

Invitation to Quote and Specification

Part 2 READ AND KEEP THIS PART

2 Specification

2.1 Contract Requirements in Brief

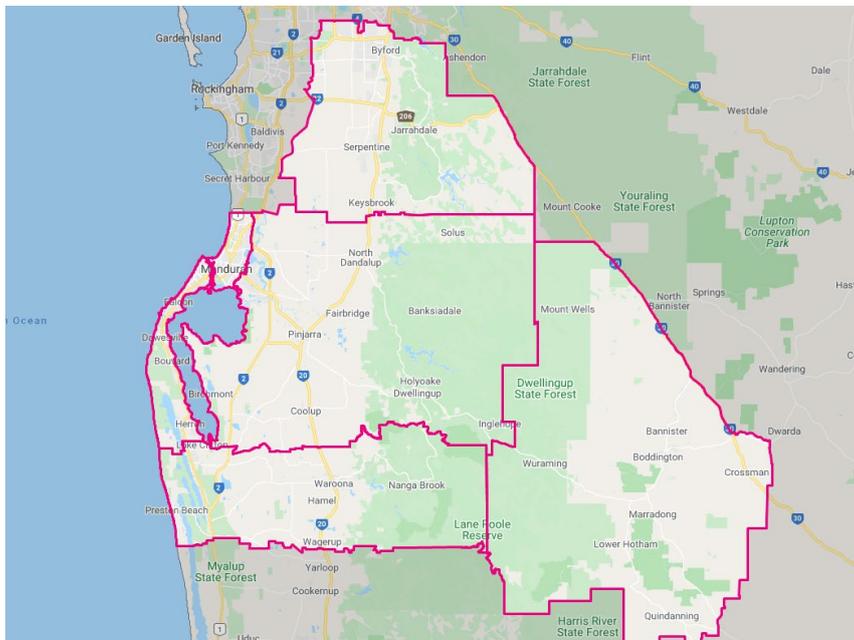
Peel Alliance seeks an appropriate consultant to articulate the water supply and demand challenges facing the Peel region across the following investigation areas:

1. Timing and magnitude of community needs to 2050
2. Timing and magnitude of agricultural needs to 2050
3. Timing and magnitude of industrial needs to 2050
4. Timing and magnitude of environmental water needs to 2050
5. Range, timing and magnitude of available water source options

The resulting report, supporting evidence and spatial mapping layers will be utilised to inform Peel Alliance's advocacy and support for initiatives that address identified challenges.

2.2 Background Information

Peel Alliance comprises the five Peel Region councils of Mandurah, Murray, Serpentine Jarrahdale, Waroona and Boddington, together with Regional Development Australia Peel, the Peel-Harvey Catchment Council and the Peel Community Development Group. The Peel Development Commission supports Peel Alliance and its strategic priorities plan.



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The main roles of Peel Alliance are to (i) advocate for priority initiatives and projects; (ii) advocate for the resolution of regional issues; and (iii) support other initiatives and projects that benefit the region. It is guided by the three pillars of economic prosperity, environmental sustainability and social wellbeing.

In October 2021, Peel Alliance members and stakeholders met to better articulate the water supply challenges facing the Peel region and develop a collective understanding of the problem. This included consideration of current and future residential and industry water demands, economic benefits, environmental and cultural water requirements, climate change impacts and total water cycle management and supply options. Workshop participants agreed to the following problem statement:

Currently accessible water is a finite resource that is being increasingly impacted by climate change. The Peel region has aspirations for its community, economy and environment that exceed currently accessible water resources with current business as usual practices.

We need to understand how currently accessible water resources can be more sustainably and efficiently used, including redistribution if necessary; what the remaining gap is; what the options are to fill the gap; and what the associated costs are.

We also recognise that there is unlikely to be a single solution due to the significant knowledge gaps and uncertainties associated with timing, changing community and environmental values and market considerations including net zero and willingness to pay. The continued commitment to collaborative delivery is therefore critical to achieve the desired outcome for the Peel region.

2.3 Scope of Work

The following work packages are proposed to assist in obtaining the information required to address the above problem statement.

1. Timing and magnitude of community needs to 2050
2. Timing and magnitude of agricultural needs to 2050
3. Timing and magnitude of industrial needs to 2050
4. Timing and magnitude of environmental water needs to 2050
5. Range, timing and magnitude of available water source options

Delivery of these work packages should also have consideration of the points below.

