Title of Proposal - Southern Forests Irrigation Scheme

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Water Management and Use

1.2 Provide a detailed description of the proposed action, including all proposed activities.

The Proposed Action relates to the clearing associated with the Southern Forests Irrigation Scheme (SFIS). The SFIS involves the construction and operation of (see Figure 2):
• water offtake from the Donnelly River;
• water storage on Record Brook;
• approximately 250 km of pipeline network; and
• supporting infrastructure such as powerlines, pumping stations and tracks.

The purpose of the Proposal is to provide additional high quality and high reliability water supplies for irrigated horticultural and agricultural production in the Southern Forests region in the southwest of Western Australia (WA).

The SFIS has been developed to support the Manjimup SuperTowns vision of expanding the area's horticulture industry and doubling the population over the next 15 years. The Manjimup SuperTown Agriculture Strategy (2014) and The Value of Horticulture Production in the Manjimup-Pemberton Area report (2014) highlighted the need to secure additional water to supply horticultural areas currently subject to water shortages.

The SFIS will be constructed and operated by the Southern Forests Irrigation Cooperative Ltd (SFIC), which will operate as a water supply and trading cooperative.

The Proposed Action to clear vegetation for construction of the SFIS is required for the following proposed activities:
1. Establish an offtake on the Donnelly River at a site south of Graphite Rd, including pump station, access road and high voltage underground power cable.
2. Pump an average of approximately 9.3GL/yr of water from the Donnelly River to the Record Brook reservoir plus capture approximately 3GL/yr of water directly from the Record Brook.
3. Establish a storage reservoir on Record Brook, which is a minor ephemeral tributary of the Donnelly River. To do this an earthen rock wall approximately 30m high and 450m long will be constructed. The reservoir will have a storage of approximately 15GL and cover approximately 160 ha.
4. Construct a supply pipeline between the Donnelly River offtake and the Record Brook reservoir, comprising two nominal 1000 mm diameter HDPE pipelines of approximate length 3.2 km.
5. Construct and operate approximately 250 km of water distribution pipelines between the Record Brook reservoir to property outlets (irrigator connection points). The network will be split

between the Middlesex line (southern network) and Graphite line (northern network). It is expected that the pipelines will largely be installed below ground, although some sections may be above ground due to site constraints such as waterway crossings.
6. A nominal 20 m wide pipeline corridor development envelope will be required for installation of pipelines - this is expected to be reduced through detailed design. Pipelines will be laid in trenches approximately 1-2 m wide and have a nominal 700 mm cover to protect from surface activities.
7. Two balance tanks of approximately 3KL storage capacity will be installed. One to service the Graphite line and the other to service the Middlesex line.

The layout of the proposal has been refined over the last 12 months with the aim of reducing the potential environmental impact of the project. The adjustments made and benefits provided include:
• Redesign of the proposed offtake on the Donnelly River to remove the requirement for an artificial weir (the original design incorporated a 4m weir to accommodate pump infrastructure). This has significantly reduced the area of inundation, disturbance of riparian vegetation and the potential obstruction to aquatic fauna.
• The redesigned river offtake will incorporate submersible pumps that will be placed upstream of an existing rock bar. It is expected that with minimal adjustment, using natural rock, sufficient water depth can be achieved upstream of the rock bar to allow stable water levels and safe pump operation.
• Reduction of the nominal width of the pipeline corridor development envelope from 30 m to 20 m resulting in a reduction in the maximum potential area of native vegetation clearing associated with pipeline network from an estimated 210 ha to 142 ha. Noting also that following construction, approximately 100 ha of cleared native vegetation within the pipeline corridor will be revegetated.

It is expected that the development envelope (for the pipeline network) shown in figure 2 will be further refined and the amount of clearing reduced through detailed design and assessment. The estimated clearing of native vegetation provided in this referral has been calculated using a 20 m pipeline corridor development envelope. Particular focus in the design and assessment will be paid to environmentally sensitive areas and areas that provide habitat to species listed as MNES and it is expected that further reduction in impacts from clearing of native vegetation can be achieved.

The delivery of high reliability water supply to irrigators from a central point will reduce the pressure on irrigators sourcing water from local surface water diversion or groundwater abstraction, which are subject to greater variability in water quantity and quality across local catchments and aquifers. The construction of a single reservoir to supply water to a large region within the Shire of Manjimup also introduces a level of regulation and management capability not currently possible with distributed self supply dams.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude

Donnelly River Offtake and delivery lines	1	-34.269399207365	115.92972668898
Donnelly River Offtake and delivery lines	2	-34.265994478869	115.95135602248
Donnelly River Offtake and delivery lines	3	-34.270817803554	115.95478925002
Donnelly River Offtake and delivery lines	4	-34.275924551667	115.93075665724
Donnelly River Offtake and delivery lines	5	-34.269399207365	115.92972668898
Indicative Northern Extent of pipe network	1	-34.130506641315	116.15976446862
Indicative Northern Extent of pipe network	2	-34.13045335578	116.15977519745
Indicative Northern Extent of pipe network	3	-34.130506641315	116.15976446862
Indicative North Eastern extent of pipe network	1	-34.232152824307	116.30285119999
Indicative North Eastern extent of pipe network	2	-34.232152824307	116.30285119999
Indicative North Eastern extent of pipe network	3	-34.23236570947	116.30285119999
Indicative North Eastern extent of pipe network	4	-34.232152824307	116.30285119999
Indicative south eastern extent of pipeline network	1	-34.355387587765	116.33783507274
Indicative south eastern extent of pipeline network	2	-34.355387587765	116.33783507274
Indicative south eastern extent of pipeline network	3	-34.355387587765	116.33783507274
Indicative Southern extent of pipeline network	1	-34.406956185641	116.21114897655
Indicative Southern extent of pipeline network	2	-34.408089204717	116.21114897655
Indicative Southern	3	-34.406956185641	116.21114897655

Area	Point	Latitude	Longitude
extent of pipeline network			
Indicative South Western extent of pipeline network	1	-34.472079848306	115.93752074169
Indicative South Western extent of pipeline network	2	-34.472645918385	115.93717741893
Indicative South Western extent of pipeline network	3	-34.472079848306	115.93752074169
Record Brook Reservoir	1	-34.264282464403	115.95135602248
Record Brook Reservoir	2	-34.260026273304	115.96028241408
Record Brook Reservoir	3	-34.256904929622	115.97744855178
Record Brook Reservoir	4	-34.257188692924	115.98294171584
Record Brook Reservoir	5	-34.264566202818	115.98465832961
Record Brook Reservoir	6	-34.271091922172	115.9705820967
Record Brook Reservoir	7	-34.272510489803	115.95753583205
Record Brook Reservoir	8	-34.272510489803	115.95753583205
Record Brook Reservoir	9	-34.264282464403	115.95135602248
Outline of extent of pipeline network	1	-34.256649543564	115.95783909978
Outline of extent of pipeline network	2	-34.231106849846	115.96607884588
Outline of extent of pipeline network	3	-34.217480910795	115.97981175603
Outline of extent of pipeline network	4	-34.197605798983	116.02581700506
Outline of extent of pipeline network	5	-34.223158653275	116.0292502326
Outline of extent of pipeline network	6	-34.220319829867	116.07731541814
Outline of extent of pipeline network	7	-34.213506263383	116.11302098455
Outline of extent of pipeline network	8	-34.194198166398	116.1089011115

