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**MRS AMENDMENT 1188/57 – WELLARD URBAN PRECINCT (EAST)**

**WAPC RESPONSE TO EPA  
ON ENVIRONMENTAL SUBMISSIONS**

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**Submission:** 1

**Submitted by:** Department of Mines & Petroleum

**Summary of Submission:**

COMMENT

The Department of Mines and Petroleum (DMP) raise no objections to the proposed amendment.

The DMP notes that the underlying clayey silt and high water table may result in the site being unsuitable for residential development, due to flooding and issues with liquid waste disposal and subsidence.

**Planning Comment:**

The Department of Water (DoW), the agency responsible for flooding matters, has not raised any objections to the proposed amendment.

The proponent advises that Hydrological investigations have identified that some areas of the site could be subject to waterlogging or inundation. However, appropriate management of this issue will be addressed in the District Water Management Strategy (DWMS), which is required to be finalised prior to the transfer of the site to the Urban zone.

The DWMS is required to be consistent with *Planning Bulletin 92: Urban Water Management* and *Better Urban Water Management*, and is to address the protection of infrastructure and assets from high water tables under peak groundwater level conditions. A Local Water Management Strategy (LWMS) will be prepared at the Local Structure Plan (LSP) stage and will require approval by DoW and City of Kwinana, prior to the LSP being approved. Urban Water Management Plans (UWMP) will be required at the subdivision stage.

As the development will be connected to reticulated sewerage, disposal of liquid waste will not occur on site and is not considered an issue.

**Determination:**

Submission noted.

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**Submission:** 3

**Submitted by:** Department of Water

**Summary of Submission:**

COMMENT

The DoW raises no objections to the proposed amendment. The DoW advises that significant water planning has been undertaken in this locality, through the Jandakot Drainage and Water Management Plan (DWMP) and to specifically address Bollard Bulrush Swamp, water modelling was undertaken in the 2010.

**Planning Comment:**

Comment noted.

**Determination:**

Submission noted.

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**Submission:** 11

**Submitted by:** Kelli McCreery (Interested Resident)

**Summary of Submission:**

OBJECTION

The vegetation survey has not been conducted in accordance with EPA Guidance Statement No. 51: *Assessment of Environmental Factors: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* and should be redone.

**Planning Comment:**

The proponent advises that the site consists of land that has been cleared and consistently grazed since at least the 1950s. Given this history, the Environmental Review (ER) concluded for this site states that it is very unlikely that the subject site supports flora of conservation significance or provides the appropriate habitat for conservation significant flora and that, as such, the potential for Threatened, Declared Rare or Priority Flora is low. Notwithstanding this, areas of the site that contain remnant vegetation are to be retained and any Threatened, Declared Rare or Priority Flora occur within the remnant vegetation will be retained and preserved.

**Determination:**

Submission noted.

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**Submission:** 14

**Submitted by:** Robyn Pickering (Interested Resident)

**Summary of Submission:**

OBJECTION

1. Bollard Bulrush Swamp is identified within the *Environment Protection (Swan Coastal Plain Lakes) Policy, 1992* (EPP). Given this, development of this wetland is not supported. The wetland should be rehabilitated.
2. Bollard Bulrush Swamp should be reserved as Parks and Recreation and included in the Beeliar Regional Park.
3. The boundaries of the wetland should ensure maximum protection for the wetland with additional buffers for access and firebreaks.

**Planning Comment:**

1. The proponent advises that the *Environment Protection (Swan Coastal Plain Lakes) Policy 1992* identified a list of wetlands for conservation based primarily on hydrology, rather than environmental value.

The ER states that the wetland boundary assessment for this development was based on the Department of Parks and Wildlife (DPaW) *Geomorphic Wetlands Swan Coastal Plain* database. The ER states that the mapped boundaries of the *Geomorphic Wetlands Swan Coastal Plain* dataset do not correspond with the mapped EPP lake boundary. Wetland boundaries for this amendment have been assessed primarily based on *Geomorphic Wetlands Swan Coastal Plain* database boundaries.

2. The proposed MRS amendment does not address the reservation of the wetland area. The reservation of this area is a separate matter to the proposed amendment. The wetland may be reserved as Parks and Recreation in the future as part of a separate amendment.
3. The ER proposes a buffer of 50 m between the wetland and development based on WAPC draft *Guideline for the Determination of Wetland Buffer Requirements*), which recommends a 50 m buffer. Buffer requirements may vary depending on the threatening processes. The ER concluded that A buffer distance of 50 m was considered as appropriate to adequately protect the wetland function area and wetland habitat from further weed infestation and from inappropriate recreational uses. This 50 m buffer is considered adequate to allow protection of the wetland, as well as for access and firebreaks.

Wetland Management Plans will address land uses and design of the buffer as well as management within the wetland. This will assist in ensuring the buffer is effective by:

- addressing control of access through appropriate pathways, signage and fencing;
- ensuring that land uses (including rehabilitation) within the buffer effectively minimise impacts; and
- designating appropriate firebreaks within the buffer zone.

**Determination:**

Submission dismissed.