The desired outcome is the sustainable management of water for community, environmental and economic needs in the Peel Region to support the delivery of organisational goals.

The planning horizon is to 2050, but staged consideration and planning will be critical, noting the considerable uncertainty associated with the possible future water needs and availability. Scenarios should be proposed by the consultant but could include:

- Status quo development that uses the same amount of water in the same way (i.e. heavily reliant on groundwater for irrigation of public open space, industry and agriculture). This is a fairly straightforward scenario to plan for and is likely to be able to be engineered.

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- Delivering urban development, public open space, and agricultural and industrial activities in a new way (new technologies, new water sources, new efficiencies). This is likely to require a different funding and delivery model and consideration should be given to the likely willingness to pay and/or the tipping points for changes in current practices or policy positions.

Future estimation of water demands and availability will also need to consider the impacts of climate change and water's role in both causing and mitigating these impacts.

While the project is focussed on the Peel Region, this should not preclude the consultant from considering solutions beyond the Peel Region (eg: Binningup/Wellington).

The scope and requirements of each work package including available information and outputs are explained in more detail below.

Work Package 1: Timing and magnitude of community needs to 2050

The consultant will assess the amount of water needed by each local government now and in the future (to 2050) to deliver planned, business as usual development on the basis of Perth and Peel @3.5million and aspirations contained in Strategic Community Plans.

1. For each local government area, the assessment should identify:
 - Current water demands for existing community (includes urban, commercial, recreational and school use), agricultural and industrial users (at 2021) differentiated spatially (at estate/suburb level if possible)
 - Current wastewater production volumes - both reticulated sewerage and via on-site disposal, differentiated spatially
 - Current water source availability (scheme, groundwater, rainwater, stormwater, treated wastewater)
 - Current water, wastewater and drainage service infrastructure capacity
 - Any current gaps in water need and source availability
 - Predicted population growth to 2050 including any differences between DPLH and local government estimates (where available) differentiated spatially (at estate level if possible) and in 10 year increments (or other as appropriate).
 - Predicted industrial growth to 2050 including any differences between DPLH and local government estimates (where available) differentiated spatially (at estate level if possible) and in 10 year increments (or other as appropriate).
 - Predicted agricultural growth to 2050 including any differences between DPLH and local government estimates (where available) differentiated spatially (at estate level if possible) and in 10 year increments (or other as appropriate).

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2. Based on the predicted growth and business as usual roll-out of development, calculate the water needs (volumes and timing) for each local government (at estate level) for:
 - Potable/drinking water for new urban and commercial development areas
 - Wastewater generated from new urban and commercial development areas
 - Irrigation of new public open space and schools (including private schools if known)
 - New industrial development areas
 - New agricultural development areas

Comment on the gaps in availability and requirements for new/upgraded service infrastructure. Document all assumptions and sources of information.

Key sources of information to be reviewed include (links provided to publically available documents):

- Peel Alliance Water for Our Future – Discussion Paper
- [Perth and Peel @ 3.5million](#)
- Local Government documents including the Local Planning Strategy, Strategic Community Plan, Corporate Business Plan and Long-term Financial Plan
- [Id forecasts for population and economic growth](#)
- [Urban Growth Monitor](#)
- Water Corporation H2ome study (unpublished, insights available from Water Corporation)
- [Water Corporation CIP Planned assets database](#)
- [Murray drainage and water management plan and accompanying reports, Department of Water, 2011](#)
- [Shire of Serpentine Jarrahdale Integrated Water Management Strategy, 2020 & Final Report](#)
- Regional analysis of the potential for sustainable groundwater, water efficiency, water entitlement transactions and alternative water supplies to meet future non-potable water demand in Perth and Peel (Waterwise Perth Action Plan - Action 29, 2021 unpublished)
- Assessment of land, water and community wellbeing outcomes for public open space in Perth and Peel @ 3.5 million (Urbaqua for Department of Local Government, Sport and Cultural Industries, 2021, unpublished)

Consultation will be required with each of the five local governments, Department of Water and Environmental Regulation, the Water Corporation, Harvey Water, Department of Planning, Lands and Heritage and the Peel Development Commission as a minimum.

Required output: Concise report including appropriate figures and tables, outlining the methodology and assumptions used, the consultation undertaken and the findings in the context of the defined problem statement and desired outcome. This should be accompanied by a spreadsheet of calculations and spatial mapping layers (where relevant).