Area	Point	Latitude	Longitude
Outline of extent of pipeline network	9	-34.169772770065	116.10958775701
Outline of extent of pipeline network	10	-34.192494298465	116.12744054021
Outline of extent of pipeline network	11	-34.18795048234	116.17207249822
Outline of extent of pipeline network	12	-34.158409711389	116.17413243474
Outline of extent of pipeline network	13	-34.137952352026	116.1617728156
Outline of extent of pipeline network	14	-34.123742937929	116.15421971502
Outline of extent of pipeline network	15	-34.122606081615	116.16726597967
Outline of extent of pipeline network	16	-34.147045123384	116.20228490056
Outline of extent of pipeline network	17	-34.155568707753	116.25241002263
Outline of extent of pipeline network	18	-34.177726001058	116.25241002263
Outline of extent of pipeline network	19	-34.21520970666	116.25446995916
Outline of extent of pipeline network	20	-34.229403728012	116.29841527166
Outline of extent of pipeline network	21	-34.237351335206	116.2936087531
Outline of extent of pipeline network	22	-34.244730584449	116.26614293279
Outline of extent of pipeline network	23	-34.24075722293	116.22631749334
Outline of extent of pipeline network	24	-34.246433396253	116.21807774724
Outline of extent of pipeline network	25	-34.257784594476	116.22563084783
Outline of extent of pipeline network	26	-34.26459457834	116.22631749334
Outline of extent of pipeline network	27	-34.270269143712	116.22837742986
Outline of extent of pipeline network	28	-34.277078116698	116.26339635076
Outline of extent of pipeline network	29	-34.283319190827	116.26339635076
Outline of extent of pipeline network	30	-34.290127106802	116.23936375799
Outline of extent of pipeline network	31	-34.30998037781	116.24760350408
Outline of extent of pipeline network	32	-34.32132299696	116.25996312322

Area	Point	Latitude	Longitude
Outline of extent of pipeline network	33	-34.324725483827	116.29841527166
Outline of extent of pipeline network	34	-34.338901027436	116.33824071111
Outline of extent of pipeline network	35	-34.352507295605	116.35884007634
Outline of extent of pipeline network	36	-34.362143732929	116.34854039373
Outline of extent of pipeline network	37	-34.346838285525	116.25378331365
Outline of extent of pipeline network	38	-34.339467999356	116.24211034002
Outline of extent of pipeline network	39	-34.324725483827	116.23043736638
Outline of extent of pipeline network	40	-34.310547545167	116.22494420232
Outline of extent of pipeline network	41	-34.296934471218	116.21189793767
Outline of extent of pipeline network	42	-34.282751839601	116.19953831853
Outline of extent of pipeline network	43	-34.285588557433	116.18580540838
Outline of extent of pipeline network	44	-34.304875699192	116.1789389533
Outline of extent of pipeline network	45	-34.326993731764	116.17550572576
Outline of extent of pipeline network	46	-34.339467999356	116.17825230779
Outline of extent of pipeline network	47	-34.366678143569	116.18099888982
Outline of extent of pipeline network	48	-34.381979967696	116.18580540838
Outline of extent of pipeline network	49	-34.39047977309	116.20159825506
Outline of extent of pipeline network	50	-34.407476794809	116.21945103826
Outline of extent of pipeline network	51	-34.413141701476	116.22219762029
Outline of extent of pipeline network	52	-34.413141701476	116.21533116521
Outline of extent of pipeline network	53	-34.3910463961	116.18443211736
Outline of extent of pipeline network	54	-34.383679997809	116.17687901677
Outline of extent of pipeline network	55	-34.356475374567	116.15353306951
Outline of extent of pipeline network	56	-34.332664083348	116.13911351385

Area	Point	Latitude	Longitude
Outline of extent of pipeline network	57	-34.319054595743	116.11988743963
Outline of extent of pipeline network	58	-34.330395988703	116.09928807439
Outline of extent of pipeline network	59	-34.336633101425	116.09928807439
Outline of extent of pipeline network	60	-34.349672838482	116.10615452947
Outline of extent of pipeline network	61	-34.363844165675	116.11302098455
Outline of extent of pipeline network	62	-34.367811707886	116.12057408513
Outline of extent of pipeline network	63	-34.387646600508	116.13705357732
Outline of extent of pipeline network	64	-34.39671241524	116.13980015935
Outline of extent of pipeline network	65	-34.409176307093	116.13980015935
Outline of extent of pipeline network	66	-34.413708171042	116.12057408513
Outline of extent of pipeline network	67	-34.413141701476	116.10272130193
Outline of extent of pipeline network	68	-34.398978715495	116.07525548162
Outline of extent of pipeline network	69	-34.414841098662	116.06152257146
Outline of extent of pipeline network	70	-34.421071926239	116.05740269842
Outline of extent of pipeline network	71	-34.443725566935	116.02307042302
Outline of extent of pipeline network	72	-34.47373218112	115.9502859992
Outline of extent of pipeline network	73	-34.476562437073	115.93380650701
Outline of extent of pipeline network	74	-34.470901829172	115.91801366033
Outline of extent of pipeline network	75	-34.457314803678	115.90016087713
Outline of extent of pipeline network	76	-34.440894197658	115.89054784002
Outline of extent of pipeline network	77	-34.432399514124	115.88368138494
Outline of extent of pipeline network	78	-34.414841098662	115.88711461248
Outline of extent of pipeline network	79	-34.400111842606	115.90016087713
Outline of extent of pipeline network	80	-34.384246666843	115.93861302556

Area	Point	Latitude	Longitude
Outline of extent of pipeline network	81	-34.369512025606	115.96127232732
Outline of extent of pipeline network	82	-34.354774792299	115.98118504705
Outline of extent of pipeline network	83	-34.319621701795	115.98873814763
Outline of extent of pipeline network	84	-34.306577293212	115.98255833806
Outline of extent of pipeline network	85	-34.285588557433	115.97225865545
Outline of extent of pipeline network	86	-34.274241111635	115.96264561834
Outline of extent of pipeline network	87	-34.256649543564	115.95783909978

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The proposed action is located within the Southern Forests area within the southwest region of WA (see Figure 1). Manjimup and Pemberton are the nearest major towns.

The Donnelly River offtake and Record Brook reservoir will be located approximately 20 km to the west of Manjimup and approximately 20 km to the north west of Pemberton.

The proposed site for the Middlesex line (southern network) balance tank is located near Waistcoat Road on State Forest (Lot 6292 on plan 225724) with approximate coordinates 407 298 mE and 6 206 685 mN.

The proposed site for the Graphite line (northern network) balance tank is located off Graphite Road on private land (Lot 5959 on plan 201680) with approximate coordinates 406 554 mE and 6 212 960 mN.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

The total development envelope for the proposal is 651 ha, which includes a 312 ha clearing footprint.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Multiple

1.8 Primary Jurisdiction.

Western Australia

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

Yes

1.9.1 Please provide details.

The Australian Government has committed funding of $1m under the feasibility component of the National Water Infrastructure Development Fund and up to $39.7m under the capital component of the National Water Infrastructure Development Fund.

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 01/2021

End date 06/2024

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

The proposal was previously referred (in 2018) under the EPBC Act as two separate referrals submitted concurrently:

Project 1: Donnelly River offtake and Record Brook Dam 2018/8159.

Project 2: Irrigation pipeline network 2018/8161.

Following consultation with the Department of the Environment and Energy, both previous referrals (2018/8159 and 2018/8161) have been formally withdrawn. The project has been consolidated and updated for submission (this referral) as a single proposal.