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**Submission:**

15

**Submitted by:**

Wetlands Conservation Society Inc

**Summary of Submission:**

**OBJECTION**

1. Development should not occur within the EPP wetlands boundary because of risks from:

- a) acid sulphate soils
  - b) waterlogging
  - c) flooding
  - d) Insect pests
  - e) bush fires
2. The entire EPP wetland should be conserved.
  3. The wetland is an important link in the eastern chain of the Beeliar Wetlands and is important for wildlife migration.
  4. Adequate (50 m) buffers for access and fire breaks are required.
  5. Bollard Bulrush Swamp should be reserved as Parks and Recreation and included in the Beeliar Regional Park.

**Planning Comment:**

- 1(a) ASS are managed through the planning process, as outlined in *Acid Sulphate Soils Planning Guidelines*. This process requires consideration of ASS throughout the planning process. Acid Sulphate Soils will be managed in a manner consistent with the *Acid Sulphate Soils Planning Guidelines*). This process requires that the risk of ASS is assessed at the LSP stage. If ASS is identified, then additional investigations, and management plans are prepared as a condition of subdivision. It is considered that the issue of ASS can be managed through this process.
- 1(b) Water management issues (including waterlogging) are addressed through the planning process through the Better Urban Water Management process, as outlined in *Planning Bulletin 92: Urban Water Management*. This process requires that issues of waterlogging are addressed at a number of stages in the planning process, starting with the preparation of a District Water Management Strategy at the MRS rezoning stage. As planning progresses, Local Water Management Strategies and Urban Water Management Plans are undertaken. These documents are reviewed and approved by DoW and local government to ensure that design outcomes are satisfactory.
- 1(c) DoW, the agency responsible for flooding matters, has not raised any objections to the development. The proponent advises that the ER indicates that the development will result in less than 50 mm change in flood levels in Bollard Bulrush Swamp in events up to and including the 1 in 100-year Average Return Interval event (i.e. the largest event anticipated to occur on average in a 100 year period).
- 1(d) Nuisance insects (i.e. mosquitoes and midges) are common issues for development in the Perth Metropolitan area, their management is understood and effective measures established for their control. The management of such nuisance insects is routinely addressed through the development of Midge and Mosquito Management Plans at the Local Structure Plan or Subdivision stage.
- 1(e) The planning process addresses bushfire management through *Planning Guidelines: Planning for Bush Fire Protection*. This process will require the preparation of a Bush Fire Hazard Assessment as a requirement to be addressed prior to the transfer of the site the Urban zone. As stated in the advertised *Amendment Report*.

This process requires that fire management is addressed at the local planning scheme or structure plan stage, and subdivision stage, through preparation of fire management plans and their approval by local government and/or Department of Fire and

Emergency Services (DFES). This process will ensure that the development addresses fire risks and setbacks within the development and its' buffers.

2. The proponent states that the portion of the EPP wetland proposed for rezoning has been cleared and is currently utilised for grazing. These areas are considered to provide limited or no habitat value for fauna species. Habitat value is considered to be limited to the uncleared areas of *Melaleuca* dampland, which will not be impacted by development.

Given the habitat values of the site will be retained, the amendment is considered unlikely to impact upon the use of the site by fauna or its' value as a linkage within the Beeliam Wetlands chain.

3. As portions of the site with habitat value are to be retained, the amendment is considered unlikely to impact upon the use of the site by fauna or its' value as a linkage within the Beeliam Wetlands chain. The Peel Main Drain will remain as a linkage for species utilising the area.
4. Refer to response to Submission 11, point 3.
5. Refer to response to Submission 11, point 2.

**Determination:**

Submission dismissed.

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**Submission:** 16

**Submitted by:** Beeliam Regional Park Community Advisory Committee

**Summary of Submission:**

**OBJECTION**

1. The boundary for the proposed amendment is based on cadastral boundaries and current land condition. It ignores ecological and hydrological boundaries and the EPP boundary. Development should not intrude within the EPP boundary.
2. The area proposed for development is subject to waterlogging. If the wetland is rezoned, fill will be required bringing weeds and possibly dieback.
3. Acid sulphate soils are a risk for development, and may cause acidification of groundwater.
4. The central wetland should be reserved as Parks and Recreation.

**Planning Comment:**

1. Refer to response to Submission 14, point 1.
2. Refer to Submission 15, point 1b above for a response to the issue of waterlogging.

- The risk of weeds and dieback infestation depends on the source of the fill utilised. This risk can be managed through the use of clean fill, tested for dieback. Given that fill will not be placed within the wetland, this risk is considered to be manageable. Furthermore, a Construction Environmental Management Plan will be prepared at the subdivision stage that will address a number of construction related issues.

3. Refer to Submission 15, point 1a above.

4. Refer to Submission 14, point 2 above.

**Determination:**

Submission dismissed.

