Report and recommendations of the Environmental Protection Authority

Balannup Wastewater Pressure Main

Water Corporation

Report 1592

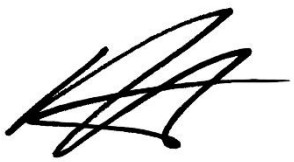
January 2017

Assessment on Proponent Information
Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
23/05/2016	Level of assessment set	
29/06/2016	Scoping guideline issued by EPA	5
17/11/2016	Proponent's final Environmental Review (API) document received by EPA	20
15/12/2016	EPA meeting	4
18/01/2017	EPA report provided to the Minister for Environment	5
23/01/2017	Publication of EPA report (3 working days after report provided to the Minister)	3 days
06/02/2017	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority met its timeline objective in the completion of the assessment and provision of a report to the Minister.



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1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of its environmental impact assessment of the proposal by the Water Corporation (Proponent) to construct and operate a 4.5 kilometre (km) long wastewater pressure main from the Collared Street Pump Station (PS), Harrisdale to the Waterworks Road PS, Haynes in the locality of Armadale. The Water Corporation was nominated as the proponent responsible for the proposal.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires that the EPA prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The procedures followed by the EPA in its assessment of this proposal are set out in the previous *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2012* (Administrative Procedures 2012).

The proponent referred the proposal to the EPA in October 2014. In May 2016 the EPA set the level of assessment at Assessment on Proponent Information – Category A (API - A), which was one of the levels of assessment available under the previous *Administrative Procedures 2012*. The Scoping Guideline for the proposal was issued in June 2016. The proponent has submitted an Environmental Review (API) document and supporting documents (including technical studies). These documents describe the proposal, outcomes of consultation, environmental studies undertaken, and the proponent's assessment of impacts on environmental factors and application of the mitigation hierarchy to manage those impacts (Appendix 5).

This report provides the EPA advice and recommendations in accordance with section 44 of the EP Act.

2. The proposal

2.1 Proposal summary

The Proponent proposes to construct and operate a 4.5 km long wastewater pressure main from the Collared Street PS, Harrisdale to the Waterworks Road PS, Haynes in the locality of Armadale (the proposal) (Figure 1).

For 3 km of its 4.5 km length, the proposal presents no significant environmental issues. However, a section of the proposal (1.5 km section), between Skeet Road and Anstey Road, crosses Bush Forever site 342 (Figures 2 and 3).This Bush Forever site contains locally and regionally significant environmental values.

The majority of the proposal is located within existing road reserves through residential areas and is 3 km in length within a 10 metre (m) wide corridor, and would be constructed using conventional open trench excavation methods. The remaining 1.5 km of the alignment is located within the Keane Road easement within Bush Forever site 342 and would be constructed using a trenchless technology, known as the EcoPlough technique.

The EcoPlough technique is a method where a bulldozer creates a narrow furrow in the ground so that neither soil removal nor dewatering is required. A pipe is then inserted to a controlled depth and the furrowline is covered. A trial of the EcoPlough technique was conducted by the Water Corporation in 2014, utilising a 450 millimetre (mm) diameter pipe.

Within the Keane Road easement the EcoPlough will drive a 450 mm diameter High Density Polyethylene (HDPE) pipe with no joins, scours or air valve pits, into the soil profile to a maximum depth of 1.2 m and width of 500 mm. The pipeline will be installed within an existing 4 m wide fire access track, with a maximum extent of 0.1 hectares (ha) vegetation clearing. No dewatering or excavation is required for this method.

The main characteristics of the proposal are summarised in Tables 1 and 2 consistent with the previous Environmental Assessment Guideline No. 1 (EAG 1) *Defining the Key Characteristics of a Proposal* and the new EPA's *Instructions on how to Define the Key characteristics of a proposal*. A detailed description of the proposal is provided in the proponent's API Environmental Review Document (Section 1.2, Water Corporation, November 2016) which is attached as Appendix 5.

Table 1: Summary of key proposal characteristics

Proposal Title	Balannup Wastewater Pressure Main
Proponent name	Water Corporation
Short Description	The proposal is to construct and operate a 4.5 km wastewater pressure main from the Collared Street pump station to the Waterworks Road pump station in the locality of Armadale.

Table 2: Proposal elements

Element	Location	Authorised Extent
Clearing and Disturbance for the EcoPlough Technique	Figure 1	Clearing of no more than 0.1 ha; and disturbance for the EcoPlough Technique, within Area A.
Conventional Trenching	Figure 1	To be limited to within Areas B.
Dewatering and Excavation	Figure 1	No dewatering or excavation to occur within Area A.

The potential impacts of the proposal on the environment identified by the proponent and their proposed management of these impacts are summarised in Table 5-3 of the Environmental Review document (Appendix 5, Strategen 2016).

In assessing this proposal, the EPA notes that the proponent has sought to avoid and minimise environmental impacts associated with the proposal by:

- selecting an alignment that is predominantly within existing cleared areas within Bush Forever site 342;
- designing the proposal such that no joins, scours or air valve pits are required where the pipeline crosses Bush Forever site 342, thus further minimising clearing and future accidental spills/leaks;
- utilising a trenchless construction methodology (the EcoPlough) within areas of high environmental value; and
- following existing infrastructure corridors in areas outside of Bush Forever site 342.

2.2 Consultation

The proposal was advertised for public comment in December 2014 and the EPA notes that 66 public comments were received. Fifty-six comments requested the level of assessment be determined as an API Category B (environmentally unacceptable) whilst 10 requested a Public Environmental Review (PER).

Due to the high level of public interest in the proposal, the time that had elapsed since the referral in October 2014, and more recent information received from the proponent about the investigations into the environmental impacts of the proposal, the EPA provided an additional seven day public comment period in March 2016 in order to provide a further opportunity to comment on new information. A total of 12 comments were received during this period with no new issues raised. All of these comments requested the level of assessment be determined as API Category B (environmentally unacceptable).

Key issues raised by the public included the following:

- the use of the EcoPlough technique as the construction method proposed;
- the potential for fragmentation of a large consolidated area of bushland;
- the potential for the introduction of dieback and spread of weeds in Bush Forever site 342;
- the potential for leaks/spills;
- the potential for changes to hydrology;
- the potential for the exposure of Acid Sulfate Soils;
- biodiversity of the site; and
- consideration of alternatives.

During the preparation of the Environmental Review (API) document, the proponent consulted with government agencies and key stakeholders. The agencies and stakeholders consulted, the issues raised and the proponent's response are detailed in Table 3-1 (pages 13-20) of the proponent's Environmental Review document (see Appendix 5, Strategen 2016).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders on the proposed development.

Figure 1: Proposal Location and Development Envelope

3. Key environmental factors

In undertaking its assessment of this proposal and preparing this report and recommendations, the EPA has had regard for the object and principles contained in section 4A of the EP Act to the extent relevant to the particular matter being considered. Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

On 13 December 2016, the EPA released a new suite of environmental impact assessment policy and guidance documents which replaced EPA policy and guidance documents that were current at the time of referral and preparation of the environmental review document (API document) for the proposal.

In its assessment of the proposal, the EPA has considered and given due regard to, where relevant, its current and any applicable former environmental impact assessment policy and guidance documents. The proponent has been consulted on the application of the current environmental impact assessment policy and guidance documents relevant to its environmental review and the EPA's assessment of the proposal.

Having regard to:

- the proponent's referral information and final Environmental Review (API) Document;
- public comments on referral information;
- consultation undertaken by the proponent and presented in the referral information and the final Environmental Review (API) Document; and
- *Statement of Environmental Principles, Factors and Objectives* (EPA, 2016a),

the EPA identified the following key environmental factors and potential impacts during the course of its assessment:

1. **Flora and Vegetation** – direct impacts from clearing of native vegetation and the activities associated with the construction of the pipeline. Potential indirect impacts from construction aspects include the spread of weeds and dieback *(Phytophthora cinnamomi).*
2. **Hydrological Processes** – direct impacts from the installation and physical presence of the pipeline during operations. Potential effects from the alteration of local hydrological processes, which has the potential to directly impact on the Conservation Category Wetland (CCW), known as the Anstey-Keane dampland, and indirectly impact on the adjacent sensitive ecological community identified as Threatened Ecological Community (TEC) Swan Coastal Plain (SCP) 10a '*shrublands on dry clay flats*'; and

3. **Inland Waters Environmental Quality** – disturbance of Acid Sulfate Soils (ASS) during construction and the potential for sewage leaks and spills during operation. Potential effects from the construction and operation aspects include the impacts to, and alteration of, groundwater and wetland water quality.