Indicative budget: \$40,000

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Work Package 2: Timing and magnitude of agricultural needs to 2050

The consultant will be required to undertake an assessment of the current and likely future water needs for agricultural production in the Peel region. The assessment should include (but may not be limited to) the following:

- Identify and spatially define the current major agricultural areas within the Peel Region
- Document the current broad activities, water demands and water sources for each agricultural area
- Discuss current best practice irrigation techniques and identify opportunities for improved practices
- Identify proposed new agricultural areas and timing associated with their development including planning, development and operational timeframes and milestones
- Develop up to three likely scenarios for future agricultural development and estimate associated water needs (including consideration of climate change impacts), noting the timing of critical milestones
- Comment on infrastructure needs to deliver new/upgraded water, wastewater and/or drainage services
- Comment on opportunities to optimise outcomes

Key sources of information to be reviewed include (links provided to publically available documents):

- Peel Alliance Water for Our Future – Discussion Paper
- The findings of Work Package 1
- [Peel Food Zone study](#)
- Waroona/Murray/Harvey Water demand assessment. Report for Department of Primary Industries and Regional Development, 28 June 2021
- [Shire of Serpentine Jarrahdale Local Planning Strategy](#)
- Shire of Serpentine Jarrahdale Agriculture Innovation Paper

Consultation will be required with the Department of Primary Industries and Regional Development, Harvey Water, each of the five local governments and the Peel Development Commission as a minimum.

Required output: Concise report including appropriate figures and tables, outlining the methodology and assumptions used, the consultation undertaken and the findings in the context of the defined problem statement and desired outcome. This should be accompanied by a spreadsheet of calculations and spatial mapping layers (where relevant).

Indicative budget: \$20,000

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Work Package 3: Timing and magnitude of industrial and mining needs to 2050

The consultant is required to undertake an assessment of the timing and magnitude of industrial needs (light, general and heavy industrial) in the Peel Region now and to 2050. The assessment should include (but may not be limited to) the following:

- Identify and spatially define the current major industrial areas within the Peel Region
- Document the current broad activities, water demands, water sources and wastewater disposal for each industrial area
- Identify existing opportunities for improved practices including water reuse, recycling and/or circular economy practices
- Identify proposed new industrial areas and timing associated with their development including planning, development and operational timeframes and milestones
- Develop up to three likely scenarios for future industrial development and estimate associated water needs, noting the timing of critical milestones
- Comment on infrastructure needs to deliver new/upgraded water, wastewater and/or drainage services
- Comment on the opportunity to apply circular economy principles to optimise outcomes

Key sources of information to be reviewed include (links provided to publically available documents):

- Peel Alliance Water for Our Future – Discussion Paper
- The findings of Work Package 1
- Waroona/Murray/Harvey Water demand assessment. Report for Department of Primary Industries and Regional Development, 28 June 2021
- [Water Corporation CIP Planned assets database](#)
- [West Mundijong Industrial Area Structure Plan](#)
- Regional analysis of the potential for sustainable groundwater, water efficiency, water entitlement transactions and alternative water supplies to meet future non-potable water demand in Perth and Peel (Waterwise Perth Action Plan - Action 29, 2021 unpublished)
- 'Assessment of land, water and community wellbeing outcomes for public open space in Perth and Peel @ 3.5 million' (Urbaqua for Department of Local Government, Sport and Cultural Industries, 2021, unpublished)
- Engineering Concept Design and Feasibility Assessment - Nambeelup managed aquifer recharge for the Peel Integrated Water Initiative (RPS consultants for Department of Water and Environmental Regulation June 2020)

Consultation will be required with the Department of Primary Industries and Regional Development, each of the five local governments, the Peel Development Commission, Department of Water and Environmental Regulation, Harvey Water and existing significant industrial/mining operations (Alcoa, Newmont, South32) as a minimum.

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Required output: Concise report including appropriate figures and tables, outlining the methodology and assumptions used, the consultation undertaken and the findings in the context of the defined problem statement and desired outcome. This should be accompanied by a spreadsheet of calculations and spatial mapping layers (where relevant).

Indicative budget: \$20,000

Work Package 4: Timing and magnitude of environmental water needs to 2050

The Peel Region is rich in significant environmental values associated with its natural environment. While the Ramsar-listed Peel-Yalgorup System of wetlands (Ramsar Site 482) which includes the Peel Inlet and Harvey Estuary, Yalgorup Lakes, Lake McLarty and Lake Mealup, is of international importance, the region includes many waterways, wetlands and areas of vegetation that have regional and local environmental significance. Some of these wetlands, in particular the lakes, have a dependency on groundwater and are therefore susceptible to declining groundwater levels.