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**Submission:** 20

**Submitted by:** Department of Parks and Wildlife

**Summary of Submission:**

COMMENT

1. Reference to the boundary of the Conservation Category portion of Bollard Bulrush Swamp should be updated to reflect the revised 2013 mapping.
2. The proposed Concept Structure Plan design is not supported. The development should ensure protection of the Conservation and Resource Enhancement Management Category sections of Bollard Bulrush Swamp. These areas should be included in the wetland function areas for preservation. The development of the resource enhancement wetland area will significantly increase the impact of the proposal due to a range of impacts.
3. The excluded section of the EPP wetland should be conserved as it provides habitat for wetland species including conservation significant waterbirds and quenda (southern brown bandicoot).
4. Detailed management conditions should be applied to this proposal, if approved, to ensure that development does not negatively impact the conservation values of Bollard Bulrush Swamp.
5. The vegetation surveys do not meet the requirements of a Level 2 Survey. Targeted flora surveys for declared rare and priority flora known to occur in wetland habitats in the local area be undertaken in areas proposed for development. A supplementary survey may be required to ensure that all species present are recorded.
6. The wetland buffer should be rehabilitated. The proponent should commit to fencing the outer edge of the minimum 50 m buffer and ensuring a hard edge between the wetland buffer and development. Access to the wetland should be limited to paths on the outer perimeter of the wetland to avoid impacts due to weeds, disease, antisocial behaviour, fire risk and disturbance of fauna habitat. Adequate provision should be made to accommodate stormwater infrastructure outside the Conservation and Resource Enhancement management category wetlands and their buffers.

7. The Conservation Category Wetland at Bollard Bulrush Swamp is almost 76 ha, and is a substantial area of habitat in the Metropolitan area. The habitat values of Bollard Bulrush Swamp should be reassessed, taking into consideration the habitat requirements of the native fauna recorded and their mobility in the landscape, the value of Bollard Bulrush Swamp as a transitory site for mobile fauna and the potential for improving habitat connectivity for less mobile fauna.
  - a) The habitat value of the Melaleuca dampland has been underestimated. The site may contain quite high numbers of Quenda (Priority 5 species).
  - b) The site should not be considered isolated from other habitat and wetlands. The vegetated portion of the site has regional linkages to Bush Forever sites and nearby reserves that would enable more mobile species to use the area. The Peel Main Drain is not a significant barrier to birds, frogs and many other fauna.
8. Bollard Bulrush Swamp is likely to be inundated more frequently than indicated by the ER because:
  - a) The groundwater monitoring undertaken to support the Amendment was undertaken in very dry years, and consequently underestimates the extent of inundation experienced on the site;
  - b) The historical aerial photographs were predominantly not taken at times of year when the wetland would be expected to be inundated; and
  - c) The DoW's Jandakot Drainage and Water Management Plan (JDWMP) states that the wetland is likely to have events with an average return interval greater than five years.
9. Surface water data should be presented as a technical appendix to the report.
10. The ER (Water Balance section) indicates that there will be a 252% increase in recharge as a result of the development. This is a significant change in water balance and may impact upon the hydrology of the Swamp. The impact of this in terms of extent and duration of inundation.
11. The proponent should commit to the rehabilitation of the wetland conservation area.
12. The proponent should commit to the development and implementation of a Wetland Management Plan (WMP), including management and mitigation impacts to conservation significant fauna to the satisfaction of DPaW and City of Kwinana (CoK).
13. Urban development is likely to increase nutrient loadings to the wetland unless there is a commitment to a program to educate residents about minimising the use of fertiliser.
14. The developer should commit to development of a surface water and groundwater monitoring program for Bollard Bulrush Swamp, including trigger levels and contingency measures to ensure that the predevelopment hydrology of the wetland is maintained. The program should occur for two years prior to development. Monitoring results should be provided to the Office of the EPA (OEPA) and DPaW.
15. Water monitoring should continue for a minimum of three years post development. Monitoring results should be provided to the OEPA and DPaW.



16. The developer should commit to development of a construction management plan to the satisfaction of City of Kwinana and DPaW.
17. A cat prohibited area should be applied to the development exclude cats to prevent impacts to fauna.
18. DPaW should be consulted on the DWMS, LWMS and UWMP with potential regard to impacts on Bollard Bulrush Swamp.

**Planning Comment:**

1. The proponent advises that in 2012, a site assessment was undertaken to re-define the boundary of the wetland based on the extent and condition of existing vegetation. A 50m buffer has been established from the boundary of the CCW to protect the wetland area and wetland habitat. This approach is consistent with the draft *Guideline for the Determination of Wetland Buffer Requirements*.

The ER states that the wetland areas to be developed are in a degraded to completely degraded condition. WMP's will be prepared at the subdivision stage outlining specific strategies for the management of Bollard Bulrush Swamp and is considered unlikely to significantly impact upon wetland values.