The key environmental factors are discussed in sections 3.1 to 3.3. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for each factor.

Appendix 2 contains the environmental factors identified during the course of the assessment and the EPA's evaluation of whether an environmental factor is a key environmental factor for the proposal.

3.1 Flora and Vegetation

EPA objective

The EPA's environmental objective for this factor is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained.*

Relevant EPA policy and guidance

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor.

- Environmental Factor Guideline - Flora and Vegetation (EPA, 2016b).
- Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016).

In addition to the relevant policy and guidance above, the EPA has also had regard to the design guidelines in Environmental Protection Bulletin No. 20 – *Protection of naturally vegetated areas through planning and development* (EPB20), noting that this Bulletin primarily applies to the development of urban and peri-urban planning proposals.

Appendix 3 details the relevant considerations for environmental impact assessment (EIA) under both the EPA's new Environmental Factor Guideline and the EPA's former suite of policies and guidelines.

EPA assessment

Consistent with the EPA's Environmental Factor Guideline – *Flora and Vegetation* (EPA, 2016b), the EPA has considered the potential direct and indirect impacts of the proposal on Flora and Vegetation and the risk to significant flora and vegetation.

Environmental Values

The proposal is located within an existing fire access track which traverses Bush Forever site 342. While all naturally vegetated areas have values, the EPA is primarily concerned with the protection of regionally significant natural areas. Bush Forever site 342 is recognised in the Bush Forever report (Government of Western Australia, 2000) as "*part of a regionally significant bushland/wetland linkage*" and as "*one of the most plant species diverse areas in the Swan Coastal Plain in the Perth Metropolitan region*".

Bush Forever site 342 contains one of the largest remaining areas of damplands of high conservation value on the SCP.

The proponent has utilised existing Flora and Vegetation Surveys that were undertaken for the Keane Road Strategic Link assessment. The flora and vegetation surveys for this proposal were undertaken in 2013, in accordance with the requirements of Guidance Statement No. 51 (EPA, 2004a), which was the relevant guidance at the time. The EPA's guidance on flora and vegetation surveys was updated into a new Technical Guideline in 2015, and revised for the EPA's new guidelines and procedures framework in 2016. While the terminology and hierarchy of surveys has been clarified, the standards and information required for each survey have not changed. The EPA considers the surveys are consistent with the 2016 Technical guidance – *Flora and Vegetation Surveys for EIA*.

The findings of the survey indicate that no threatened flora occur within the proposal area. A Priority 3 flora species *Jacksonia gracillima* was recorded at eight locations within and adjacent to the development envelope.

A sensitive ecological community, identified as Threatened Ecological Community (TEC) SCP 10a '*Shrublands on dry clay flats'* occurs adjacent to the proposal development envelope. A Priority Ecological Community (PEC) identified as SCP 21c '*Low lying Banksia attenuata woodlands or shrublands*' also occurs within and adjacent to the development envelope.

The *Banksia Woodlands of the Swan Coastal Plain* ecological community was recently listed as a TEC under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is noted that SCP 21c is one of a number of Swan Coastal Plain floristic community types that are encompassed within the *Banksia Woodlands* ecological community.

Potential Impacts on Flora and Vegetation

The pipeline alignment within Area A (Figure 2) is proposed to be laid within the existing fire access track which traverses Bush Forever site 342. Whilst the fire access track is sufficiently wide in most locations to accommodate the EcoPlough's required 4 m installation width, there are some sections where the track is not wide enough and some vegetation will need to be pruned or trampled on the edge of the track.

The proponent proposes to clear up to 0.1 ha of native vegetation for construction of the pipeline corridor. The EPA notes that installation of the pipeline in Areas B (the areas outside Bush Forever site 342) will not require any vegetation clearing as it is within existing infrastructure corridors.

The proposal will result in the direct loss of 0.1 ha of native vegetation from clearing. This includes a very small area of PEC SCP21a (up to 0.04 ha), where the fire access track is at its narrowest. The clearing of 0.04 ha represents a very small incremental loss which is unlikely to result in a significant impact to this community.

The proposal is consistent with EPB20 to the extent that it has a small development footprint within an existing fire access track and requires only a very small scale of clearing, and implementation of the proposal would not result in further fragmentation of vegetated areas.

Indirect impacts may also occur in Area A as a result of construction activities, particularly the introduction or spread of weeds and dieback. The EPA notes that dieback is already present within some areas of the development envelope, but considers that the proponent's proposed management measures will prevent further introduction or spread of weeds and disease.

The EPA considers that the proponent has identified the potential impacts of the proposal that are consistent with the Environmental Factor Guideline for Flora and Vegetation which includes a very small scale of vegetation clearing. In addition, it is noted that the proposal will not result in the permanent alteration of vegetation substrate and habitat, nor the greater fragmentation of Bush Forever site 342, and the risk of indirect impacts has been minimised.

Minimising Impacts

The EPA notes that, in designing the proposal, the proponent has considered alternative alignments and demonstrated the application of the mitigation hierarchy, in accordance with Environmental Factor Guideline – *Flora and Vegetation* (EPA, 2016b) by:

- utilising a construction method that avoids trenching activities;
- minimising clearing within Bush Forever site 342 by utilising the existing fire access track;
- not clearing any vegetation within the boundary of the TEC SCP10a;
- avoiding all individuals of *Jacksonia gracillima* in the final alignment; and
- minimising the spread of weeds and disease through the implementation of hygiene measures in accordance with Department of Parks and Wildlife (Parks and Wildlife) guidelines.

The EPA considers that the proposed management and mitigation measures are technically and practically feasible because the proposed avoidance and

minimisation measures are typically applied to pipeline projects in sensitive environments. It is also noted that the proponent has undertaken trials of the Ecoplough technique in similar environments to demonstrate that it can be undertaken effectively.

The EPA recommends that the proponent prepare a Construction Environmental Management Plan. The Management Plan requires that the proponent includes provisions in order to:

- prevent the introduction or spread of weeds during construction;
- undertake follow-up weed control, post construction; and
- ensure disease and pathogens are not introduced into disease free areas during construction.

Summary

The EPA has paid particular attention to the:

- Environmental Factor Guideline – *Flora and Vegetation* (EPA, 2016b);
- potential impacts, including direct and indirect impacts;
- mitigation measures proposed by the proponent to avoid and minimise environmental impacts;
- very small scale of vegetation clearing proposed;
- minimal impacts to the PEC and TEC; and
- avoidance of priority flora.

Accordingly the EPA considers, having regard to the environmental principles (see Appendix 2) and objective for Flora and Vegetation that the impacts to this factor are acceptable, provided there is:

- a restriction of a very small amount of vegetation clearing to within the development envelope (Schedule 1 of Recommended Environmental Conditions in Appendix 4); and
- implementation of the measures to minimise indirect impacts to flora and vegetation during construction through the preparation, submission and implementation of a Construction Environmental Management Plan (condition 6).