The consultant is required to undertake an assessment of the timing and magnitude of environmental water needs now and to 2050 to protect the ecological value of these wetlands and waterways, on the basis of currently available information, having consideration of the likely impacts of climate change. It is recognised that sufficient site-specific ecological information may not currently be available and that some assumptions will be necessary.

The assessment should include (but may not be limited to) the following:

- Identify and spatially define the regionally significant water dependent environmental assets in the Peel Region
- Summarise current knowledge of the health of these assets including their ecological water requirements (quantity and quality), any existing environmental water provisions, and relevant water allocation plans.
- Briefly document the likely impacts of projected climate change on the health of the significant environmental assets in the Peel region under the current regime of water allocation
- Develop a broad-scale water balance depicting the current state and at 2050
- Comment on the future environmental water needs for the region including likely timing of tipping points and any changes required to current regimes to maintain the ecological character of the asset under future climate change projections.

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Key sources of information to be reviewed include (links provided to publically available documents):

- Peel Alliance Water for Our Future – Discussion Paper
- [A river health assessment of the Serpentine River, Western Australia, Murdoch University's Harry Butler Institute, 2021](#)
- [Bindjareb Djilba: A plan for the protection of the Peel-Harvey estuary, Department of Water and Environmental Regulation, December 2020](#)
- [Hotham Williams River Health Assessment 2019/2020](#)
- [Baseline Report Card Ramsar 482 Peel-Yalgorup System, Peel Harvey Catchment Council, 2019](#)
- [Ecological Character Description Peel-Yalgorup Ramsar Site Addendum, draft, 2019](#)
- [Balancing estuarine and societal health in a changing environment: Summary Report, ARC Linkage Project LP150100451, December 2019](#)
- [Historical and projected climate of the Peel Region, S Charles, G Fu, O Barron, G Hodgson 2019 CSIRO Land and Water, Australia and Water resource Assessment in the Peel region: historical and under projected future climate. Technical report 2019c CSIRO.](#)
- [Assessment of ecological water requirements for the Peel Integrated Water Initiative \(CSIRO, 2018\)](#)
- Integrated Water Supply Scheme release review, Department of Water and Environmental Regulation, November 2017
 - [Managing releases for the Serpentine River - Serpentine River allocation statement.](#)
 - [Managing releases from the North Dandalup Dam, North Dandalup allocation statement](#)
- Hydrological and nutrient modelling of the Peel-Harvey catchment, Department of Water, Water Science Technical Series [Report no. 33, February 2011](#) and [Report no. 84, September 2021](#)
- [Statewide Policy No. 5, Environmental Water Provisions Policy for Western Australia, Water and Rivers Commission, Statewide Policy No. 5. \(Water and Rivers Commission, 2000\)](#)
- [Legal Duties for Environmental Water Provisions in Western Australia \(Jeanette Jensen and Alex Gardner, 2017\)](#)

Consultation will be required with the Department of Biodiversity, Conservation and Attractions, Department of Water and Environmental Regulation, Peel Harvey Catchment Council, Western Australian Biodiversity Science Institute, and each of the five local governments as a minimum.

Required output: Concise report summarising the outcomes of the assessment undertaken. It should include appropriate figures and tables, outlining the methodology and assumptions used, the consultation undertaken and the findings in the context of the defined problem statement and desired outcome. This should be accompanied by a spreadsheet of calculations and spatial mapping layers (where relevant).

Indicative budget: \$20,000

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Work package 5: Water source options, gaps and opportunities analysis

The consultant is required to describe the current and future water needs, water sources and likely opportunities to sustainably manage the Peel Region's water resources for community, environmental and economic needs to support the delivery of organisational goals. This will include consideration of climate change as well as opportunities for and effect of changes to business-as-usual development and servicing delivery.