Western Australian Government Approvals

The proposed action was referred to the EPA under Part IV of WA Environmental Protection Act 1986 (EP Act) on 21 December 2018. The EPA have advised that the proposal (Notice of Decision to Assess Proposal 23 April 2019) shall be formally assessed and set the level of assessment as Public Environmental Review (PER). A six week public review period for the Environmental Review Document has been set. SFIC are currently preparing the environmental

scoping document for the proposal and anticipate submitting the scoping document in August 2019. Preparation of the PER will commence following acceptance of the scoping document by the EPA. The submission of the draft PER is planned for late 2019, pending completion of additional technical studies to support the impact assessment.

A Section 5C licence to take water from the Donnelly River will be required under the Rights in Water and Irrigation Act 1914 (RiWI Act). A bed and banks permit will be required for the construction of the reservoir on Record Brook, construction of the water offtake on the Donnelly River and potentially for interference with watercourses during construction of the pipeline network. Applications for these approvals will be submitted following assessment under the EP Act.

Environmental Water Requirements for the Donnelly River are currently being developed by the Department of Water and Environmental Regulation (DWER) as required to support the impact assessment under Part IV of the EP Act and assessment of the Section 5C licence (RiWI Act) and Warren- Donnelly Surface Water Allocation Plan.

SFIC will also require a licence under the Water Services Act 2012 for the provision of water for agriculture (irrigation).

It is possible that a Section 18 consent to disturb Aboriginal heritage sites will be required under the Aboriginal Heritage Act 1972. Additional Aboriginal heritage surveys will be conducted to determine the presence and sensitivity of heritage sites, and pipeline routes re-aligned where practicable to avoid or minimise impacts to sites.

Land tenure approvals will be required under the Conservation and Land Management Act 1984 and/or Land Administration Act 1997 for development in State Forest, Crown reserves and leases.

Local Government Approvals

No local government approvals are required for the SFIS.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

Consultation has been undertaken with key stakeholders including Shire of Manjimup, Warren Catchment Council, Southwest Catchment Council, Conservation Council (WA Forest Alliance), Manjimup and Pemberton Landowners Group, Southern Forest Food Council, Potato Growers Association of WA, Wine Industry Association, Truffle Industry, Ribbons of Blue, Recfishwest, Bibbulmum Track Board, WA Trout Fishing Club and Australian Trout Guild, the South West Development Commission and State and Federal Government Members of Parliament.

Consultation has also been undertaken with State Government agencies including Department of Water and Environmental Regulation; Department of Biodiversity, Conservation and Attractions; and Department of Planning, Lands and Heritage. The consultation has been led by Department of Primary Industries and Regional Development as the lead Government agency providing support to the proponent in recognition of the importance of the proposed action to the

State Government.

Briefings have been held in Pemberton and Manjimup with prospective water buyers (irrigators) in 2015, 2016 and 2018. The briefings in 2018 included attendance by members of the local and national press. Numerous additional meetings, including recently through until mid-2019, have also been held with individual landholders.

Initial consultation with Indigenous stakeholders has been undertaken through presentation to the South West Boojarah Working Party at the South West Aboriginal Land and Sea Council (SWALSC). A presentation is also proposed to the Wagyl Kaip & Southern Noongar Working Party at SWALSC. Additional consultation with Indigenous stakeholders is proposed through an ethnographic survey of the proposed action area, which will engage up to ten Indigenous representatives/consultants selected by SWALSC.

Consultation to date included an overview of the scope of the proposed action, key environmental issues, proposed mitigation and expected approvals process.

A six week public review period will be undertaken as part of the EPA assessment of the proposed action under Part IV of the EP Act. This will provide details of potential environmental impacts and proposed mitigation based on the findings of technical studies, some of which be completed in Q3/4 2019.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

The proposal will be assessed under Part IV of the EP Act as a PER (Notice of Decision to Assess Proposal 23 April 2019). The SFIC is currently preparing an Environmental Scoping Document as part of this process and anticipate submitting the scoping document in August 2019. Preparation of the PER will commence following acceptance of the scoping document by the EPA. The submission of the PER is planned for late 2019, pending completion of additional technical studies to support the impact assessment.

The Environmental Impact Assessment will address the potential impacts of the proposal and present proposed mitigation measures in relation to the following key environmental factors (as specified by the EPA 16 April 2019):

Flora and Vegetation

Terrestrial Environmental Quality

Terrestrial Fauna

Inland Waters

Social Surroundings

The PER will also include a Construction Environmental Management Plan (CEMP) detailing

measures to be put in place during the construction of the scheme to manage potential impacts resulting from construction activities.

An Operations Environmental Management Plan will also be prepared to set out an overarching framework for the management of operations of the SFIS. Pathways to develop trigger levels, response actions and future monitoring will be developed to support the ongoing management of the scheme once established, and allow the establishment and integration with Farm Water Access Plans for individual properties. SFIC propose that this plan will link with the water licensing process and reporting requirements under the RiWI Act.

Given the factors identified and potential residual impacts, an offsets strategy will be developed to support the PER. The offsets strategy will address residual impacts to Matters of National Environmental Significance (MNES) and environmental factors, consistent with the following guidelines:

EPBC Act Environmental Offsets Policy (Department of Sustainability, Environment, Water Population and Communities 2012)WA Environmental Offsets Policy (Government of Western Australia 2011)WA Environmental Offsets Guidelines (Government of Western Australia 2014).

Application of these guidelines will ensure that decisions made on environmental offsets are consistent and accountable under the EP Act and the EPBC Act. The offsets strategy will summarise the legislative context in relation to offset policies at both state and federal government levels, the direct and indirect impacts expected to MNES and environmental factors and outline a strategy for locating a suitable offsets package.

Impacts of the abstraction of water from the Donnelly River will also be assessed through the Section 5C licence to take water under the RiWI Act. There is capacity for conditions to manage and monitor impacts from water take to be set on the licence under the RiWI Act.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

No

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Caladenia harringtoniae (Harrington's Spider Orchid)	There are no previous records for the species within the footprint of the Proposal and it has not been recorded in the flora and vegetation

Species	Impact
	surveys undertaken to support the Proposal to date. Flowering of Caladenia harringtoniae typically follows summer fire and none of the areas surveyed are understood to have been subject to recent fires. It is possible the species may be present but not visible during surveys. C. harringtoniae is typically found in winter wet areas, margins of lakes, creeklines and granite outcrops from Albany to Nannup (Brown et al. 2013, Western Australian Herbarium 1998-). Within the project area, three vegetation types covering an estimated 42.4 ha, have been identified as potential suitable habitat for the species (Strategen 2019a, Strategen 2019b). This habitat is likely to be well represented outside of the proposal area. The corresponding vegetation complexes (within which the suitable vegetation types were identified) are well represented within the Shire of Manjimup: - Warren (WA) has a total of 5,349 ha intact representing approximately 87% of its estimated pre-European distribution - Wheatley (WH1) has a total of 9,975 ha intact, representing approximately 75% of its estimated pre-European distribution.
Caladenia christineae (Christine's Spider Orchid)	Caladenia christineae was not recorded in flora and vegetation surveys undertaken to support the Proposal to date and there are no previous records of the species within the Proposal Area. The species is typically found around the margins seasonally wet flats and margins of lakes occurring from Mount Barker to Bridgetown (Brown et al. 2013, Western Australian Herbarium 1998-). Within the project area, three vegetation types covering an estimated 42.4 ha, were identified as potential suitable habitat for the species (Strategen 2019a, Strategen 2019b). There are no previous records for the C. christineae within the footprint of the Proposal. The potential habitat for C. christineae is likely to be well represented outside of the proposal area. The corresponding vegetation complexes (within which the suitable vegetation types were identified) are well represented within the Shire of Manjimup: - Warren (WA) has a total of 5,349 ha intact representing approximately 87% of its estimated pre-European distribution - Wheatley