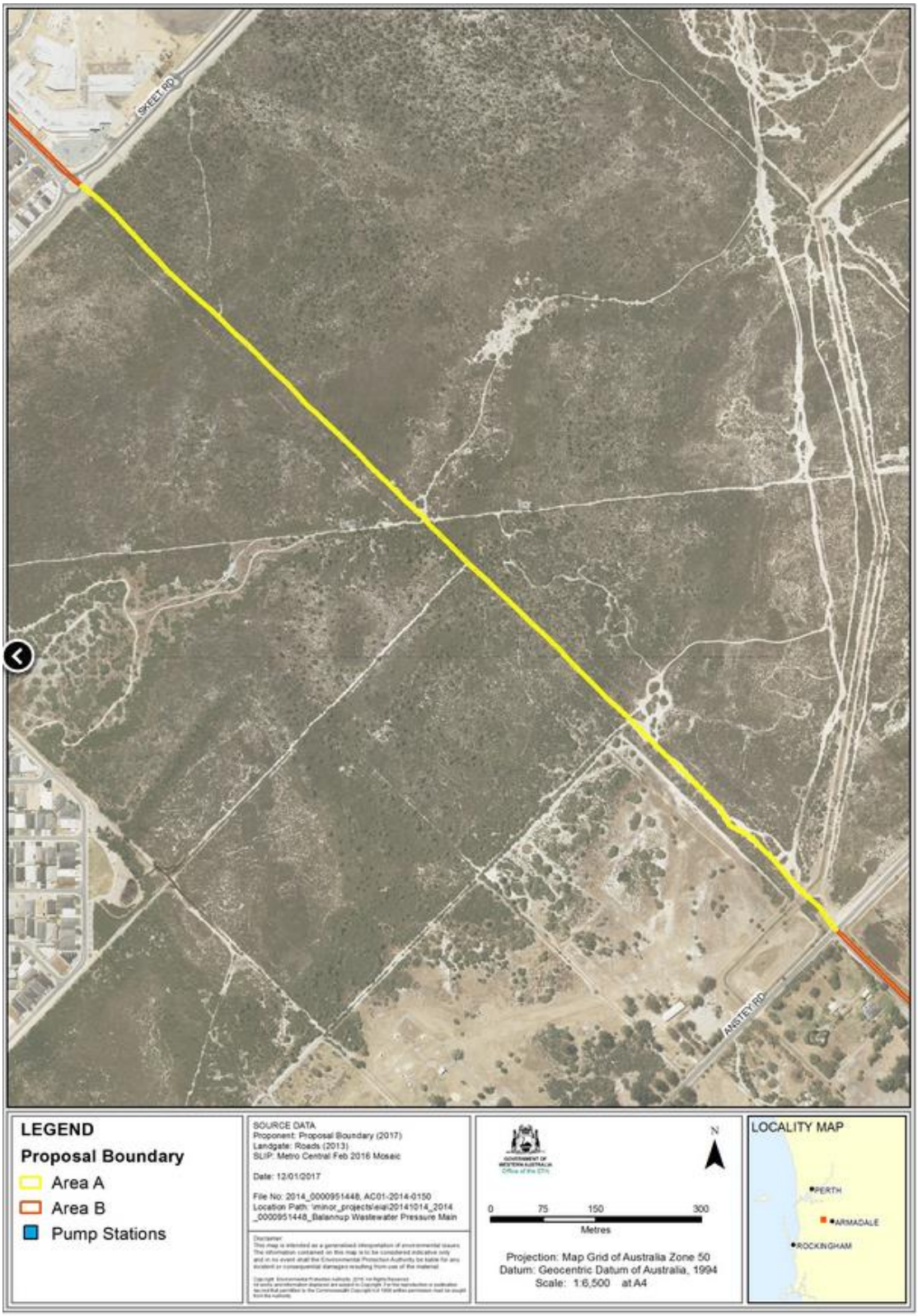

Figure 2: Pipeline Alignment - Area A (using EcoPlough Technique)

3.2 Hydrological Processes

EPA objective

The EPA's environmental objective for this factor is *to maintain the hydrological regimes of groundwater and surface water so that environmental values are protected.*

Relevant EPA policy and guidance

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor.

- Environmental Factor Guideline – *Hydrological Processes* (EPA, 2016c).

Appendix 3 details the relevant considerations for EIA under both the EPA's new Environmental Factor Guideline and the EPA's former suite of policies and guidelines.

EPA assessment

Consistent with the EPA's Environmental Factor Guideline – *Hydrological Processes* (EPA, 2016c), the EPA is focused on impacts to the hydrological regimes that maintain the environmental values of environmentally significant water dependent ecosystems, including Conservation Category Wetlands (CCWs) and ecosystems which support conservation significant communities.

Environmental Values

As mentioned previously in Section 3.1 the majority of the proposal traverses Bush Forever site 342, which supports a CCW known as the Anstey-Keane damplands (seasonally waterlogged basins that support rich plant and animal communities) and a mapped threatened ecological community know as TEC SCP10a '*shrublands on dry clay flats*', which is located in the southeast corner of the Bush Forever site (Figures 3 and 4).

This TEC is listed as 'Critically Endangered' under the EPBC Act. The Commonwealth listing advice for the TEC states '… *the clay pans are generally not considered to be connected to the local groundwater. They fill during the winter rains and dry completely over summer*.'

Hydrological regimes

Based on existing knowledge about the local area, the hydrological regimes that cause inundation in winter of the damplands and TEC are from a combination of: fluctuations in groundwater levels; direct runoff from the local catchment area; and during very wet years overland surface runoff from the Baileys branch drain (an open drain). The combination of these hydrological regimes along with the 'perched' layers in the area are what supports the damplands and the TEC.

The EPA notes that the hydrological processes that operate at the local scale are not fully understood because of the complex stratigraphy (the underlying layers of soil) in the area.

The continued existence of the TEC in the urban bushland setting following historical impacts, such as from the construction of the Baileys branch drain, suggests that the TEC is resilient to some level of hydrological change. However, it is not known what magnitude of change the TEC can tolerate from threats and pressures in the future.

Potential impacts on hydrological regimes

As the pipeline will be buried under an existing track, surface water regimes that flow into nearby damplands will not be affected. The proposal has the potential to interrupt local sub-surface hydrology during construction through temporary construction activities; and also after construction from the physical presence of the pipeline in the soil profile. These impacts are generally consistent with the types of potential impacts in the EPA's Environmental Factor Guideline – *Hydrological Processes* (EPA, 2016c).

In terms of potential construction impacts, the proponent has indicated that it will not need to undertake dewatering (i.e. lowering of the groundwater table) and excavation to trench due to the construction technique that it will employ for the proposal. The construction technique (known as EcoPlough, discussed in Section 2.1) will be undertaken for the portion of the proposal which coincides with Area A shown in Figure 2 because this section is adjacent to the sensitive ecological communities. Hence, during construction the proposal is not expected to alter the local hydrological processes that support the damplands and the TEC.

The proposal does however have the potential to impact on the local hydrological regimes from the physical presence of the pipeline in the soil profile. This is from the potential to change the layers in the soil profile and local hydrological processes to the extent that it could indirectly affect certain plant species associated with the adjacent TEC.

Recognising the complexities and the sensitivities of the TEC to changes in hydrological processes, the proponent undertook site-specific investigations to better understand the hydrological regime that sustains the TEC. The proponent commissioned investigations of the water tables/flow paths, soil profile, cementation and soil moisture levels in the vicinity of the TEC. The investigations took into account seasonality and have provided a greater level of understanding of the potential impacts (Water Corporation, 2016).

The investigations identified that groundwater is typically shallow throughout the proposal area with depths fluctuating between 0-4 m below ground level. Soils within the proposal area consist of two distinct types:

- loose Bassendean Sand to 2.5 m, overlaying medium dense to dense silty sand with thin layers of coffee rock at depths between 2.5 m and 3.5 m; and
- thin layer Bassendean Sand (0.5 – 2.0 m) overlying sandy clay/clayey sand layers, which are associated with the Guilford Formation.

The depth of these layers are variable along the length of the pipeline along with small pockets of peaty sands, which are 'lenses' of lower permeability. The low permeability layers of sandy clay/clayey sand are likely to represent the perched layers associated with the TEC.

Based on the site-specific investigations, the proponent will construct the pipeline to a maximum depth of 1.2 m below ground level to largely avoid impacting on the integrity of the perched layers.

In summary, the EPA notes that implementation of the proposal in Area A will not require activities such as dewatering, excavation or fill, and therefore will not result in a lowering of the water table. Furthermore, due to the small size of the pipeline being up to 450 mm in diameter, it is highly unlikely that it will have a significant impact on the recharge rates through the soil profile or horizontal water flows over the shallow perched layers. Any potential impacts on sub-surface water regimes are likely to be confined to within the existing access track (4 m wide).