2. The proponent states that area of Resource Enhancement Category Wetland (REW) that is to be developed is in a degraded to completely degraded condition and is considered to have limited fauna habitat value. The REW area has been excluded from the wetland function area as it was not found to support wetland values in terms of vegetation and habitat. The management of weeds and feral animals can be addressed through WMPs
3. Refer to response to Submission 15, Issue 2 above.
4. Noted.
5. Refer to response to Submission 11 above.
6. The proponent advises that rehabilitation works will be implemented within the wetland area and associated buffer. Land uses within the wetland buffer will be addressed as part of the WMPs.
7. The ER states that the site consists of land that has been cleared and consistently grazed since at least the 1950s. Apart from the remnant vegetation identified in the ER, it is considered that the site is in Degraded or Completely Degraded condition, and provides limited or no habitat value for fauna species. The areas of the site that contain remnant vegetation have habitat value will be retained.

The value of the wetland as providing habitat for Quenda has been identified and acknowledged. The development will allow for increased control of feral animals and weeds and, in combination with revegetation, will encourage the recovery of fauna habitat values of the wetland. Revegetation will focus on creating appropriate habitat for conservation significant species, including Quenda.

The extent of regional linkages to the remnant wetland habitat primarily relate to mobile fauna, such as birds, that can cross the areas of limited habitat value that currently exist surrounding this habitat. By retaining and enhancing remnant

vegetation, the habitat of species that utilise these linkages will be retained. The Peel Main Drain will also remain as a linkage for species utilising the area.

8. The frequency of inundation of Bollard Bulrush Swamp will be further addressed in the DWMS through assessment of work undertaken by DoW and monitoring results. A draft DWMS has been assessed by the DoW, and will be required to be finalised as a conditions to transfer the site to the Urban zone in future.
9. The proponent advises that surface water data will be provided in the DWMS and subsequent water management documents as required by *Planning Bulletin 92: Urban Water Management*.
10. Changes in the hydrological regime are likely to be partially mitigated by the presence of the Peel Main Drain, which may remove excess recharge from the wetland. A detailed water balance and assessment of impacts of development on the wetland hydrological regime will be provided in the DWMS and subsequent water management documents as required by *Planning Bulletin 92*.
11. The *Jandakot Structure Plan* indicates that wetland portions of Bollard Bulrush Swamp are intended to be retained as open space. The ultimate agency responsible for the wetland will be determined in future planning stages, but any commitments to rehabilitation and management of the wetland will be made between the proponent and future responsible agency/agencies as part of WMP's.
12. The proponent is committed to the development of WMPs at the subdivision stage that will address management of conservation significant fauna and associated habitat. The WMPs will be prepared in consultation with relevant agencies, including DPaW and CoK.
13. The proponent advises that nutrient loadings will be addressed in the DWMS and subsequent water management documents as required by *Planning Bulletin 92*. At the LSP stage, the LWMS will outline community education programs, including fertiliser use. The LWMS will be reviewed by relevant agencies, including DoW and CoK, prior to implementation.
14. It has been advised that the DWMS will provide an opportunity for review of the data by DoW and CoK to determine its' adequacy. If DoW and CoK consider that additional data is required, this can be provided in the LWMS and triggers and contingencies can be developed through this process. Copies of the DWMS and associated monitoring results will be provided to other agencies if required.
15. Requirements for post-development monitoring and reporting will be addressed through the DWMS process. Monitoring results will be provided to OEPA and DPaW.
16. The developer is committed to development of a construction management plan in consultation with CoK and DPaW.
17. The proponent advises that the *Cat Act 2011* will come into effect in November 2013 and will require owners to exercise more control in the movement of cats and increase sterilisation rates. This Act will reduce the potential impact on wildlife. This will reduce the need for other control measures such as cat prohibited areas. The need for a 'cat prohibited area' can be further assessed at the LSP stage with input from DPaW and CoK.

18. The proponent advises that they will consult with DPaW during preparation of the DWMS, LWMS and UWMP.

**Determination:**

Submission noted.

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**Submission:** 21

**Submitted by:** Wildflower Society of WA

**Summary of Submission:**

**OBJECTION**

1. The following factors have not been adequately addressed:

- a. wetland environmental values as a whole
- b. wetland buffer
- c. ecological linkages
- d. ASS
- e. hydrological regimes.

2. Only a portion of the wetland has been assessed. The entire wetland should be assessed so an adequate assessment of the proposed amendment can be made.

3. The wetland buffer has not been properly assessed. The proposed 50 m buffer is within the wetland boundary.

4. Hydric soils analysis should be undertaken for the whole of the site to assess the location of the buffer.

5. The ecological linkage value of the wetland has not been addressed.

6. The fauna study does not address the presence of significant or threatened species in the vicinity.

7. The hydrological regimes have not been adequately considered or addressed. The development could alter wetland hydrology due to:

- a. stormwater drainage
- b. importation of fill
- c. the 250% increase in recharge shown in the water balance
- d. lack of contingency measures in case of alteration of groundwater levels due to irrigation, importation of fill and subsoil drainage.

8. Developments near wetlands accelerate the deterioration of the wetland due to:

- a. uncontrolled access affecting vegetation condition
- b. weed dominance
- c. predation of fauna by feral animals including cats and dogs
- d. nutrient inputs from stormwater.

If these impacts cannot be adequately mitigated against, then the amendment should not proceed.