Species	Impact
	(WH1) has a total of 9,975 ha intact, representing approximately 75% of its estimated pre-European distribution.
Calypyorhynchus banksii naso (Forest Red-tail Black Cockatoo)	Recorded within the project area (360 Environmental 2019). Potential impacts include clearing of up to approximately 275 ha of habitats containing Jarrah, Marri and Karri species that are likely to provide habitat for the species. Quantification of roosting and breeding habitat within the Proposal Area will be completed through further targeted surveys. Suitable foraging habitat is likely to be widespread in areas adjacent to and surrounding the project area. All the 21 vegetation complexes occurring within the project area potentially provide foraging habitat (Jarrah, Marri and/or Karri present) and all have greater than 30% of their pre-European extent intact within the Shire of Manjimup. The total current extent of the 21 complexes combined within the Shire of Manjimup is 209,321 ha.
Calyptorhynchus baudinii (Baudin’s Cockatoo)	Recorded within the project area (360 Environmental 2019). Impacts include clearing of up to approximately 275 ha of habitats containing Jarrah, Marri and Karri species that are likely to provide habitat for the species. Quantification of roosting and breeding habitat within the Proposal Area will be completed through further targeted surveys. Suitable foraging habitat is likely to be widespread in areas adjacent to and surrounding the project area. All the 21 vegetation complexes occurring within the project area potentially provide foraging habitat (Jarrah, Marri and/or Karri present) and all have greater than 30% of their pre-European extent intact within the Shire of Manjimup. The total current extent of the 21 complexes combined within the Shire of Manjimup is 209,321 ha.
Calyptorhynchus latirostris (Carnaby’s Cockatoo)	Not recorded but identified as having a high likelihood of occurring within the project area (360 Environmental 2019). Impacts include clearing of up to approximately 275 ha of habitats containing Jarrah, Marri and Karri species that are likely to provide habitat for the species. Quantification of roosting and breeding habitat within the Proposal Area will be completed through further targeted surveys.

Species	Impact
	Suitable foraging habitat is likely to be widespread in areas adjacent to and surrounding the project area. All the 21 vegetation complexes occurring within the project area potentially provide foraging habitat (Jarrah, Marri and/or Karri present) and all have greater than 30% of their pre-European extent intact within the Shire of Manjimup. The total current extent of the 21 complexes combined within the Shire of Manjimup is 209,321 ha.
Pseudocheirus occidentalis (Western Ringtail Possum)	Potentially recorded (drey observed) within the project area (360 Environmental 2019). No other observations recorded. Impacts include clearing of up to 229 ha of Marri and Jarrah Forest habitat. Density and distribution within Proposal Area to be confirmed through further targeted surveys in 2019. Given the narrow nature of the pipeline area (20m wide), it was not expected that the pipeline clearing will have a significant impact on Western Ringtail Possum. Preclearing surveys will be undertaken as part of construction environmental management.
Dasyurus geoffroii (Chuditch, Western Quoll)	High likelihood of occurring at low densities (360 Environmental 2019). Impacts include clearing of approximately 275 ha of Forest habitat within the Proposal Area. Given large home ranges and mobility of the species, clearing, particularly that associated with the pipeline corridor, is not considered likely to significantly impact the species. Preclearing surveys will be undertaken as part of pre-clearing construction environmental management.
Falco peregrinus (Peregrine Falcon)	Identified as highly likely to utilise Forest habitat within the Proposal area for foraging but not breeding (360 Environmental 2019). Impacts include clearing of up to 275 ha of forest foraging habitat within the Proposal Area. Clearing associated with the Proposal is considered unlikely to have a significant adverse impact on this wide ranging species, especially given the foraging habitat that will remain intact adjacent to surrounding the Proposal Area.
Setonix brachyurus (Quokka)	High likelihood of occurring within restricted, densely vegetated, riparian habitats (360 Environmental 2019). Potential impacts include

Species	Impact
	clearing of up to an estimated 19 ha of suitable habitat within the Proposal Area. Additional targeted surveys for the species planned for 2019 to confirm presence or absence of the species.
Myrmecobius fasciatus (Numbat)	Identified as having a medium likelihood of occurrence within Forest habitat containing Jarrah and Marri in the east of the Proposal Area (360 Environmental 2019). Impacts based on occurrence of potentially suitable habitat within pipeline network (reservoir area in the west of the Proposal Area excluded) include clearing of up to an estimated 129 ha of potential habitat. Given the narrow nature of the pipeline corridor (20m wide), it was not expected that clearing associated with the Proposal will have a significant impact on numbats as individual home ranges are likely to be only marginally affected. Preclearing surveys will be undertaken as part of pre-clearing construction environmental management.
Nannatherina balstoni (Balston’s Pygmy Perch)	Species previously recorded approximately 20 km downstream of the proposed Chappell Bridge location of the Donnelly River offtake point in the Fly Brook (tributary to the Donnelly River) (Beatty et al. 2016). Recent surveys within the Chappell Bridge to Palings Road reach have not recorded the species (Beatty et al. 2018). If present, the species could potentially be impacted by changes in the flow regime resulting from abstraction of water from the Donnelly River. Risk to aquatic ecosystems of the Donnelly River, including freshwater fish, will be managed through implementation of an environmental flow regime and water take rules determined by Western Australian Department of Water and Environmental Regulation (DWER). Impacts unlikely to be significant.
Westralunio carteri (Carter’s Freshwater Mussel)	Recorded by Beatty et al. (2018) from the Chappell Bridge location and additional sample site downstream. Construction of the Donnelly River offtake could potentially impact the species due to temporary disturbance to river bed during construction of river offtake. Impacts could include temporary disturbance to habitat and indirect impacts from sedimentation resulting from construction activities. The species could also potentially be impacted by

Species	Impact
	changes in the flow regime resulting from abstraction of water from the Donnelly River. Risk to aquatic ecosystems of the Donnelly River, including Carter's Freshwater Mussel, will be managed through implementation of an environmental flow regime and water take rules determined by DWER. Impact unlikely to be significant

2.4.2 Do you consider this impact to be significant?

Yes

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

Yes

2.5.1 Impact table

Species	Impact
Motacilla cinerea (Grey Wagtail)	Grey Wagtail recorded in southwest near Donnelly River catchment. Species uses riverine habitats and may potentially be impacted through pipeline waterway crossings. Given scale and nature of project area, largely narrow corridor (20m wide) clearing, the proposal will not have a significant adverse impact on this species.

2.5.2 Do you consider this impact to be significant?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

Flora and Vegetation

Detailed flora and vegetation studies have been undertaken for the reservoir on Record Brook (Strategen 2019a) and pipeline network (Strategen 2019b). These studies complimented previous reconnaissance level surveys undertaken in 2016 and 2017 and presented compiled findings for the two study areas. The studies are currently being reviewed and complimentary studies to address gaps will be completed and presented to support the assessment of the proposed action. Preliminary findings from the detailed studies completed to date are presented below.

Record Brook Reservoir

A total of 103 native vascular plant taxa from 65 plant genera and 36 plant families were recorded within the Record Brook survey area. The majority of taxa were recorded from the Myrtaceae (10 taxa) and Fabaceae (8 taxa) families. The number of plant species recorded reflects the historic logging and disturbance throughout much of the survey area and is consistent with expected species richness in the region.