Therefore, the proposal is unlikely to interrupt the hydrological regime to the point where the range and diversity of the species and habitats of the damplands are significantly impacted over time. In coming to this conclusion the EPA has had regard to the current state of knowledge, the proponent's site-specific investigations and the level of confidence in predicting the residual impacts from similar types of linear infrastructure projects.

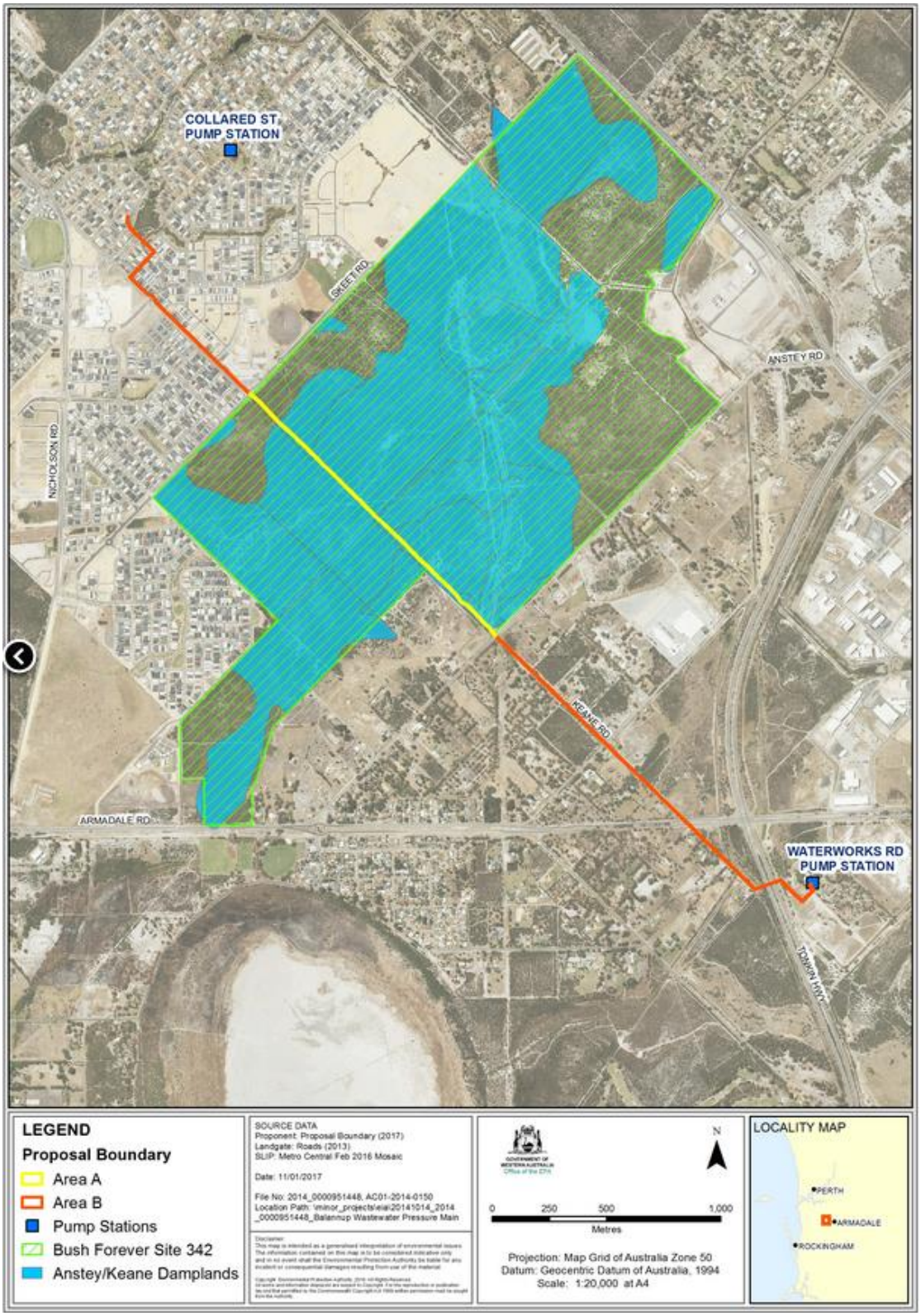

Figure 3: Location of Bush Forever site 342 and Anstey-Keane Damplands

Figure 4: Extent and distribution of TEC SCP 10a

Minimising Impacts

The EPA notes that, in designing the proposal, the proponent has demonstrated the application of the mitigation hierarchy to avoid or minimise impacts on hydrological processes by:

- avoiding the need for dewatering and excavation within the CCW, and minimising the extent of soil disturbance by utilising the EcoPlough technique (described in Section 2.1);
- installing the pipeline within the Bush Forever site during the summer period when the likelihood of rainfall events and surface water flow is low; and
- installing the bottom of the pipe to be within 1.2 m below ground level to ensure it is largely above the perched layers that maintain the damplands.

The proponent will utilise conventional trenching methods in Areas B and as such dewatering and excavation will be required. Areas B are over 100 m from the TEC and contain no CCWs or conservation significant vegetation communities. It is noted that the proponent will also be required to obtain a licence from the Department of Water under sections 5C and 26D of the *Rights in Water and Irrigation Act 1914* to undertake dewatering.

Noting that there are still some residual uncertainties associated with the complex hydrology that maintains the TEC, the EPA recommends that the proponent prepare a Baseline Survey and Monitoring Plan. The aim of the Plan will be to validate the proponent's predictions and to further increase the understanding of the hydrological regime in the area. The plan will require the proponent to:

- detail the proposed methodology for the surveys including the parameters to be monitored to determine whether there are any changes to groundwater flows and health of the TEC;
- include the method for developing hydrological criteria from baseline data;
- identify the proposed survey locations; and
- detail the proposed timing and frequency for the baseline surveys and ongoing monitoring.

The proponent will be required to implement the Baseline Survey and Monitoring Plan, before and after construction, to demonstrate that the implementation of the proposal does not result in indirect impacts to the health of the TEC as a result of changes to hydrological processes.

Summary

The EPA has paid particular attention to the:

- Environmental Factor Guideline – *Hydrological Processes* (EPA, 2016c);
- mitigation measures proposed by the proponent to avoid and minimise environmental impacts;
- small magnitude and extent of the proposal;
- construction methodology proposed within the Bush Forever site; and
- level of confidence in the proponents predictions that the proposal will not impact on the TEC.

Accordingly the EPA considers, having regard to the environmental principles (see Appendix 2) and objective for Hydrological Processes that the impacts to this factor are acceptable, provided there is:

- implementation of the proposal consistent with the elements and authorised extent in Schedule 1 of Appendix 4; and
- implementation of the Baseline Survey and Monitoring Plan required by recommended condition 7 to demonstrate and confirm post-construction, that the proposal does not result in indirect impacts to the health of the TEC, as a result of changes to hydrological processes.

3.3 Inland Waters Environmental Quality

EPA objective

The EPA's objective for this factor is *to maintain the quality of groundwater and surface water so that environmental values are protected.*

Relevant EPA policy and guidance

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor.

- Environmental Factor Guideline – *Inland Waters Environmental Quality* (EPA, 2016d).

Appendix 3 details the relevant considerations for environmental impact assessment under both the EPA's new Environmental Factor Guideline and the EPA's former suite of policies and guidelines.

EPA assessment

Consistent with the Environmental Factor Guideline – *Inland Waters Environmental Quality* (EPA, 2016d), for this assessment the EPA is focused on impacts to environmentally significant ecosystems, including CCWs.

Environmental Values

As discussed above in Hydrological Process, Area A is located within a mapped CCW (Figure 3). The proposal has the potential to impact wetland water quality through the disturbance of potential Acid Sulfate Soils (ASS), and accidental leaks and spills.

Potential Impacts to wetland water quality

Acid Sulfate Soils

The proposal has the potential to disturb ASS during construction and consequently the proponent undertook a review of the Department of Environment Regulation ASS risk mapping. Mapping indicates that for the section of alignment within the Bush Forever site the majority has a moderate to low risk of ASS occurring, with two small occurrences of high to moderate risk of ASS occurring within 3 m of the natural surface.