9. The development does not adequately assess and consider the significance of ASS.

**Planning Comment:**

1. a) The ER has assessed the values of the wetland in terms of hydrology, vegetation, fauna and habitat values and a visual assessment provided. This assessment has identified the sections of the wetland to be retained for development. These values have been maintained by retaining the wetland function zone and allowance for a buffer.  
  
b) The proponent advises that the process of identifying the wetland buffer was undertaken in consultation with DPaW and CoK. The buffers are considered adequate to protect the wetland and comply with distance requirements outlined in the *Guideline for the Determination of Wetland Buffer Requirements*. The ER concluded that a buffer distance of 50m was considered appropriate to adequately protect the wetland function area and wetland habitat from further weed infestation and from inappropriate recreational uses. This 50 m buffer is considered adequate to allow protection of the wetland, as well as for access and firebreaks. WMP's will address land uses and design of the buffer as well as management within the wetland.  
  
c) Refer to the response to Submission 20, Point 7 above.  
  
d) Refer to the response to Submission 15, Point 1a above.  
  
e) The ER provides information to establish the hydrological regime and changes in water levels at Bollard Bulrush Swamp due to extreme storm events. The hydrological regime will be assessed in greater detail through the DWMS and subsequent water management documents.
2. The western portion of Bollard Bulrush Swamp was not included in the assessment as it is not part of the amendment area. The EPA determined that the MRS amendment for the western area of Bollard Bulrush Swamp did not require a formal environmental assessment. The western portion of the wetland is physically separated from the eastern portion by the Peel Main Drain. The proponent advises that the impacts of the development are considered to be limited to the eastern portion of the wetland based on separation distances and the barrier formed by the Drain to the movement of feral animals and hydrological changes.
3. The ER states that a 50 m buffer to the wetland boundary is proposed. The process of identifying the wetland buffer was undertaken in consultation with DPaW and CoK. The buffer is considered to protect the wetland and comply with distance requirements outlined in the draft *Guideline for the Determination of Wetland Buffer Requirements*.
4. The proponent states that the draft *Guideline for the Determination of Wetland Buffer Requirements* does not require an assessment of hydric soils to determine wetland

boundaries. Hydric soils may be present in areas that have been historically wetlands but retain few wetland values due to factors including clearing and drainage.

The proponent advises that a hydric soils analysis at groundwater bore locations show that half of the locations display hydric properties. Given that most of the site is classified as a Multiple Use Category wetland, the presence of hydric soils is expected. However, while hydric soil properties demonstrate that an area is (or has been) a wetland, they do not contribute to an assessment of its management category.

5. Refer to the response to Submission 20, Point 7 above.
6. The presence of significant and threatened fauna in the vicinity of the project area is addressed in the ER. This report addresses fauna species based on their conservation status, distribution and preferred habitats, relevance to the site and likelihood of occurrence.
7. The ER provides information to establish the potential impacts of the hydrological regime and changes in water levels at Bollard Bulrush Swamp due to extreme storm events. Changes to the hydrological regime will be assessed in greater detail through the DWMS and subsequent water management documents. Approval of the DWMS by DoW will be required prior to the transfer of the site to the Urban zone. It is considered that the hydrological regimes of the site can be adequately investigated and appropriately managed through this process.
8. The proponent advises that uncontrolled access, weeds, feral animals and nutrient inputs are common management issues for wetlands in urban areas. These issues are routinely managed through the development and implementation of WMP's and urban water management. Controlling access to humans and animals through the use of paths and fencing, weed control programs and implementation of appropriate best management practices for stormwater can effectively mitigate against these practices.

WMP's will be developed as a condition of subdivision in consultation with CoK and DPaW. These plans will be approved by CoK and DPaW prior to the condition being cleared.

Urban water management requirements (DWMS, LWMS and UWMP) will be developed in consultation with CoK and DoW, consistent with *Planning Bulletin 92*. These documents will also require approval by the agencies prior to development being allowed to progress to the next stage. These measures will be approved by the relevant agencies and are considered to effectively mitigate potential impacts due to uncontrolled access, weeds, feral animals and nutrient inputs.

9. Refer to the response to Submission 15, Point 1a above.

**Determination:**

Submission dismissed.

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**Submission:** 22

**Submitted by:** City of Kwinana

**Summary of Submission:**

1. The City supports the proposed Urban Deferred zoning.
2. A DWMS should be prepared prior to the Rural zoning being amended because of potential issues associated with:
  - a. ASS
  - b. separation to groundwater
  - c. groundwater quality
  - d. presence of a conservation category wetland
  - e. the location within the Peel-Harvey catchment and a floodway
  - f. lack of information regarding availability of groundwater for irrigation and suitability of groundwater for irrigation.
3. The DWMS should demonstrate that the water quality targets in the can be achieved.
4. The *JDWMP* does not appear to support new urban development in the Bollard Bulrush Swamp area.
5. The ER should provide maximum historical recorded or modelled maximum groundwater levels should be provided in accordance with the *JDWMP*.
6. The proposed water monitoring regime is not consistent with the *JDWMP*, which states that post-development monitoring should be undertaken for at least five years.
7. Any future baseline monitoring should be undertaken for at least three years with a minimum of two winters of approximately average rainfall, consistent with the *JDWMP*.

