.
03	Modelled scenarios	Scenarios modelled to assess the potential hydrology impacts from construction and operation include the following: base case, change case and cumulative case. The change case scenario does not differentiate between the impact of the operations plan or the additional environmental water/rules. It would be beneficial to understand modelling scenarios to determine the weighting of the impacts and differentiate between impacts of operation plan and new environmental water provisions. This should include: 1. Change case – proposed infrastructure with potential impacts of the changes in the operations plan and no environmental water provisions. 2. Change case – proposed infrastructure with potential impacts of the environmental water provisions and no changes in the operations plan.	1. It is recommended that if the Operation Plan should not be approved or is significantly modified, that additional assessment of the changed case scenario to inform KFH impacts be undertaken for the scenarios to differentiate between impact.
04	Need to adequately assess the full extent of downstream and upstream impacts including system wide impacts.	The SDLAM Yanco project and the proposed Billabong Creek regulators is complex with many interacting elements and multiple creeks/gauging locations to consider, plus the potential interaction of broader project elements of the Yanco SDLAM project and subsequent cumulative impacts. DPIRD Fisheries suggests that there needs to be greater assessment of the implications of this proposal on the upper and lower reaches and the interaction of the regulators on the Yanco/Billabong Creek system hydrological regime. The Upper Yanco Creek is habitat of the threatened Trout Cod species. This upper section of the Yanco Creek is unique in that it is an unregulated section of the system that provides a faster flowing water with suitable velocities that are preferred habitat types for Trout Cod.	1. The aquatic ecology assessment needs to consider the hydrology and asset function relationships and be clearer on what the proposal impacts are outside of the area of investigation. At a minimum this should include the changes in the upper and lower sections of the Yanco/Billabong Creek system based on the reduction in water in moving through the system. Detailed analysis of gauges throughout the system showing hydrograph changes for each of the scenarios listed in the EIS.

		Any storage of unregulated flows will have a cumulative impact on the flows being diverted into the upper reaches and subsequently flow variability in the lower reaches.	
05	EWR/Hydraulics/velocity modelling outputs	To finalise an offsets strategy, DPIRD Fisheries requests information regarding velocity changes under different scenarios mapped out for the full extent of the impacted area for each of the regulators/weirs (and potentially other sections of the Yanco system if required). This needs to be at sufficient velocity resolution (i.e. the water velocity m/s categories tabulated in the assessments such as Table 5-7 in the Aquatic Ecology report are appropriate). Water level/velocity data will need to be overlayed with the detailed habitat mapping data (upstream and downstream) to show changes in inundation and velocity as they relate to overall habitat and across habitat feature categories. Further analysis of behaviour around unregulated flows events is requested. As a key element of the project is capturing uncontrolled flows and re-regulating them through increased storage capacity in the system, DPIRD Fisheries seeks further information to understand how the project changes the behaviour and passage of unregulated flows through the Yanco system. It is noted that the regulated flow and unregulated flows are not well modelled.	1. Data relating to velocity changes is needed <u>for multiple scenarios:</u> a. Weir pool extents to FSL (bottom and top of yellow zone) - including newly inundated habitats – modelled for at least maximum and minimum operating flow rates. b. Mapped velocity changes in different operating zones (bottom and top of yellow zone) – modelled for at least maximum and minimum operating flow rates. c. Data to show relationship of water level/velocity change to hydrology. 2. Further analysis of behaviour around unregulated flows events is requested.
06	Frequency/Timing/Duration	The mitigations proposed for the Billabong Creek Environmental Water Regulators are contingent upon the operation of the new structures to minimise weirpool levels within the yellow operating zones. It is important to assess the historical flow records to understand where unregulated flows would be captured at the proposed weir pools, in association with historical irrigation orders to understand downstream demand to use the storage. Analysis of the above, along with the operation of the new structures, will provide an understanding of the likely frequency, timing and duration of the impacts to the aquatic community.	1. DPIRD Fisheries recommend additional analysis of historical unregulated flows and irrigation orders in association with the operation of the new structure to understand the frequency, timing, and duration of the impacts.