The use of the EcoPlough technique in Area A will minimise the exposure of ASS material as there will be no dewatering and the soil is furrowed instead of being trenched.

Leaks and Spills

A sewage leak or spill within Area A would increase the level of nutrients within the CCW. The EPA notes that the proponent has committed to installing a stronger standard pipe within Area A of the alignment, to reduce the operational risk of a leak. The proponent has advised that the stronger standard of the pipe and the depth of pipeline (at a depth of 650 mm) provides adequate cover for the pipe to withstand vehicle loadings including from 4-wheel drive vehicles that would use the track.

The EPA notes that the proponent has also designed the proposal such that no additional structures such as discharge outlets (air or scour valves) will be installed within Area A, and a metal tracer will be installed within the pipeline to assist in locating the pipeline should future maintenance activities be required.

The proponent has standard operating procedures regarding the actions to be implemented in the event of a leak being detected to reduce environmental effects of leaks. The types of response measures would include isolating sections of the pipeline and/or diverting flow to inhibit the leak, recovery (where possible), clean up and corrective repair to restore service to community and amenity, where impacted.

To lower the risk of hydrocarbon spills during construction, the proponent has committed to not refuelling vehicles or storing chemicals within Area A.

The EPA considers that the potential impacts of the proposal are consistent with the Environmental Factor Guideline – *Inland Waters Environmental Quality* (EPA, 2016d) to the extent that the proposal will not result in any discharge or use of land or water that will significantly impact on water quality and the environmental values it supports.

Minimising Impacts

The EPA notes that, in designing this proposal, the proponent has demonstrated the application of the mitigation hierarchy, in accordance with Environmental Factor Guideline – *Inland Waters Environmental Quality* (EPA, 2016d) to avoid or minimise impacts on inland waters environmental quality by:

- minimising the exposure of ASS within Area A by using the EcoPlough technique in Area A;
- installing a stronger standard of pipe to minimise the risk of potential leaks; and
- designing the pipeline within Area A such that there are no discharge outlets, joins or air valves.

The EPA considers that the proposed management and mitigation measures are technically and practically feasible.

The EPA recommends that the proponent prepare a Construction Environmental Management Plan (condition 6 in Appendix 4). To address Inland Waters Environmental Quality, the Management Plan requires that the proponent includes provisions for the treatment of ASS consistent with the requirements of the Department of Environment Regulation's Acid Sulfate Soil Guideline Series *Identification and investigation of acid sulfate soils and acidic landscapes* (2015a) and *Treatment and management of soils and water in acid sulfate soil landscapes* (2015b), or any approved update of these guidelines.

Summary

The EPA has paid particular attention to the:

- Environmental Factor Guideline – *Inland Waters Environmental Quality* (EPA, 2016d);
- mitigation measures proposed by the proponent to avoid and minimise environmental impacts;
- construction methodology proposed; and
- low risk of leaks and spills due to the design of the pipeline.

Accordingly the EPA considers, having regard to the environmental principles and objective for Inland Waters Environmental Quality, that the impacts to this factor are acceptable, provided there is:

- implementation of the measures to minimise impacts to inland water environmental quality during construction through the preparation, submission and implementation of a Condition Environmental Management Plan (condition 6).

4. Conclusion and recommended conditions

Having assessed the proposal against the EPA's objectives for the key environmental factors of Flora and Vegetation, Hydrological Processes, and Inland Waters Environmental Quality, the EPA has also recognised there is a high degree of connectivity and interrelatedness of the processes and impacts under each factor, particularly in relation to impacts on the damplands and sensitive ecological communities.

Understanding the environmental processes and interactions between them was critical to assessing the significance of potential impacts from the proposal on the sensitive damplands and sensitive ecological communities in Bush Forever site 342.

In summary, the EPA has assessed the environmental impacts of the proposal based on the proponent's mitigation, the level of confidence in the predictions, and the degree of risk to the environmental values of the wetlands and concluded that the proposal is environmentally acceptable, and recommends a set of conditions be imposed if the proposal by the Water Corporation to construct and operate the proposal is approved for implementation (Appendix 4).

Matters addressed in the conditions include the following:

- condition 6 which requires the preparation, submission, and implementation of a Construction Environmental Management Plan:
    - to prevent the introduction or spread of weeds during construction;
    - to undertake follow-up weed control, post construction;
    - to ensure disease and pathogens, such as *Phytophthora cinnamomi*, are not introduced into disease free areas of the proposal area during construction; and
    - for the treatment of ASS consistent with the requirements of the Department of Environment Regulation's Acid Sulfate Soil Guideline Series *Identification and investigation of acid sulfate soils and acidic landscapes* (2015a) and *Treatment and management of soils and water in acid sulfate soil landscapes* (2015b), or any approved update of these guidelines.
- Condition 7 which requires the preparation, submission, and implementation of a Baseline Survey and Monitoring Plan to demonstrate:
    - that operation of the proposal does not result in indirect impacts to the health of the TEC SCP 10a 'shrublands on dry clay flats', as a result of changes to groundwater flows.

5. Recommendations

That the Minister for Environment notes:

1. that the proposal being assessed is for the construction and operation of Balannup wastewater pressure main;
2. the key environmental factors of Flora and Vegetation, Hydrological Processes and Inland Waters Environmental Quality, as identified by the EPA in the course of its assessment set out in Section 3; and
3. the EPA has concluded that the impacts of the proposal are acceptable and the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 4 and summarised in Section 4.

Appendix 1

References

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DER 2015b, *Treatment and management of soils and water in acid sulfate soil landscapes,* Department of Environment Regulation, June 2015, Perth, WA.

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EPA 2002, Position Statement No. 3 – *Terrestrial Biological Surveys as an Element of Biodiversity Protection*, Environmental Protection Authority, March 2002, Perth, WA.

EPA 2006, Guidance Statement No. 10 – *Level of assessment for proposals affecting natural areas within the System 6 region and Swan Coastal Plain portion of the System 1 region*. Environmental Protection Authority, June 2006, Perth, WA.

EPA 2004a, Guidance Statement No. 51 – *Guidance for the Assessment of Environmental Factors – Terrestrial Flora and Vegetation Surveys for Environmental Impact in Western Australia*. Environmental Protection Authority, June 2004, Perth, WA.

EPA 2004b, Position Statement No. 4 – *Environmental Protection of Wetlands*. Environmental Protection Authority, November 2004, Perth, WA.

EPA 2008, Guidance Statement No. 33 – *Environmental Guidance for Planning and Development.* Environmental Protection Authority, May 2008, Perth, WA.

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EPA 2015c, Environmental Assessment Guideline No. 14 *for Preparation of an API – Category A Environmental Review Document,* Environmental Protection Authority, January 2015, Perth, WA.

EPA 2015d, Environmental Assessment Guideline No. 17 – *Preparation of management plans under Part IV of the Environmental Protection Act 1986,* Environmental Protection Authority, August 2015, Perth, WA.

EPA 2015e, Environmental Assessment Guideline No. 11 – *Recommending environmental conditions*, Environmental Protection Authority, revised August 2015, Perth, WA.

EPA 2015f, Technical Guide – *Flora and Vegetation Surveys for Environmental Impact Assessment*, Environmental Protection Authority, Perth, WA.

EPA 2016a, *Statement of Environmental Principles, Factors and Objectives*, Environmental Protection Authority, Perth, WA.

EPA 2016b, Environmental Factor Guideline – *Flora and Vegetation*, Environmental Protection Authority, Perth, WA.

EPA 2016c, Environmental Factor Guideline – *Hydrological Processes*, Environmental Protection Authority, Perth, WA.

EPA 2016d, Environmental Factor Guideline – *Inland Waters Environmental Quality*, Environmental Protection Authority, Perth, WA.

EPA 2016e, Technical Guide – *Flora and Vegetation Surveys for Environmental Impact Assessment*, Environmental Protection Authority, Perth, WA.

Government of Western Australia 2000, *Bush Forever Volume 1 Policies, Principles and Processes.* Western Australian Planning Commission, Perth, WA.

Water Corporation, November 2016, *Balannup Wastewater Pressure Main – Assessment on Proponent Information Environmental Review*, Subiaco, WA.