**Planning Comment:**

1. Noted.
2. (a-f) The DoW is the agency responsible for flood management, has not raised any objection to the development. The proponent advises that the hydrological modelling undertaken indicates that flood levels at Bollard Bulrush Swamp will be altered by less than 50 mm as a consequence of the development.

A draft DWMS has been prepared to support the initiation and advertising of the amendment and was supported by the DoW. If the site is zoned Urban Deferred, the DWMS will be required to be finalised and approved by the DoW, prior to the transfer of the site to the Urban zone. Preparation of the DWMS with an LSP allows for provision of land for the purpose of drainage management in appropriate areas, including design of arterial drainage networks.

The proponent advises that the issues identified by CoK are considered manageable within the context of the development. ASS is well understood and can be managed, as is separation to groundwater (refer to response to Submission 15, Point 1). Standards and guidelines exist for water quality and quantity management in the Peel-Harvey catchment. Management of Conservation Category Wetlands from a

hydrological perspective is also managed through the *Better Urban Water Management* process.

It has been advised that groundwater availability and suitability for irrigation is a logistical issue as other sources of water can be utilised for irrigation. Innovative open space design can also be used to reduce irrigation demand.

It is considered that these issues can be effectively managed through the rezoning and LSP process, and are not considered to warrant the finalisation of a DWMS prior to zoning of this site Urban Deferred.

3. Noted. The DWMS will address this matter.
4. The JDWMP indicates that it does not support the development plan for Bollard Bulrush Swamp presented in the Eastern Redevelopment Intensification Concept due to concerns regarding flood levels at Bollard Bulrush Swamp.

As part of the ER, additional modelling was undertaken to assess Bollard Bulrush Swamp using the current proposed concept plan. This modelling was based on the JDWMP model and showed less than 50 mm of change in the maximum flood levels in the 1 in 10 and 1 in 100-year Average Return Interval events (i.e. the largest flood event expected to occur on average in 10 and 100 years respectively) as a result of the proposed development.

It is also noted that the DoW has not raised any objections to the proposed amendment (and future development) during the submissions process.

5. The proponent advises that maximum groundwater levels are predominantly used in the design of drainage and subsoil groundwater control systems. The presence of wetland species is predominantly driven by groundwater and surface water levels that occur more frequently, such as the annual average maximum groundwater levels. Maximum groundwater levels will be discussed in the DWMS and used to inform design of the development.
6. Refer to response to Submission 20, Point 15.
7. Refer to response to Submission 20, Point 16.

**Determination:**

Submission noted.

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**Submission:** 24  
**Submitted by:** Peel Harvey Catchment Council

**Summary of Submission:**

**OBJECTION**

1. The ER does not demonstrate that the objectives of the *Peel-Harvey Water Quality Improvement Plan (WQIP)* can be met on site. The groundwater quality at Wellard East does not meet the WQIP target of 30-50% reduction in phosphorus loads as proposed in the ER. The ER states there will be no change from predevelopment levels.

Meeting the WQIP target will require an improvement in water quality to be achieved. Any LWMS and UWMP documents should demonstrate that the development can achieve a 38% reduction in phosphorus loads leaving the site, consistent with the WQIP through modelling and use of innovative water sensitive urban design. Post development water quality monitoring will be required.

2. The assessment of the current relationship between groundwater on the site and flows in the Peel Main Drain is inadequate. Appropriate studies and modelling of groundwater and nutrient movement and dynamics on site should occur prior to the preparation of a LWMS to review the adequacy of the proposed wetland buffer and development setbacks.
3. The site will require extensive use of fill to obtain suitable clearance from groundwater. Because of the high concentrations of nitrogen and phosphorus in groundwater on the site, fill should be required to have a minimum Phosphorus Retention Index (PRI) of 15 to allow for phosphorus absorption to occur on the site.
4. Bollard Bulrush Swamp should be reserved as Parks and Recreation under the MRS (as part of this amendment) rather than ceding as part of the process of subdivision of land.
5. The boundary of the proposed amendment has influenced the setting of the wetland boundary and buffer, and excludes portions of the freehold lots that contain portions of Bollard Bulrush Swamp.
6. A proactive framework is required to manage the ceding/reservation and land management to protect Bollard Bulrush Swamp.
7. Wetland values need to be assessed in the context of the entire Bollard Bulrush Swamp.
8. All of the Conservation and Resource Enhancement Category Wetlands on the site should be retained. These areas are seasonally inundated and function as wetlands. These areas should be included within the functional boundary. The review of the functional boundary should consider the potential capacity of the wetland area and buffer to retain stormwater to achieve water quality improvement objectives for the Peel-Harvey System.
9. The wetland buffer is inadequate and needs to be reviewed, given the following:
  - the revised functional boundary
  - the *draft Guideline for Determination of Wetland Buffer Requirements* that does not recommend a 50 m buffer for all wetlands
  - setbacks to prevent nuisance midges and mosquitoes
  - current development trends that place recreational facilities in wetland buffers
10. The WMP should be prepared at the LSP stage rather than the subdivision stage to ensure that a single coordinated WMP is prepared. If it occurs at the subdivision stage, developing a single coordinated WMP is not possible. A Wetland Management Implementation Report should then be prepared and implemented at the subdivision stage based on the WMP. The WMP should be implemented by the developers.
11. The value of the wetland as an ecological linkage and consequently its regional significance has been underestimated. The linkage value should be assessed based on the South West Ecological Linkages Technical Report.