A total of 4 introduced (exotic) taxa were recorded. One species, **Zantedeschia aethiopica*, is a Declared Plant species pursuant to section 22 of the Biosecurity and Agriculture Management Act (BAM) 2007 (DAFWA 2016).

As part of the Regional Forest Agreement, Mattiske and Havel (1998) mapped vegetation complexes of the forest regions of south west WA at a scale of 1:50,000. Three vegetation complexes are present within the survey area.

Strategen (2019a) identified five vegetation types within the Record Brook reservoir survey area. The dominant native vegetation type, comprising 29% of the total area, was vegetation type 2: *Eucalyptus marginata* and *Corymbia calophylla* forest with occasional *E. patens*, *E. diversicolor* and *Banksia grandis* over *Allocasuarina decussata* and *Trymalium odoratissimum* thicket to scrub over *Thomasia foliosa, Pteridium esculentum* and *Bossiaea* spp. low shrubland over an open native herbland and forbland including *Hovea elliptica*, *Tetrarrhena laevis* and *Tetraria capillaris* on brown loam soils.

Approximately 0.7% of the survey area was comprised of cleared areas.

Vegetation condition was described using the vegetation condition scale for the South West Botanical Province (Keighery 1994). Vegetation condition within the reservoir survey area

ranged from Completely Degraded to Excellent with majority of the survey area (52%) found to be in Excellent condition.

No State or Federally listed threatened flora species have been recorded within the reservoir survey area (including during the 2016 and 2017 field surveys).

No threatened ecological communities have been recorded or are expected to occur within the reservoir survey area. Vegetation recorded within the area is well represented in the adjacent conservation reserves including Donnelly State Forest, Barlee Brook State Forest and South East Nannup State Forest (Strategen 2019a).

Pipeline network

A total of 265 vascular plant taxa from 128 plant genera and 48 plant families were recorded within the pipeline network survey area. The survey was conducted over a 200m wide corridor, centred on the proposed pipeline network alignment and covered approximately 4945 ha. The majority of taxa were recorded within the Fabaceae (32 taxa) and Myrtaceae (17 taxa) families. The relatively high number of plant genera recorded reflects the large size of the survey area.

A total of 36 introduced (exotic) taxa were recorded. Two of these species, **Asparagus asparagoides* and **Zantedeschia aethiopica*, are Declared Plant species pursuant to section 22 of the BAM Act (DAFWA 2016). *Asparagus asparagoides is also listed as a Weed of National Significance (WoNS).

Twenty-one vegetation complexes (as mapped and described by Mattiske and Havel 1998) are present within the pipeline network survey area (Figure 3).

Nineteen vegetation types were mapped and described by Strategen (2019b) in the survey area. The dominant native vegetation types described were:

K1: *Eucalyptus diversicolor* over *Allocasuarina decussata* mid open woodland over *Trymalium odoratissimum, Chorilaena quercifolia* and *Callistachys lanceolata* tall shrubland.

K2: *Eucalyptus diversicolor* tall open forest to forest over *Trymalium odoratissimum, Chorilaena quercifolia* and *Bossiaea aquifolium* tall shrubland.

K5: *Eucalyptus diversicolor, Eucalyptus marginata* and *Corymbia calophylla* tall open forest to forest over *Trymalium odoratissimum, Chorilaena quercifolia* and *Bossiaea aquifolium* tall shrubland over *Pteridium esculentum, Hibbertia cuneiformis* and *Hovea elliptica* mid open shrubland.

Approximately 56% (2746ha) of the survey area was cleared.

Vegetation condition within the pipeline network survey area (based on ratings of Keighery 1994) ranged from Completely Degraded to Excellent. Approximately 62% was mapped as Completely Degraded condition, approximately 21% in Excellent and 13% in Very Good condition.

No Threatened flora species listed under State or Federal legislation were recorded within the

pipeline network survey area (including during the 2016 and 2017 field surveys).

One state listed priority ecological community was identified as potentially occurring within the pipeline network survey area: 'Epiphytic Cryptograms of the Karri forest'. This PEC comprises liverworts, mosses and lichens found on the bark of host species which include mature (plants greater than 15 years old and prior to senescence at about age 50) of *Trymalium odoratissimum* subsp. *odoratissimum* and *Chorilaena quercifolia* in the karri forest of southwest WA. The occurrence of this community was not verified during the survey however there is potential for this PEC to occur in Vegetation Types K1, K2, K3, K4 and K5, where *Trymalium odoratissimum* and *Chorilaena quercifolia* are present and where logging has not occurred for at least 15 years (Strategen 2019b).

No threatened ecological communities have been recorded or are expected to occur within the pipeline network area.

Vegetation recorded within the pipeline network area is well represented in the adjacent conservation reserves including Donnelly State Forest, Barlee Brook State Forest and South East Nannup State Forest (Strategen 2019b).

Fauna and Fauna Habitats

A detailed fauna study has been undertaken in the proposal area across the reservoir site and pipeline network by 360 Environmental (2019). These studies complimented previous reconnaissance level surveys undertaken by Bamford Consulting Ecologists (2016) and Strategen Environmental (2018). In addition, specialist studies have been undertaken on short range endemic fauna (Invertebrate Solutions 2019) and aquatic species (Storer et al. 2017a, 2017b; Beatty et al. 2018). Fauna studies are currently being reviewed and complimentary studies are planned, where required, to address gaps and support the assessment of the proposed action. Preliminary findings from the detailed studies completed to date are presented below.

Terrestrial Fauna

Eight broad fauna habitats were identified by 360 Environmental (2019):

Jarrah and Marri Forest; Karri, Jarrah and Marri Forest; Karri Forest; Karri and Blackbutt Forest; Melaleuca Woodland / Riparian Vegetation; Open Water / Dam; Plantation / Seedlings; and Tall Shrubland.

Database searches retrieved a total of 183 vertebrate species from 68 families. The fauna assemblage recorded during the field survey by 360 Environmental (2019) comprised 83 fauna species from 46 families (45% of all potential species). This included two amphibian species from two families (16% of all potential amphibian species); 52 bird species from 28 families (40% of all potential bird species); 23 mammal species from thirteen families (85% of all potential mammal species); and six reptile species from three families (46% of all potential reptile species).

A total of 24 conservation significant fauna species were identified in the desktop searches. A likelihood of occurrence assessment for the species was completed by 360 Environmental

(2019) based on the results of the desktop assessment and field survey, categorising the following:

Six species were recorded during the survey: Forest Redtailed Black Cockatoo (Vulnerable); Baudin's Cockatoo (Endangered); Water-rat (Priority 4); Quenda (Priority 4); Western Ringtail Possum (Critically Endangered); and Western Falsistrelle (Priority 4).Five were considered to have a high likelihood of occurrence within the Survey Area: Carnaby's Cockatoo, Peregrine Falcon, Chuditch, Brushtailed Phascogale and Quokka;Five were considered to have a medium likelihood of occurrence within the Survey Area: Bluebilled Duck, Muir's Corella, Australian Masked Owl, Western Brush Wallaby and Numbat; and Eight species were considered to have a low likelihood of occurrence within the Survey Area: Australasian Bittern, Malleefowl, Curlew Sandpiper, Common Sandpiper, Common Greenshank, Tammar Wallaby, Woylie and Bilby.