Appendix 2

Summary of Key Environmental Factors and Principles

Environmental Factors	Proposal characteristics and potential impacts	Evaluation of whether a factor is a key environmental factor
LAND		
Flora and vegetation	The pipeline alignment within Bush Forever site 342 is proposed to be laid within the existing fire access track. Whilst the fire access track is sufficiently wide in most locations for the construction of the proposal, there are some sections where the track is not wide enough and a very small amount of vegetation will need to be cleared. The proposal has the potential to indirectly impact on the adjacent vegetation through the spread of weeds and disease (Dieback) to occur during construction.	Based on the proposal characteristics and potential impacts, Flora and Vegetation was identified as a preliminary environmental factor in the EPA's decision to assess the Proposal. Having regard to the potential direct and indirect impacts to flora and vegetation, the **EPA identified Flora and Vegetation as a key environmental factor** at the conclusion of its assessment.
WATER		
Hydrological Processes	The section of pipeline within Bush Forever site 342 also forms part of the Anstey-Keane damplands which is a mapped Conservation Category Wetland (CCW). The proposal has the potential to alter local hydrology due to construction and the physical presence of the pipeline, which has the potential to indirectly impact on the adjacent ecological community	Based on the proposal characteristics and potential impacts, Hydrological Processes was identified as a preliminary environmental factor in the EPA's decision to assess the proposal.

	identified as TEC SCP10a '*shrublands on dry clay flats'*, which is located in the southeast corner of the Bush Forever site.	Having regard to the installation of the pipeline within a mapped CCW and the sensitivities of the adjacent TEC, the **EPA identified Hydrological Processes as a key environmental factor**, at the conclusion of its assessment.
Inland Waters Environmental Quality	The section of pipeline within Bush Forever site 342 also forms part of the Anstey-Keane damplands. The proposal has the potential to impact wetland water quality through the disturbance of potential ASS, and accidental leaks and spills.	Based on the proposal characteristics and potential impacts, Inland Waters Environmental Quality was identified as a preliminary environmental factor in the EPA's decision to assess the proposal. Having regard to the sensitivities of the receiving environment, the **EPA identified Inland Waters Environmental Quality as a key environmental factor**, at the conclusion of its assessment.

Summary of identification of principles

Principle	Consideration
Environmental principles of the EP Act	
1. The precautionary principle *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.* *In application of this precautionary principle, decisions should be guided by –* *a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and* *b) an assessment of the risk-weighted consequences of various options.*	In considering this principle, the EPA notes that Flora and Vegetation and Hydrological Processes and Inland Waters Environmental Quality could be significantly impacted by this proposal. The assessment of these impacts is provided in this report. Investigations on the biological and physical environment undertaken by the proponent have provided sufficient certainty to assess risks and identify measures to avoid or minimise impacts. The EPA has recommended conditions to ensure relevant measures are undertaken by the proponent. From its assessment of this proposal against the three key environmental factors, the EPA has concluded that there is not a threat of serious or irreversible harm.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.*	In considering this principle, the EPA notes that the proponent has taken measures to avoid and minimise impacts. In assessing this proposal the EPA has recommended adaptive management mechanisms (through conditions requiring environmental management plans) be implemented to maintain ecological processes. From its assessment of this proposal, the EPA has concluded that the health, diversity and productivity of the environment can be maintained and enhanced for the benefit of future generations.
3. The principle of the conservation of biological diversity and ecological integrity	In considering this principle, the EPA notes that the proposal would result in impacts to flora and vegetation. In assessing the proposal the EPA has considered these impacts and has taken into account measures proposed by

Principle	Consideration
Conservation of biological diversity and ecological integrity should be a fundamental consideration.	the proponent to minimise impacts to the affected species. The EPA has concluded that, given the very small footprint within an existing fire access track and short duration for construction within the Bush Forever site, the proposal would not compromise the biological diversity or ecological integrity within the Bush Forever site 342 (Anstey-Keane dampland). Through this assessment, the EPA has demonstrated that the conservation of biological diversity and ecological integrity was a fundamental consideration.
4. Principles relating to improved valuation, pricing and incentive mechanisms *(1) Environmental factors should be included in the valuation of assets and services.* *(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.* *(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.* *(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or*	In considering this principle, the EPA notes that the proponent would bear the cost relating to waste and pollution, including avoidance and abatement. The EPA has demonstrated due regard to this principle during the assessment of the proposal.

Principle	Consideration
minimize costs to develop their own solution and responses to environmental problems.	
5. The principle of waste minimisation *All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.*	In considering this principle, the EPA notes that waste products created as a result of implementation of the proposal would be disposed of according to relevant regulations and legislation. The EPA has demonstrated due regard to this principle during the assessment of this proposal.

Appendix 3

Relevant EPA Policies and Guidance and considerations for Environmental Impact Assessment

The EPA reviewed its policies and guidance documents for each environmental factor to determine their relevance to the assessment of the proposal. The EPA has outlined its relevant EIA considerations discussed in each policy and guidance document for the key environmental factors below.

The relevant considerations for environmental impact assessment from both the EPA's former policies and guidelines and the EPA's new Environmental Factor Guidelines and Technical guidance (released December 2016) have been included as the proponent prepared documentation in accordance with the relevant EIA considerations under the EPA's former policies and guidelines framework. The new factor guidelines and technical guidance documents address similar matters as those covered in the former EPA policies, but adopt a more contemporary position to reflect the current practice of the EPA in undertaking EIA.

1. Flora and Vegetation

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor:

- Environmental Factors Guideline – *Flora and Vegetation* (EPA 2016); and
- Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2015f and EPA, 2016e).

Under the EPA's former policy and guidance the following policy and guidance was relevant to the assessment of this proposal:

- Position Statement No. 2 – *Environmental protection of native vegetation in Western Australia* (EPA 2000);
- Position Statement No. 3 – *Terrestrial biological surveys as an element of biodiversity protection* (EPA 2002);
- Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in WA* (EPA, 2004a); and
- Guidance Statement No. 10 – *Level of Assessment for Proposals affecting natural areas within the System 6 region and Swan Coastal Plain portion of the System 1 region* (EPA 2006); and

Environmental Factor Guideline – Flora and Vegetation

The considerations in the Guideline for this assessment are:

1. Application of the mitigation hierarchy.
2. The potential impacts and the activities that will cause them, including direct and indirect impacts.
3. Whether surveys and analyses have been undertaken to a standard consistent with guidance.
4. The significance of flora and vegetation, and the risk to the flora and vegetation.

5. The current state of knowledge of flora and vegetation and the level of confidence underpinning the predicted residual impacts.
6. Whether proposed management and mitigation approaches are technically and practically feasible.

The considerations have been addressed in the EPA's assessment.

Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment

The purpose of this technical guidance is to ensure adequate flora and vegetation data of an appropriate standard are obtained and used in EIA.

The flora and vegetation surveys for this proposal were undertaken in 2013 in accordance with Guidance Statement 51 (EPA, 2004a), which was the relevant guidance for flora and vegetation surveys at the time. This was updated into a Technical Guideline 2015 and a revised version was released in December 2016. The standards and information required for each survey have not changed and therefore the EPA considers that the surveys are consistent with the standards in this Technical Guidance.

Position Statement 2 – Environmental Protection of Native Vegetation in Western Australia **(Replaced by Environmental Factor Guideline – Flora and Vegetation EPA, 2016)**

Relevant EIA considerations discussed in Position Statement No. 2, in relation to the EPA's consideration of biological diversity in assessing a proposal, for this assessment include the following:

1. A comparison of development scenarios, or options, to evaluate protection of biodiversity at the species and ecosystem levels, and demonstration that all reasonable steps have been taken to avoid disturbing native vegetation.
2. No known species of plant or animal is caused to become extinct as a consequence of the development and the risks to threatened species are considered to be acceptable.
3. No association or community of indigenous plants or animals ceases to exist as a result of the project.
4. There would be an expectation that a proposal would demonstrate that the vegetation removal would not compromise any vegetation type by taking it below the "threshold level" of 30% of the pre-clearing extent of the vegetation type.
5. There is a comprehensive, adequate and secure representation of scarce endangered habitats within the project area and/or in areas which are biologically comparable to the project area, protected in secure reserves.
6. The on-site and off-site impacts of the project are identified and the proponent demonstrates that these impacts can be managed.