12. The fauna values of the site are not fully and properly represented. The wetland provided more than one microhabitat.
13. While this type of wetland has a naturally low native species diversity, the site currently supports a population of the conservation significant Quenda. Wetland management should aim to increase habitat for this species and reduce threats from feral animals.

**Planning Comment:**

1. The proponent advises that achieving water quality targets is a key objective of the DWMS and associated documents. The ways in which development targets will be met will be addressed in the DWMS. The DWMS will require approval by DoW prior to the transfer of the site to the Urban zone. The Peel Harvey Catchment Council will be consulted in the development of the DWMS.
2. It is noted that the DWMS and LWMS will address groundwater and nutrient movement on the site through:
  - review of groundwater quality and level monitoring data
  - assessment of nutrient retention ability of soils on the site
  - development of a conceptual model for nutrient movement on the site
  - design of groundwater management systems in the context of this information.
3. The proponent advises that the need for fill on the site is acknowledged. Requirements relating to fill will be addressed in the DWMS. Groundwater management will be detailed in the LWMS and UWMPs, including the use of fill and encouraging soil amendment in residential gardens.
4. Refer to response to Submission 14, Point 2 above.
5. The original draft boundary for the MRS amendment was revised based on the assessment of the wetland boundary and values. This revised boundary is presented in the current amendment which has been advised.
6. The development of a framework requires the determination and input of the agency (such as DPaW or CoK) to whom the land will be ceded. This agency is not anticipated to be identified until later in the development (possibly LSP stage). When this agency is determined, a framework for the ceding and management of land at Bollard Bulrush Swamp will be developed.
7. Refer to response to Submission 21, Point 2.
8. Refer to response to Submission 20, Point 2.

The proponent has advised that the potential capacity of the wetland to retain stormwater is addressed through the JDWMP and the modelling undertaken in the ER. Storage at Bollard Bulrush Swamp has been maintained and will continue to provide treatment for stormwater from areas to the north of the site.

9. Refer to response to Submission 14, Point 3 regarding the adequacy of the buffer.

The issue of nuisance midge and mosquitoes from wetlands can be managed through a mixture of 50 m separations and design measures to prevent insects being attracted to residential areas through use of screening vegetation and appropriate

lighting design. This issue will be addressed through the development of a Midge and Mosquito Management Plan at the subdivision stage, to be approved by CoK.

The placement of recreational facilities such as walkways in wetland buffers, where not detrimental to the wetland, may benefit future residents. These land uses will be appropriately managed and controlled, and are not anticipated to adversely impact on the wetland. Appropriate land uses for wetland buffers will be considered as part of the development of the WMP's. Details of landscaping and design interface solutions, such as protective fencing and creation of a hard edge to the agreed wetland area, will also be included in a WMP.

10. Provided that the management objectives and actions for wetland management are agreed, the stage at which the WMPs are developed should not impact upon the outcomes achieved. Management objectives and actions for wetland management are identified in the ER.
11. Refer to response to Submission 15, Point 3. The proponent advises that by retaining and enhancing the vegetation within the wetland and buffer, the linkage value of the site will be retained. It is not considered that additional investigations into the value of the linkage would significantly increase current knowledge or alter this outcome.
12. Refer to response to Submission 20, Point 7.
13. The ER has assessed the value of the wetland as providing habitat for Quenda and is acknowledged. The development will allow for increased control of feral animals and weeds and, in combination with revegetation, will encourage the recovery of fauna habitat values of the wetland. Revegetation will focus on creating appropriate habitat for conservation significant species, including Quenda.

**Determination:**

Submission dismissed.

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**Submission:** 25  
**Submitted by:** Urban Bushland Council WA Inc  
**Summary of Submission:**

**OBJECTION**

1. The following factors have not been adequately addressed:
  - a. wetland environmental values as a whole
  - b. wetland buffer
  - c. ecological linkages
  - d. ASS
  - e. hydrological regimes.
2. Only a portion of the wetland has been assessed. The entire wetland should be assessed so an adequate assessment of the proposed amendment can be made.
3. The wetland buffer has not been properly assessed. The proposed 50 m buffer is within the wetland boundary.

4. Hydric soils analysis should be undertaken for the whole of the site to assess the location of the buffer.
5. The ecological linkage value of the wetland has not been addressed.
6. The fauna study does not address the presence of significant or threatened species in the vicinity.
7. The hydrological regimes have not been adequately considered or addressed. The development could alter wetland hydrology due to:
  - a. stormwater drainage
  - b. importation of fill
  - c. the 250% increase in recharge shown in the water balance
  - d. lack of contingency measures in case of alteration of groundwater levels due to irrigation, importation of fill and subsoil drainage.
8. Developments near wetlands accelerate the deterioration of the wetland due to:
  - a. uncontrolled access affecting vegetation condition
  - b. weed dominance
  - c. predation of fauna by feral animals including cats and dogs
  - d. nutrient inputs from stormwater.