A total of 1,745 ha of Black Cockatoo foraging habitat was identified within the 5,096 ha Survey Area, comprising Jarrah and Marri Forest and Karri, Jarrah and Marri Forest. Sightings of both Forest Red-tailed Black Cockatoo and Baudin's Black Cockatoo were recorded on 27 occasions throughout the Survey Area during the field survey. Evidence of Black Cockatoo foraging was identified in the form of chewed Marri fruit and feather on 19 occasions. In a survey of 53 quadrats, a total of 840 native trees met the criteria for breeding habitat. 281 of these trees contained hollows (33%), of which 229 had an estimated opening diameter of >120 mm (27%); and no evidence of Black Cockatoo breeding or roosting was observed within the Survey Area.

Mapping of fauna habitats and details of the Black Cockatoo Habitat Assessment is available in the 360 Environmental (2019) Fauna Report (Appended to referral).

Short Range Endemic (SRE) Invertebrates

The SRE field survey by Invertebrate Solutions (2019) recorded 1,121 individual specimens representing 45 taxa of invertebrates from eight classes, 19 orders and 29 families that have the potential to contain SRE taxa. The SRE field survey recorded 25 potential SRE invertebrate species from within the Survey Area. These 25 taxa included six confirmed SRE species, eight likely SRE species and 11 Possible SRE species. Details of SRE's is available in Invertebrate Solutions (2019).

Aquatic Fauna

The Donnelly River is a relatively large system for the southwest of WA with numerous permanent pools and a range of habitats for aquatic fauna. Record Brook is a smaller system, with few permanent pools and a more restricted range of habitats for aquatic fauna.

A total of six conservation significant fauna were identified within the Warren-Donnelly catchments during aquatic fauna surveys, with two species *Nannatherina balstoni* (Balston's Pygmy Perch) and *Westralunio carteri* (Carter's freshwater mussel) listed as vulnerable under the EPBC Act. Details of aquatic fauna present is available in Beatty et al. 2018. Carter's freshwater Mussel was recorded at the Chappell Bridge survey site (where the proposed Donnelly River offtake is to be located) and an additional site downstream.

Balston's Pygmy Perch was not recorded in recent surveys of aquatic fauna in the Donnelly

River (Beatty et al. 2018). Previous records for this species in the Donnelly River catchment are from the Fly Brook, a tributary of the Donnelly River located approximately 20km downstream of the proposed offtake site.

Surveys completed indicated Record Brook provided limited permanent habitat for aquatic fauna. No freshwater fish were recorded in recent surveys (2015-16 and 2017-18) and no threatened species were recorded (Beatty et al. 2018).

3.2 Describe the hydrology relevant to the project area (including water flows).

The proposed action area occurs within the Donnelly River catchment which is located within the Warrren subregion and is the sole river system within the Donnelly Drainage Basin (Munro 2006). The Donnelly River catchment covers an area of approximately 1670 km2 which includes 9 subareas including Barlee Brook, Beedelup Brook, Carey Brook, Fly Brook, Lower Donnelly, Manjimup Brook/Yanmah-Dixvale, Middle Donnelly, Record Brook and the Upper Donnelly.

River flow in the catchment is influenced by rainfall, catchment clearing for agriculture and by onstream dams used for irrigation. Donnelly River flows peak within the winter months of August where rainfall is higher. Flows decrease in February/March where rainfall decreases and upper reaches of the Donnelly River cease to flow. The lower parts of the Donnelly River flow all year round, with the exception of typically dry years (between 1975-2010) when flows have ceased during March or April (Department of Water 2012).

The Record Brook reservoir area is located within the Record Brook subarea of the Donnelly River catchment, with Record Brook being a tributary of the Donnelly River. Streamflow within Record Brook is mainly influenced by rainfall, with no onstream dams currently within this catchment.

Streamflow is seasonal with higher flows associated with the winter months. Streamflow within the Record Brook catchment has slightly declined since recorded stream flow for the subarea have commenced in 1975.

Surface water modelling for the Donnelly River and Record Brook catchments has been completed by Hydrology and Risk Consulting (2018) under contract from the Department of Water and Environmental Regulation as part of the hydrological assessment of the Southern Forests Water Futures Project.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

Soils and topography

The proposed action is located within the Warren biogeographic region of WA (Hearn et al. 2002). The Warren bioregion consists of dissected undulating country of the Leeuwin Complex,

Southern Perth Basin (Blackwood Plateau), southwest intrusions of the Yilgarn Craton and western parts of the Albany Orogen.

Vegetation characteristics

Regional vegetation

Beard (1990) Botanical Subdistrict

The proposed action area occurs within the Warren Botanical Subdistrict which is characterised by tall forest of Karri (*Eucalyptus diversicolor*) on deep loams and forest of Jarrah-Marri (*E. marginata-Corymbia calophylla*) on leached sands with extensive paperbark (*Melaleuca* spp.) and sedge swamps in valleys (Beard 1990).

IBRA subregion

The proposed action area occurs within the Warren subregion which is dominated by *Eucalyptus diversicolor* (Karri) forest on loamy soils, *Corymbia calophylla* (Marri) and *Eucalyptus marginata* (Jarrah) forest on lateritic soils and Jarrah woodlands, *Agonis flexuosa* and Banksia woodlands/heaths and paperbark/sedge swamps on marine dunes and leached sandy soils (Hearn et al. 2002). The pre-European extent of vegetation remaining within the Warren subregion is 74% with a current extent of over 95 000 ha (Government of Western Australia 2015).

Vegetation complexes and vegetation system associations

At a vegetation complex scale, 21 vegetation complexes as mapped by Mattiske and Havel (1998) occur across the proposal area (Figure 3). All of the vegetation complexes have greater than 30% of their pre-European extent remaining.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

Not applicable

3.5 Describe the status of native vegetation relevant to the project area.

The proposed action area contains 21 vegetation complexes. All 21 of the vegetation complexes have greater than 30% of their pre-European extent remaining (Government of Western Australia 2019).

Detailed flora and vegetation studies have been completed for the reservoir and pipeline network. The reports are currently being reviewed and compilated and further details of the flora, vegetation and fauna habitat will be presented in the assessment of the proposed action.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area)

relevant to the project area.

Not applicable

3.7 Describe the current condition of the environment relevant to the project area.

Wtihin the Record Brook reservoir survey area Strategen (2019a) mapped approximately 0.7% of the survey area as cleared. Vegetation condition was described using the vegetation condition scale for the South West Botanical Province (Keighery 1994). Vegetation condition within the reservoir survey area ranged from Completely Degraded to Excellent with majority of the survey area (52%) found to be in Excellent condition.

In their survey of the pipeline network (survey area covered a 200m wide corridor centred on the pipeline alignment) Strategen (2019b) mapped approximately 56% (2746ha) of the survey area as cleared.

Vegetation condition within the pipeline network survey area (based on ratings of Keighery 1994) ranged from Completely Degraded to Excellent. Approximately 62% was mapped as Completely Degraded condition, approximately 21% in Excellent and 13% in Very Good condition.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

Not applicable

3.9 Describe any Indigenous heritage values relevant to the project area.

The Donnelly River is a recorded Aboriginal heritage site. An Aboriginal heritage survey including ethnographic and archaeological survey will be undertaken over the proposed action area to identify heritage values.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

The proposed action area includes portions of the following Conservation and Land Management Act 1984 (CALM Act) lands vested in the Conservation and Parks Commission (Commission):

State forest

timber reserves

national parks

nature reserves.