The proposal is consistent with the relevant mattes in Position Statement No. 2. The proponent has:

- considered alternatives and demonstrated application of the mitigation hierarchy (1);
- identified the on-site and offsite impacts of the proposal (6); and
- demonstrated that vegetation removal would not compromise any vegetation type (4).

The EPA considers that there is no risk of extinction of any plant, animal (2), association or community (3) and that the small scale of impacts will not affect representation of scarce endangered habitats affected by the proposal (5).

Position Statement 3 – Terrestrial Biological Surveys as an element of biodiversity protection **(Replaced by Environmental Factor Guideline – Flora and Vegetation EPA, 2016 and Technical Guidance – Flora and Vegetation Surveys EPA, 2016e)**

Relevant EIA considerations discussed in Position Statement No. 3 for this assessment include the following:

1. The EPA expects proponents to demonstrate in their proposals that all reasonable measures have been undertaken to avoid impacts on biodiversity. Where some impact on biodiversity cannot be avoided, it is for the proponent to demonstrate that the impact will not result in unacceptable loss.
2. The EPA expects proponents to ensure that terrestrial biological surveys provide sufficient information to address both biodiversity conservation and ecological function values within the context of the type of proposal being considered and the relevant EPA objectives for protection of the environment.
3. The EPA requires that the quality of information and scope of field surveys meets the standards, requirements and protocols as determined and published by the EPA.

Position Statement No. 3 refers to definitions, principles and objectives in the first national biodiversity strategy *National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia, 1996). The EPA notes that the most recent version of the strategy, *Australia's Biodiversity Conservation Strategy 2010–2030* (Commonwealth of Australia, 2010), refers to a shortened definition of biological diversity and contains different principles. The 2010 Strategy also notes that a review of the 1996 Strategy found it difficult to objectively measure performance against the qualitative objectives in the 1996 Strategy and that there have been shifts in environmental management approaches regarding biodiversity conservation. Therefore, the EPA has not considered the matters relating to the 1996 Strategy to be relevant for this assessment.

The proponent has demonstrated reasonable measures to avoid impacts on biodiversity and that unavoidable impacts will not result in unacceptable loss. (1) The proponent has carried out flora and vegetation surveys in accordance with Position Statement No. 3 (2) and that surveys used to inform this assessment were conducted in accordance with EPA standards, requirements and protocols (3).

Guidance Statement No. 51 – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in WA **(Replaced by Technical Guidance – Flora and Vegetation, EPA 2015)**

Relevant EIA considerations discussed in Guidance Statement No. 51 for this assessment include the following:

1. Surveys are planned and designed appropriately.
2. The analysis, interpretation and reporting is of a suitable quality and consistent methodology to enable the EPA to judge the impacts of proposals on flora and vegetation.
3. The environment, in particular significant flora and vegetation biodiversity is identified and protected.

The proponent used existing flora and vegetation surveys and identified and retained (where practicable) significant flora and vegetation in accordance with Guidance Statement No. 51.

Guidance Statement No. 10 – Level of Assessment for Proposals affecting natural areas within the System 6 region and Swan Coastal Plain portion of the System 1 region **(Superseded by Environmental Factor Guideline – Flora and Vegetation EPA, 2016)**

Guidance Statement No. 10 (GS10) provides guidance for proposals clearing natural areas with particular relevance to proposals with impacts on Conservation Estate and DPaW managed lands, Bush Forever sites, regionally significant land, conservation category wetlands, threatened ecological communities and areas containing threatened species.

The guidance states that proposal within Bush Forever sites subject to minor potential impacts would not require formal assessment. The proposal falls within the definition of 'Bush Forever sites subject to minor potential impacts' in GS10. The proposal is consistent with GS10 as it affects cleared areas and will not affect the conservation values of the regionally significant bushland.

2. Hydrological Processes

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor:

- Environmental Factor Guideline – *Hydrological Processes* (EPA 2016c).

Under the EPA's former policy and guidance the following policy and guidance was relevant to the assessment of this proposal:

- Position Statement No. 4 – *Environmental protection of wetlands* (EPA 2004b).

Environmental Factor Guideline – Hydrological Processes

The considerations in the Guideline for this assessment are:

1. Application of the mitigation hierarchy.
2. The environmental values which are potentially impacted, and their significance.
3. That all analyses are undertaken to a standard consistent with recognised published guidance.
4. The current state of knowledge and the level of confidence in predicting the residual environmental impacts.
5. The risk to the environmental values should the predictions be incorrect.
6. Whether proposed mitigation is technically and practically feasible.

Position Statement No. 4 – Environmental protection of wetlands (Replaced by Environmental Factor Guideline — Hydrological Processes EPA, 2016)

The Position Statement defines the important environmental values and functions of wetlands and establishes four principles to provide guidance to proponents. The considerations in Position Statement No. 4 (PS4) for this assessment are:

1. Proponents will conduct a thorough appraisal of all development options, including proper consideration of site selection, which would avoid direct or indirect impacts on wetlands.
2. Protect environmental values and functions of wetlands in Western Australia.
3. Protect, sustain and, where possible, restore the biological diversity of wetland habitats in Western Australia.
4. Protect the environment quality of the wetland ecosystems of Western Australia through sound management in accordance with the concept of “wise use”, as described in the Ramsar Convention, and ecologically sustainable development principles, regardless of land use or activity.
5. Have an aspirational goal of no net loss of wetland values and functions.

The proposal is consistent with PS4 as the proponent has considered alternative alignments; committed to the use of the EcoPlough technique to install the pipeline within the CCW section to avoid the need for trenching and dewatering; committed to raising invert level of pipeline to increase the distance above the pockets of more sandy material; and will install the pipeline during summer.

3. Inland Waters Environmental Quality

The EPA considers that the following policy and guidance is relevant to its assessment of the proposal in relation to this factor:

- Environmental Factor Guideline – *Inland Waters Environmental Quality* (EPA 2016d).

Under the EPA's former policy and guidance the following guidance was relevant to assessment of this proposal:

- Position Statement No. 4 – *Environmental protection of wetlands* (EPA 2004b).

Environmental Factor Guideline – Inland Waters Environmental Quality

The considerations in the Guideline for this assessment are:

1. Application of the mitigation hierarchy.
2. The environmental values which are potentially impacted, and their significance.
3. The pathways through which water quality may be impacted.
4. The risk to environmental values and whether proposed mitigation is technically and practically feasible.

Position Statement No. 4 – Environmental protection of wetlands (Replaced by Environmental Factor Guideline — Hydrological Processes EPA, 2016)

The Position Statement defines the important environmental values and functions of wetlands and establishes four principles to provide guidance to proponents. The considerations in Position Statement No. 4 (PS4) for this assessment are:

1. Proponents will conduct a thorough appraisal of all development options, including proper consideration of site selection, which would avoid direct or indirect impacts on wetlands.
2. Protect environmental values and functions of wetlands in Western Australia.
3. Protect, sustain and, where possible, restore the biological diversity of wetland habitats in Western Australia.
4. Protect the environment quality of the wetland ecosystems of Western Australia through sound management in accordance with the concept of "wise use", as described in the Ramsar Convention, and ecologically sustainable development principles, regardless of land use or activity.
5. Have an aspirational goal of no net loss of wetland values and functions.

The proposal is consistent with PS4 as the proponent has considered alternative alignments; committed to the use of the EcoPlough technique to install the pipeline within the CCW section to avoid the need for trenching and dewatering; committed to raising invert level of pipeline to increase the distance above the pockets of more sandy material; and will install the pipeline during summer.