The assessment should include (but may not be limited to) the following:

- Utilise the outputs of Work Packages 1-4 to develop a broad-scale water balance of the region and spatially map the current water needs and water sources
- Document the current order of magnitude costs of the range of water sources/supplies for community, agricultural, industrial and environmental uses including capital and operational costs, noting critical issues influencing feasibility and economies of scale
- Comment on willingness to pay and current funding and delivery frameworks
- Spatially map the water needs and water sources of the future in 10 year increments (or other as appropriate)
- Identify gaps in water source availability, infrastructure capacity, and critical milestones for decision-making
- Identify opportunities for alternative provision or changes to business as usual development and/or delivery that could “close the gap”

Key sources of information to be reviewed include (links provided to publically available documents):

- Peel Alliance Water for Our Future – Discussion Paper
- McFarlane, D.J. (2019). [Wastewater as a possible source of recycling in the Perth-Peel region](#). Report to the Department of Water and Environmental Regulation
- McFarlane, D.J. (2019). [Drainage water as a possible source of recycling in the Perth-Peel region](#). Report to the Department of Water and Environmental Regulation
- McFarlane, D.J. (2019). [The potential for managed aquifer recharge, third-pipe and direct piping systems in the Perth-Peel region](#). Report to the Department of Water and Environmental Regulation
- Engineering Concept Design and Feasibility Assessment - Nambeelup managed aquifer recharge for the Peel Integrated Water Initiative (RPS consultants for Department of Water and Environmental Regulation June 2020)
- [Groundwater allocation information for relevant aquifers](#)
- [Economics and experiences of managed aquifer recharge \(MAR\) with recycled water in Australia](#), Australian Water Recycling Centre of Excellence, 2015.

Consultation will be required with all members of the Peel Alliance.

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Required output: Concise report including appropriate figures and tables, outlining the methodology and assumptions used, the consultation undertaken and the findings in the context of the defined problem statement and desired outcome. This should be accompanied by a spreadsheet of calculations and spatial mapping layers (where relevant).

Indicative budget: \$20,000

Reference Materials

A significant amount of data is available in the form of various reports and strategies as noted against each Work Package. Where the reference material is not publically available, this has been agreed to be provided by the relevant stakeholders to the consultant upon engagement, subject to appropriate confidentiality agreements. The reference material provided is not considered to be the sole source of information available and the consultant is encouraged to expand as appropriate to meet the objectives of this scope of work.

Local Government References:

LGA	Local Planning Strategy	Strategic Community Plan	Corporate Business Plan	Long Term Financial Plan
Serpentine Jarrahdale	LPS	SCP	CBP	LTFP
Murray		SCP	CBP	LTFP
Mandurah	LPS	SCP	CBP	LTFP
Waroona	LPS	SCP	CBP	LTFP
Boddington	LPS	SCP	CBP	LTFP

Please note this is a non-exhaustive link to local government references, other documentation such as Local Planning Schemes, Structure Plans, Community Infrastructure and Public Open Space Strategies, Community Infrastructure Implementation Plans and Economic Development Plans are also publically available on the relevant websites.

2.4 Consultation and Liaison

The following liaison is included in the scope of works:

- Liaison with the Principal through regular meetings, discussion, and correspondence
- Consultation with the stakeholders identified in each Work Package as a minimum. Key stakeholders that have agreed to technical advice, feedback and provide reference material for this initiative include:
 - Department of Water and Environmental Regulation
 - Water Corporation
 - Harvey Water
 - Department of Planning, Lands and Heritage
 - Peel Development Commission
 - Department of Primary Industries and Regional Development
 - Department of Biodiversity, Conservation and Attractions
 - Shire of Serpentine Jarrahdale
 - Shire of Murray
 - City of Mandurah

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- Shire of Waroona
- Shire of Boddington
- Peel-Harvey Catchment Council

The Principal will provide contact details and assist with liaising with these stakeholders. It is critical that the stakeholders are consulted on scenarios, methodology and assumptions for the Work Packages as identified, to ensure that the findings and key deliverables are defensible.

2.5 Timing of Services

The Consultant shall provide with their Response a detailed Works Breakdown Schedule including start dates, finish dates, milestones and Response path for the project deliverables for the Work Packages.

Indicative Project schedule / List of activities / Milestones	Date (indicative only)
Contract (if any) awarded	19/4/22
Inception meeting with Principal	TBA
Submit detailed project plan	"
Progress report 1 – Literature and data research	"
Internal comments on progress report	"
Progress report 2 – Summary of findings and proposed report structure	"
Internal comments on progress report	"
Draft Report	"
Internal comments on progress report	"
Final Report	12/12/22

2.6 Project Management and Reporting

The Consultant shall provide with their Response a detailed Works Breakdown Schedule (WBS), outlining the various project management tasks, meeting dates with the Principal's Representative and the costs associated. It is envisaged that as a minimum one meeting will be required with the Principal's Representative every month and fortnightly progress reports provided by email.