The two national parks (Beedelup and Sir James Mitchell) located within the proposed action area are A class reserves. The two nature reserves within the Project Area are C class reserves. The proposed action areas includes portions of up to 35 separate Crown reserves most of which are vested in the Shire of Manjimup and used for a wide range of purposes including recreation, extractive industry and public uses. The proposed action area also lies over number road reserves vested in the Shire of Manjimup and Main Roads WA, and numerous freehold properties which are predominantly used for agriculture.

3.11 Describe any existing or any proposed uses relevant to the project area.

The proposed action area includes Crown reserves and leases currently used for a range of purposes including forestry and roads, as well as freehold use predominantly for agriculture. Use of State Forest and Timber Reserves is in accordance with the Forest Management Plan 2014-2023 (Conservation Commission 2013).

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

The preliminary assessment of species and communities provided in section 2 has been informed by surveys undertaken to date. Some areas of the proposal footprint are yet to be surveyed – approximately 20 ha (of the pipeline corridor) remain to be surveyed as a result of alterations to the scheme layout since commissioning of the initial surveys. Additional surveys to complete survey of remaining areas and compliment the previous assessment, including targeted surveys for threatened species, will be completed by Q4 2019.

Areas provided represent the maximum potential clearing requirements. For the pipeline network the areas have been calculated based on an average 20 m clearing corridor. The layout of the pipeline network has been adjusted through the development of the project to reduce the potential impacts on native vegetation and fauna habitat. More than 70% of the 250 km of pipeline network is located on land that is already cleared, with only 142 ha within the 481 ha corridor containing vegetation.

The reservoir area covers approximately 160 ha, of which 23 ha was mapped as in degraded condition, having been subject to recent logging (estimated <5 years) or other disturbance.

It is expected that the clearing footprint (for the pipeline corridor) will be reduced further as the detailed design of the project proceeds. The design will be informed by the findings of the environmental surveys with the aim of reducing the impacts to the environment, including threatened species and MNES.

Additional mitigation measures to be incorporated for the SFIS include the following:

- Reservoir located off the Donnelly River, significantly reducing impacts to the river.

- Donnelly River offtake has been redesigned to remove requirement for artificial weir (the original design incorporated a 4m weir to accommodate pump infrastructure). The redesigned offtake will incorporate submersible pumps that will be placed upstream of an existing rock bar. It is expected that with minimal adjustment, using natural rock, sufficient water depth can be achieved upstream of the rock bar to allow stabel water levels and safe pump operation. and, if necessary, incorporate a fish ladder to minimise impacts to fish passage.

- Offtake re-design and location means that the previous inundation expected (2.2km upstream) will be reduced to zero as the natural rock bar replaces the need for the originally designed artificial weir.

- Proposed offtake regime to target winter flows and provide a low level of risk to Donnelly River aquatic ecosystems.

- Definition of Environmental Water Requirements to be maintained by the offtake regime is currently being prepared by the WA Department of Water and Environmental Regulation (DWER).

- Construction activities for Donnelly River offtake to be timed to minimise the potential impacts on aquatic fauna (construction during low flow periods to reduce potential temporary impact to downstream water quality from sedimentation).

- Record Brook has a limited catchment area and does not have significant aquatic ecology values. Record Brook reservoir site was adjusted to move upstream to avoid old growth forest areas and the Stewart Tree (a Karri tree of significance) within the Record Brook catchment.

- Clearing of vegetation within Record Brook reservoir area will occur prior to inundation to minimise water quality impacts. Timber will be salvaged where possible.

- Preliminary pipeline corridors have been selected to minimise clearing of native vegetation.

- Reservoir offtake, transmission pipeline and distribution pipeline corridors have been subject to detailed flora, vegetation and fauna habitat survey to identify sensitive areas (e.g. known or likely threatened species habitat, good condition vegetation) and pipeline alignments will be adjusted as far as is practicable to avoid or minimise impacts to sensitive areas.

- Pipeline clearing corridors (where native vegetation has been cleared) will be revegetated with native species while maintaining sufficient clearance from the pipeline to enable access for future pipeline maintenance (e.g. 5 m for large trees, 2 m for shrubs).

- Environmental management plans will be prepared for clearing including fauna spotting/relocation and pre-clearance surveys, vegetation protection / access control, and weed and dieback hygiene.Provision of offsets to counterbalance significant residual impacts from clearing.

- Scheme wide Environmental Management Plan will be prepared and implemented through individual Farm Water Access Plans. The implementation of Farm Water Access Plans for scheme irrigators is expected to improve environmental management practice within the region from current agricultural operations.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

There will be no net loss of critical habitat for threatened species as a result of the construction of the SFIS.

There will be no reduction in water quality within the Donnelly River catchment as a result of the construction or operation of the SFIS.

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

Listed threatened species and communities - Yes

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Not applicable

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

Not applicable.

The Proponent will be a newly formed water trading cooperative.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

Not applicable.

The Proponent will be a newly formed water trading cooperative.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

No

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

Southern Forests Irrigation Scheme - Project 1: Donnelly River Offtake and Record Brook Dam, SW WA. Previous referral number 2018/8161

Southern Forests Irrigation Scheme - Project 2: Pipeline network, SW WA. Previous referral number 2018/8159

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Bamford Consulting Ecologists (2016). Manjimup Irrigation Project – Fauna Assessment. Unpublished report prepared for the Department of Water by M.J.& A.R. Bamford Consulting Ecologists.	Good	As per document
Beard JS (1990). Plant Life of Western Australia. Kangaroo Press, Kenthurst, New South Wales.	Good	As per document
Beard JS (1981). Vegetation of Western Australia 1:3000000 Map and Explanatory Notes. Forests Department Western Australia Press, Como, Western Australia.	Good	As per document
Beatty S, Morgan D, Ryan T and K Strehlow (2016). Review of Aquatic Fauna in the Warren Donnelly Catchments: Identification of Knowledge Gaps and a Preliminary Assessment of Ecological Risks from Increased Water Abstraction. Report to the Department of Water. Freshwater Fish Group & Fish Health Unit, Murdoch University, Perth, Western Australia.	Good	As per document
Brown A, Dixon K, French C and Brockman G (2013). Field guide to the orchids of Western Australia, Simon Neville Publications.	Good	As per document
Conservation Commission of	Good	As per document

Reference Source	Reliability	Uncertainties
Western Australia (2013). Forest Management Plan 2014-2023, Conservation Commission of Western Australia, Perth		
De Graaf M, Morgan, DM, Beatty SJ and Hugh CW (2009). Risk assessment of Record Brook interbasin water transfer scheme to the aquatic fauna of the Donnelly and Warren Rivers. Fisheries Research Contract Report No. 20, Department of Fisheries, Western Australia, 40 p.	Good	As per document
Department of Agriculture and Food (DAFWA) (2016). Declared Pests (s22) list, [Online], Government of Western Australia, Available from: http://www.biosecurity.wa.gov.au/organisms/export/PER-DP [6 Oct 2016].	Good	As per document
Department of Environment and Energy (DEE) (2016a). Interim Biogeographic Regionalisation for Australia, Version 7, [Online], Australian Government, Available from: http://www.environment.gov.au/topics/land/national-reserve-system/science-maps-and-data/australias-bioregions-ibra	Good	As per document
Department of Water (2012). Warren Donnelly surface water allocation plan. Water resource allocation planning series: Report no 39, April 2012. Department of Water, Western Australia.	Good	As per document
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Reference Source	Reliability	Uncertainties
ca		
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Reference Source	Reliability	Uncertainties
Munro J 2006, Donnelly River Action Plan, Manjimup Land Conservation District Committee.	Good	As per document
Storer T, Rennie B, O'Neill K, White G, Christie E and Bunny F (2017a). Record Brook condition summary 2016-17, Ecosystem values and condition assessment for the Record Brook and adjoining sections of the Donnelly River to inform monitoring & management needs under the proposal to construct a water reservoir on the Record Brook, unpublished report by Water Science Branch to the Water for Food Southern Forests Program, Department of Water, Perth.	Good	As per document
Storer T, Rennie B, O'Neill K, White G and Christie E (2017b). Record Brook river health monitoring program, unpublished report by Water Science Branch to the Water for Food Program, Department of Water, Perth.	Good	As per document
Strategen Environmental (2018). Pipeline network alignment – Southern Forests Irrigation Scheme, Flora, vegetation and fauna survey. Unpublished report prepared for the Department of Water by Strategen Environmental Pty Ltd.	Good	As per document
Strategen Environmental (2019a). Southern Forests Water Futures Project, Detailed flora and vegetation survey. Unpublished report prepared for the Department of Water by Strategen Environmental Pty Ltd.	Good	As per document
Strategen Environmental (2019b). Pipeline network	Good	As per document