Appendix 4

Identified Decision-making Authorities
and
Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

Decision-making Authority	Approval
1. Minister for Environment	*Wildlife Conservation Act 1950* Taking of flora and fauna
2. Minister for Water	*Rights in Water and Irrigation Act 1914* Dewatering
2. Department of Environment Regulation	• *Environmental Protection Act 1986* • *Environmental Protection (clearing of Native Vegetation) Regulations 2004* • Native Vegetation Clearing Permit
3. Western Australian Planning Commission	*Planning and Development Act 2005* Land access within Bush Forever site
4. Main Roads	*Main Roads Act 1930* Consent to cross Tonkin Highway
5. Metropolitan Redevelopment Authority	*Metropolitan Redevelopment Authority Act 2011* *Armadale Redevelopment Scheme*

Note: In this instance, agreement is only required with DMAs 1-2 since these DMAs are Ministers.

Statement No. xxx

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
***(Environmental Protection Act 1986*)**

BALANNUP WASTEWATER PRESSURE MAIN

Proposal: The proposal is to construct and operate a 4.5 kilometre long wastewater pressure main from the Collared Street Pump Station to the Waterworks Road Pump Station, Haynes in the locality of Armadale WA.

Proponent: Water Corporation
Australian Business Number 28 003 434 917

Proponent Address: 629 Newcastle Street
LEEDERVILLE WA 6007

Assessment Number: 2081

Report of the Environmental Protection Authority: XXXX

Pursuant to section 45 of the **EP Act** it has been agreed that the proposal described and documented in Table 1 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

1 Proposal Implementation

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 in Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the **EP Act**.

2 Contact Details

2-1 The proponent shall notify the **CEO** of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.

3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the **CEO** with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

4-1 The proponent shall prepare and maintain a Compliance Assessment Plan which is submitted to the **CEO** at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation, whichever is sooner.

4-2 The Compliance Assessment Plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of Compliance Assessment Reports; and

(6) public availability of Compliance Assessment Reports.

4-3 After receiving notice in writing from the **CEO** that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the **CEO**.

4-5 The proponent shall advise the **CEO** of any potential non-compliance within seven (7) days of that non-compliance being known.

4-6 The proponent shall submit to the **CEO** the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then

annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the **CEO**.

The Compliance Assessment Report shall:

(1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved Compliance Assessment Plan; and

(5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

5 Public Availability of Plans and Reports

5-1 Subject to condition 5-2, within a reasonable time period approved by the **CEO** of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the **CEO**, all environmental plans and reports required under this Statement.

5-2 If any parts of the plans or reports, referred to in condition 5-1 contains particulars of:

(1) a secret formula or process; or

(2) confidential commercially sensitive information;

the proponent may submit a request for approval from the **CEO** to not make these environmental plans and reports publicly available. In making such a request the proponent shall provide the **CEO** with an explanation and reasons why those parts of the plans or reports should not be made publicly available.

6 Construction Environmental Management Plan (Flora and Vegetation and Inland Waters Environmental Quality)

6-1 The proponent shall ensure that impacts from construction within Area A, as identified in Figure 1, on water quality and flora and vegetation are minimised as far as practicable through the implementation of conditions 6-2 and 6-3.

6-2 Prior to the commencement of **ground disturbing activities** within Area A, as identified in Figure 1, the proponent shall prepare a Construction Environmental Management Plan to minimise impacts from construction within Area A on the Anstey-Keane Dampland and Bush Forever site 342, to the requirements of the

CEO, on advice of the Department of Parks and Wildlife and Department of Environment Regulation.

6-3 The Construction Environmental Management Plan shall include provisions:

(1) to prevent the introduction or spread of weeds during construction;

(2) to undertake follow-up weed control, post construction;

(3) to ensure disease and pathogens, such as *Phytophthora cinnamomi*, are not introduced into disease free areas of the proposal area during construction; and

(4) for the treatment of ASS consistent with the requirements of the Department of Environment Regulation's Acid Sulfate Soil Guideline Series Identification and investigation of acid sulfate soils and acidic landscapes (2015) and Treatment and management of soils and water in acid sulfate soil landscapes (2015), or any approved update of these guidelines.

6-4 The proponent:

(1) may review and revise the Construction Environmental Management Plan, or

(2) shall review and revise the Construction Environmental Management Plan as and when directed by the CEO.

6-5 The proponent shall implement the lasted revision of the Construction Environmental Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 6-2.

7 Baseline Survey and Monitoring Plan (Flora and Vegetation and Hydrological Processes)

7-1 The proponent shall implement the proposal in Area A as identified in Figure 1 to meet the following environmental objective:

(1) to ensure that the proposal does not result in indirect impacts to the health of the Threatened Ecological Community Swan Coastal Plain 10a '*shrublands on dry clay flats*' as shown in Figure 2, as a result of changes to groundwater flows.

7-2 Prior to the commencement of **ground disturbing activities** within Area A as identified in Figure 1, the proponent, in consultation with the Department of Parks and Wildlife, shall prepare and submit a Baseline Survey and Monitoring Plan to the CEO. The Baseline Survey and Monitoring Plan shall:

(1) when implemented determine that the objective in 7-1 is being met;

(2) detail the proposed methodology for the surveys including the parameters to be monitored to determine whether there are any changes to groundwater flows and decline in the health of the Threatened Ecological Community Swan Coastal Plain 10a '*shrublands on dry clay flats*' as shown in Figure 2;

(3) include the method for developing hydrological criteria from baseline data, to demonstrate that the objective in 7-1 is being met;

(4) identify and spatially define the proposed survey locations and reference/control sites and provide rationale for the location of the sites; and

(5) detail the proposed frequency and timing for the baseline surveys and ongoing monitoring.

7-3 After receiving notice in writing from the CEO that the Baseline Survey and Monitoring Plan satisfies the requirements of condition 7-2, the proponent shall undertake the baseline surveys in accordance with the requirements of the Baseline Survey and Monitoring Plan, or as agreed by the CEO.

On completion of the baseline surveys the proponent shall report to the CEO on the following:

(1) completion of the baseline surveys in accordance with the Baseline Survey and Monitoring Plan;

(2) the results of the baseline surveys; and

(3) the hydrological criteria referred to in condition 7-2(3).

7-4 The proponent shall continue to monitor the areas identified in condition 7-2(4) for a period of 2 years post construction, or as otherwise agreed in writing by the CEO, in order to demonstrate that the environmental objective in condition 7-1 has been met.

7-5 The proponent shall submit the monitoring results required by condition 7-4, annually to the CEO.

Schedule 1

Table 1: Summary of the Proposal

Proposal Title	Balannup Wastewater Pressure Main
Short Description	The proposal is to construct and operate a 4.5 km wastewater pressure main from the Collared Street pump station to the Waterworks Road pump station in the locality of Armadale.

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	**Location**	**Authorised Extent**
Clearing and disturbance for the construction of the proposal.	Figure 1	Clearing of no more than 0.1 ha; and disturbance for the construction of the proposal within Area A.
Conventional Trenching	Figure 1	To be limited to within Areas B. No conventional trenching within Area A.
Dewatering and Excavation	Figure 1	No dewatering or excavation to occur within Area A.

Table 3: Abbreviations and Definitions

Acronym or Abbreviation	Definition or Term
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
Ground Disturbing Activity	Activities that are associated with the implementation of the proposal, including but not limited to, vegetation clearing or furrowing.
ha	Hectare
km	Kilometre

Figures (attached)

Figure 1 Balannup Wastewater Pressure Main development envelope (The proposal shown in this figure is a representation of the coordinates in Schedule 2).

Figure 2 Location of Threatened Ecological Community Swan Coastal Plain 10a '*shrublands on dry clay flats*'.

Figure 1 - Balannup Wastewater Pressure Main development envelope

Figure 2 - Location of Threatened Ecological Community Swan Coastal Plain 10a '*shrublands on dry clay flats*'.

Schedule 2

Coordinates defining the Balannup Wastewater Pressure Main Development Envelope in Figure 1 are held by the Office of the Environmental Protection Authority, Document Reference Number 2017-1484270455920.

Coordinates defining Area A in Figure 1 are held by the Office of the Environmental Protection Authority, Document Reference Number 2017- 1484270496964.

Coordinates defining Areas B in Figure 1 are held by the Office of the Environmental Protection Authority, Document Reference Number 2017-1484270496964.

Appendix 5

Proponent's API Environmental Review documentation

Provided on CD in hardcopies of this report and on the EPA's website at www.epa.wa.gov.au