09	Construction Activities	Figures. 3.7-3.9 of the EIS main report show construction staging for the regulators. These figures indicate placement of the silt curtain entirely across Billabong Creek during construction works. This will be ineffective in any significant flow. Best Management practice suggest silt curtains should be placed adjacent to coffer dams and parallel to the direction of flowing water to encapsulate the construction works rather than placing perpendicular to the flow direction across the entire creek	1. DPIRD Fisheries will need to review the sub plans of the Construction Environmental Management Plan (CEMP) for comment post approval including fish management/relocation plans as part of the coffer dam installation/dewatering process.
8	Legislation/Operations plan	The physical infrastructure of Hartwood and Wanganella regulators results in raised weir pools which will have a design life of 100+ years, resulting in an enduring impact on aquatic ecology, flows, hydraulics and fish habitat. The proposed mitigations are not permanent and are subject to controls outside of the planning legislation and frameworks including: 1. Additional environmental rules – these would need to be incorporated into Water Sharing Plan (WSP) legislation, which is not necessarily enduring and is subject to review/amendments outside the control of the project. 2. Operations of the structures – will be managed through the approved operations plan and would be subject to periodic review and changes that may potentially alter operations and reduce the effectiveness of mitigations in the future.	1. There are uncertainties with the long-term mitigation strategies and quantifying the level of projected KFH impact associated with the project. It is recommended that an environmental bond be held until the full or partial effectiveness of mitigations can be confirmed. It is also recommended that this is linked with a fully resourced MER program to inform the ecological implications of the project. 2. Conditioning any approval of the project to ensure that the implementation of the final operations plan is overseen by appropriate governance that must be engaged throughout decision making and implementation. This governance structure should include DPIRD Fisheries.
10	Offset Strategy	The EIS analysis does not acknowledge the full impact of the project on aquatic habitat, considering the impact to hydraulic conditions and loss of high-quality lotic habitat conditions in the weir pools. The EIS does not consider downstream implications from the proposed project as potentially requiring offsets; however, based on the documentation provided, DPIRD Fisheries suggest that it is yet to be	1. An offsets strategy is recommended, that considering the above submission response, evaluates the full impacts of the proposal. 2. The offsets strategy must have consideration of impacts to threatened fish species and may require additional steps and mitigation

		concluded that no offset is required for downstream areas impacted by altered flows and reduced flow variability as a result of capturing unregulated flows in the weir pools. There is also limited consideration of system wide implications of the lower and upper reaches of the Yanco/Billabong Creek system with respect to flows entering the system and flow variability.	actions if a significant impact is identified. For example, loss of lotic conditions would potentially be significant for Trout Cod.
	Aquatic Biodiversity Strategy	DPIRD Fisheries recommends the inclusion of a Biodiversity Strategy. This should include adequate post implementation MER of the operations and the efficacy of the mitigation measures in eliminating the impacts. The MER plan should be sufficient (in terms of the timeframes and types of conditions that are examined, and resourcing) to give an acceptable degree of certainty of the project mitigations. There should also be remedial actions identified if the ability to mitigate impacts of the project are less than projected in the final assessment, noting that additional offsets may be required if mitigation is not possible.	1. Adequate MER of the structures and operations, as well as the identification of remedial actions that need to be taken if the operations plan is less effective than projected. 2. Conditioning any approval of the project to ensure that the final operations plan objectives are clearly oriented to preventing impacts on hydrology, hydraulics and aquatic ecology.
11.	Environmental Bond	The proposed mitigation actions for hydrological and hydraulic impacts on aquatic ecology rely heavily on the Operating Plan for the infrastructure and associated assumptions made in the assessment. Due to the long-term life span of the proposed structures, and uncertainties associated with potential impacts and effectiveness of mitigations of the proposal over the extended timeframe, DPIRD Fisheries recommend an Environmental Bond be instated.	3. DPIRD Fisheries recommend that a bank guarantee be required to be provided to DPIRD Fisheries to offset key fish habitat impacts in accordance with the DPIRD Fisheries *Policy and Guidelines for Fish Conservation and Management* (Updated 2013), and the *NSW Biodiversity Offsets Policy for Major Projects, Fact sheet: Aquatic Biodiversity*.