Reference Source	Reliability	Uncertainties
alignment – Southern Forests Irrigation Scheme. Unpublished report prepared for Southern Forest Irrigation Co-operative Limited by Strategen Environmental Pty Ltd.		
360 Environmental (2019). Southern Forest Irrigation Scheme, Detailed/Level 2 Terrestrial Vertebrate Fauna Survey. Unpublished report prepared for Southern Forest Irrigation Co-operative Limited by 360 Environmental Pty Ltd.	Good	As per document

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

Alternatives considered included:

Using on-farm dams for water supply. This was not pursued due to extreme difficulty in achieving a reliable yield and quality, difficulty in trading due to multiple pump stations across the district, and potential for obstruction by individual dam owners.

Using groundwater for water supply. This was not pursued due to inadequate yield in the superficial and fractured rock aquifers of the region and requirement for multiple bores and associated difficulty in distribution and trading.

Alternative reservoir locations at Damper Gully and East Brook. These were not pursued due to higher capital cost and/or greater distance from the Donnelly River affecting the feasible harvesting rate and thus reliability of supply.

Alternative off take sites have been considered and the least impact alternative selected. The design of the offtake has been altered to remove the requirement for an artifical weir and has been selected to minimise; potential clearing requirements in the riparian zone, area of inundation upstream of the weir and potential additional barrier to aquatic fauna.

Based on the above considerations no feasible alternative was identified for the proposed action.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Project Manager

9.2.2 First Name

Jeremy

9.2.3 Last Name

Bower

9.2.4 E-mail

jeremy@sfic.com.au

9.2.5 Postal Address

Locked Bag 7
Manjimup WA 6258
Australia

9.2.6 ABN/ACN

ABN

24904433713 - SF IRRIGATION CO-OPERATIVE LIMITED

9.2.7 Organisation Telephone

(08) 9777 0181

9.2.8 Organisation E-mail

info@sfic.com.au

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, JEREMY BOWER, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:..... Date: 4/9/2019

I, JEREMY BOWER, the person proposing the action, consent to the designation of SF IRRIGATION CO-OPERATIVE LTD as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: 4/9/2019

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Project Manager

9.5.2 First Name

Jeremy

9.5.3 Last Name

Bower

9.5.4 E-mail

jeremy@sfic.com.au

9.5.5 Postal Address

Locked Bag 7
Manjimup WA 6258
Australia

9.5.6 ABN/ACN

ABN

24904433713 - SF IRRIGATION CO-OPERATIVE LIMITED

9.5.7 Organisation Telephone

(08) 9777 0181

9.5.8 Organisation E-mail

info@sfic.com.au

Proposed designated proponent - Declaration

I, JEREMY BOWER, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:..... Date: 4/9/2019

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Project Manager

9.8.2 First Name

Jeremy

9.8.3 Last Name

Bower

9.8.4 E-mail

jeremy@sfic.com.au

9.8.5 Postal Address

Locked Bag 7
Manjimup WA 6258
Australia

9.8.6 ABN/ACN

ABN

24904433713 - SF IRRIGATION CO-OPERATIVE LIMITED

9.8.7 Organisation Telephone

(08) 9777 0181

9.8.8 Organisation E-mail

info@sfic.com.au

Referring Party - Declaration

I, JEREMY BOWER, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature:..... Date: 4/9/2019

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. 360 Environmental 2019_SFIS Fauna_1of6.pdf
2. 360 Environmental 2019_SFIS Fauna_2of6.pdf
3. 360 Environmental 2019_SFIS Fauna_3of6.pdf
4. 360 Environmental 2019_SFIS Fauna_4of6.pdf
5. 360 Environmental 2019_SFIS Fauna_5of6.pdf
6. 360 Environmental 2019_SFIS Fauna_6of6.pdf
7. HARC 2019_Catchment Modelling Report_Part1of3.pdf
8. HARC 2019_Catchment Modelling Report_Part2of3.pdf
9. HARC 2019_Catchment Modelling Report_Part3of3.pdf
10. SFIS Figure 1_location.pdf
11. SFIS Figure 1_location_Sept19.pdf
12. SFIS Figure 2_Layout of proposal.pdf
13. SFIS Figure 2_Layout of proposal_Sept19.pdf
14. SFIS Figure 3_Vegetation complexes_1 of 2.pdf
15. SFIS Figure 3_Vegetation complexes_2 of 2.pdf
16. SFIS_Figure 3 Vegetation complexes_Sept19.pdf
17. SFIS_Figure 3 overview_Sept19.pdf
18. SFIS_Figure 3_overview.pdf
19. SFIS infrastructure.zip
20. Strategen 2019a_SFIS Flora and Vegetation_Record Brook Dam_1of6.pdf
21. Strategen 2019a_SFIS Flora and Vegetation_Record Brook Dam_2of6.pdf
22. Strategen 2019a_SFIS Flora and Vegetation_Record Brook Dam_3of6.pdf
23. Strategen 2019a_SFIS Flora and Vegetation_Record Brook Dam_4of6.pdf
24. Strategen 2019a_SFIS Flora and Vegetation_Record Brook Dam_5of6.pdf
25. Strategen 2019a_SFIS Flora and Vegetation_Record Brook Dam_6of6.pdf
26. Strategen 2019b_SFIC Flora Survey_Pipelines_1of12.pdf
27. Strategen 2019b_SFIC Flora Survey_Pipelines_2of12.pdf
28. Strategen 2019b_SFIC Flora Survey_Pipelines_3of12.pdf
29. Strategen 2019b_SFIC Flora Survey_Pipelines_4of12.pdf
30. Strategen 2019b_SFIC Flora Survey_Pipelines_5of12.pdf
31. Strategen 2019b_SFIC Flora Survey_Pipelines_6of12.pdf
32. Strategen 2019b_SFIC Flora Survey_Pipelines_7of12.pdf
33. Strategen 2019b_SFIC Flora Survey_Pipelines_8of12.pdf
34. Strategen 2019b_SFIC Flora Survey_Pipelines_9of12.pdf
35. Strategen 2019b_SFIC Flora Survey_Pipelines_10of12.pdf
36. Strategen 2019b_SFIC Flora Survey_Pipelines_11of12.pdf
37. Strategen 2019b_SFIC Flora Survey_Pipelines_12of12.pdf