If these impacts cannot be adequately mitigated against, then the amendment should not proceed.

9. The development does not adequately assess and consider the significance of ASS.

**Planning Comment:**

1. a) The proponent advises that the ER has assessed the values of the wetland in terms of hydrology, vegetation, fauna and habitat values and a visual assessment provided. This assessment is considered adequate to identify the sections of the wetland to be retained for development. These values have been maintained by retaining the wetland function zone and allowance for a buffer.

b) The process of identifying the wetland buffer was undertaken in consultation with DPaW and CoK. The buffers are considered adequate to protect the wetland and comply with distance requirements outlined in the draft *Guideline for the Determination of Wetland Buffer Requirements*. Buffer requirements may vary depending on the threatening processes, however, it was concluded that a buffer distance of 50m was considered appropriate to adequately protect the wetland function area and wetland habitat from further weed infestation and from inappropriate recreational uses. This 50 m buffer is considered adequate to allow protection of the wetland, as well as for access and firebreaks.

WMP's will address land uses and design of the buffer as well as management within the wetland. This will assist ensuring the buffer is effective by:

- addressing control of access through appropriate pathways, signage and fencing

- ensuring that land uses (including rehabilitation) within the buffer effectively minimise impacts
- designating appropriate firebreaks within the buffer zone.

c) Refer to the response to Submission 20, Point 7 above.

d) Refer to the response to Submission 15, Point 1a above.

e) The ER provides information to establish the hydrological regime and changes in water levels at Bollard Bulrush Swamp due to extreme storm events. The hydrological regime will be assessed in greater detail through the DWMS and subsequent water management documents. The DWMS will be required to be finalised and approved by DoW, as a condition to transfer the lands to the Urban zone.

2. The proponent advises that the western portion of Bollard Bulrush Swamp was not included in the assessment as it is not part of the amendment area. The EPA considered the MRS amendment for the western side of Bollard Bulrush Swamp and did not formally assess it. The western portion of the wetland is physically separated from the eastern portion by the Peel Main Drain.

It has also been advised that the impacts of the development are considered to be limited to the eastern portion of the wetland based on separation distances and the barrier formed by the Peel Main Drain to the movement of feral animals and hydrological changes. An assessment of the western portion of the wetland was considered not required to assess the potential impacts of the proposed Amendment.

3. The ER provides for a 50 m buffer to the wetland boundary. The process of identifying the wetland buffer was undertaken in consultation with DPaW and CoK. The buffer is considered adequate to protect the wetland and comply with distance requirements outlined in the draft *Guideline for the Determination of Wetland Buffer Requirements*.
4. The draft *Guideline for the Determination of Wetland Buffer Requirements* does not require an assessment of hydric soils to determine wetland boundaries. The proponent advises that hydric soils may be present in areas that have been historically wetlands but retain few wetland values due to factors including clearing and drainage (such as the portions of Bollard Bulrush Swamp).

Hydric soils analysis of soil profiles at groundwater bore locations show that half of the locations display hydric properties. Given that most of the site is classified as a multiple use wetland, the presence of hydric soils is expected. However, while hydric soil properties demonstrate that an area is (or has been) a wetland, they do not contribute to an assessment of its management category.

5. Refer to the response to Submission 20, Point 7 above.

6. The presence of significant and threatened fauna area is addressed in a fauna survey which has been undertaken in the ER. This report addresses fauna species based on their conservation status, distribution and preferred habitats, relevance to the site and likelihood of occurrence.

7. The ER provides information to establish the potential impacts of the hydrological regime and changes in water levels at Bollard Bulrush Swamp due to extreme storm events. Approval of the DWMS by DoW will be required prior to the transfer of the site to the Urban zone, and it is considered that the hydrological regime of the site can be adequately investigated and appropriately managed through this process.
8. The proponent advises that uncontrolled access, weeds, feral animals and nutrient inputs are common management issues for wetlands in urban areas. These issues are routinely and successfully managed through the development and implementation of WMP's and urban water management. Controlling access to humans and animals through the use of paths and fencing, weed control programs and implementation of appropriate best management practices for stormwater can effectively mitigate against these practices.

WMP's will be developed as a condition of subdivision in consultation with CoK and DPaW. These plans will be approved by CoK and DPaW prior to the condition being cleared.

Urban water management requirements (including DWMS, LWMS and UWMP) will be developed in consultation with CoK and DoW, consistent with *Planning Bulletin 92*. These documents will also require approval by the relevant agencies prior to development being allowed to progress to the next stage.

These measures will be approved by the relevant agencies and are considered to effectively mitigate potential impacts due to uncontrolled access, weeds, feral animals and nutrient inputs.

9. Refer to the response to Submission 15, Point 1a above.

**Determination:**

Submission dismissed.

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