

# Local Standards under Airports (Environment Protection) Regulations 1997 – Technical Information

31 May 2024



Western  
Sydney  
Airport

Introduction  
and background

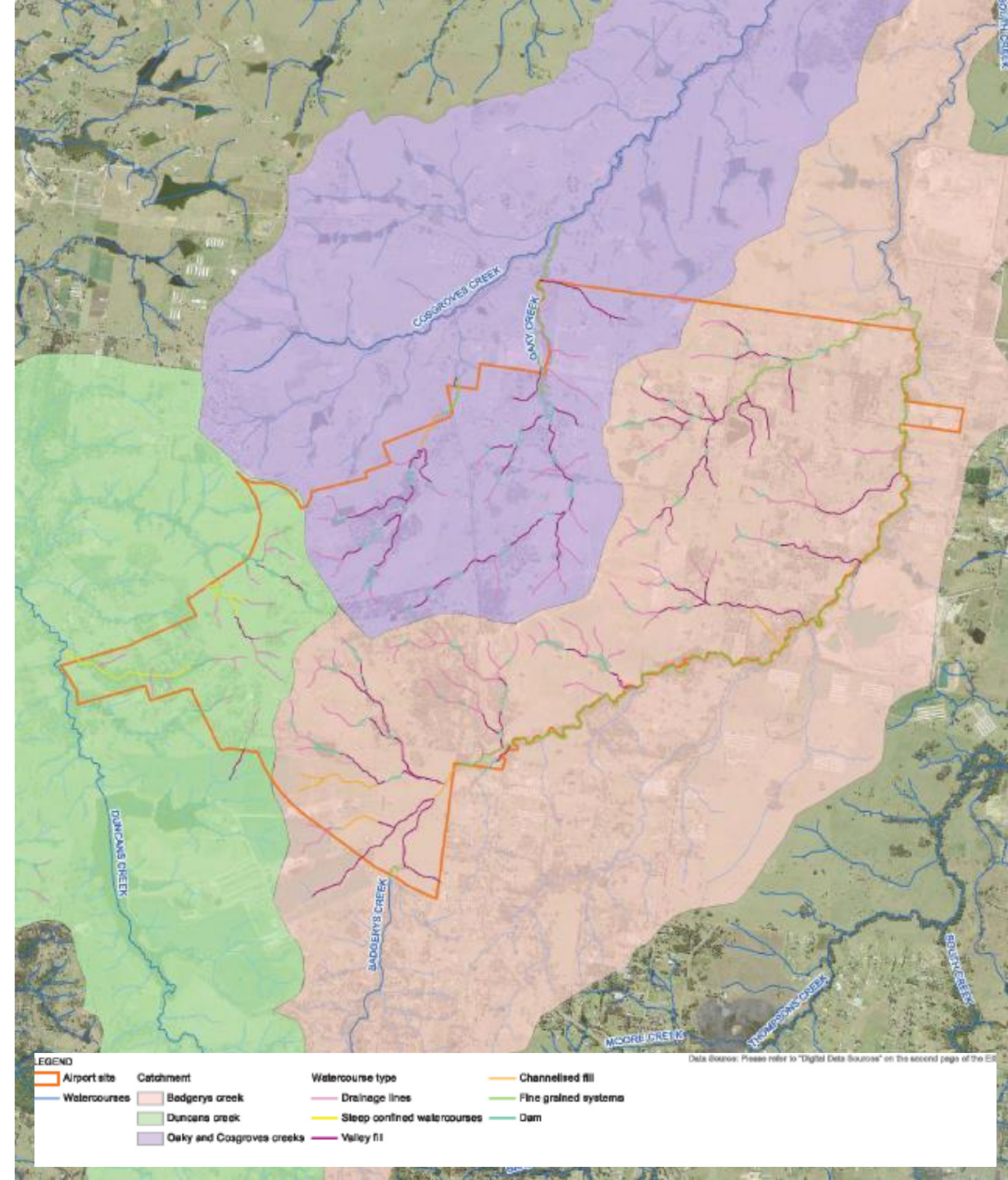
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The following sections outlines the background context relating to the need for Local Standards as determined by the WSA EIS (2016) upon which WSI was approved for construction and operation.

# WSI Location

- WSA is located across three catchments with the following creeks adjacent to the airport feeding into them:
  - Cosgrove Creek
  - Duncans Creek
  - Badgerys Creek

Catchments surrounding the WSA site as detailed in WSA EIS (2016)



# Introduction

- It is recognised that the pollution standards set out in the Schedules to the *Airports (Environment Protection) Regulations 1997 (AEPR)* may not be appropriate to certain airports, given climatic, topographical, geological, other local conditions or similar considerations.
- Water quality monitoring data shows that pre-construction surface and groundwater at the WSI site exceeded many of the AEPR and Australian and New Zealand Water Quality Guidelines 2018 (ANZG 2018) accepted limits due to site specific factors including those indicated above.
- The proposed site-specific local standards will reflect the pre-existing pre-construction water quality at the site
- The EIS 2016 acknowledged that the water management systems proposed for WSI both during construction and the operation of the airport will address likely pollution risks and would be expected to improve the water quality on site but pollutants will still exceed AEPR criteria due to the pre-existing poor water quality.
- Important to acknowledge that, despite likely on-site improvements to water quality through various WSI water quality management systems, there will continue to be substantial impacts on local water quality from up-stream and adjacent properties on State controlled land.
- If developed and approved, the local standards for water quality will be relevant to the operational phase of the airport expected in 2026.

# Western Sydney Airport Environmental Impact Statement 2016

- The WSI proposal to develop local standards to replace relevant accepted limits in Schedule 2 is supported by the Western Sydney Airport Environmental Impact Statement 2016 (EIS 2016).
- The EIS states that, despite the management measures proposed by WSI both during construction and operation of the airport resulting in improved water quality, the quality would still be unlikely to meet the accepted limits in the AEPR.
- While these management measures will appropriately address potential water quality issues related to the operation of the airport, it would be unreasonable and technically difficult to address the pre-existing level of contaminants that has resulted from diffuse pollutant sources caused local geological, topographical, climatic and historical land use factors.



## WESTERN SYDNEY AIRPORT

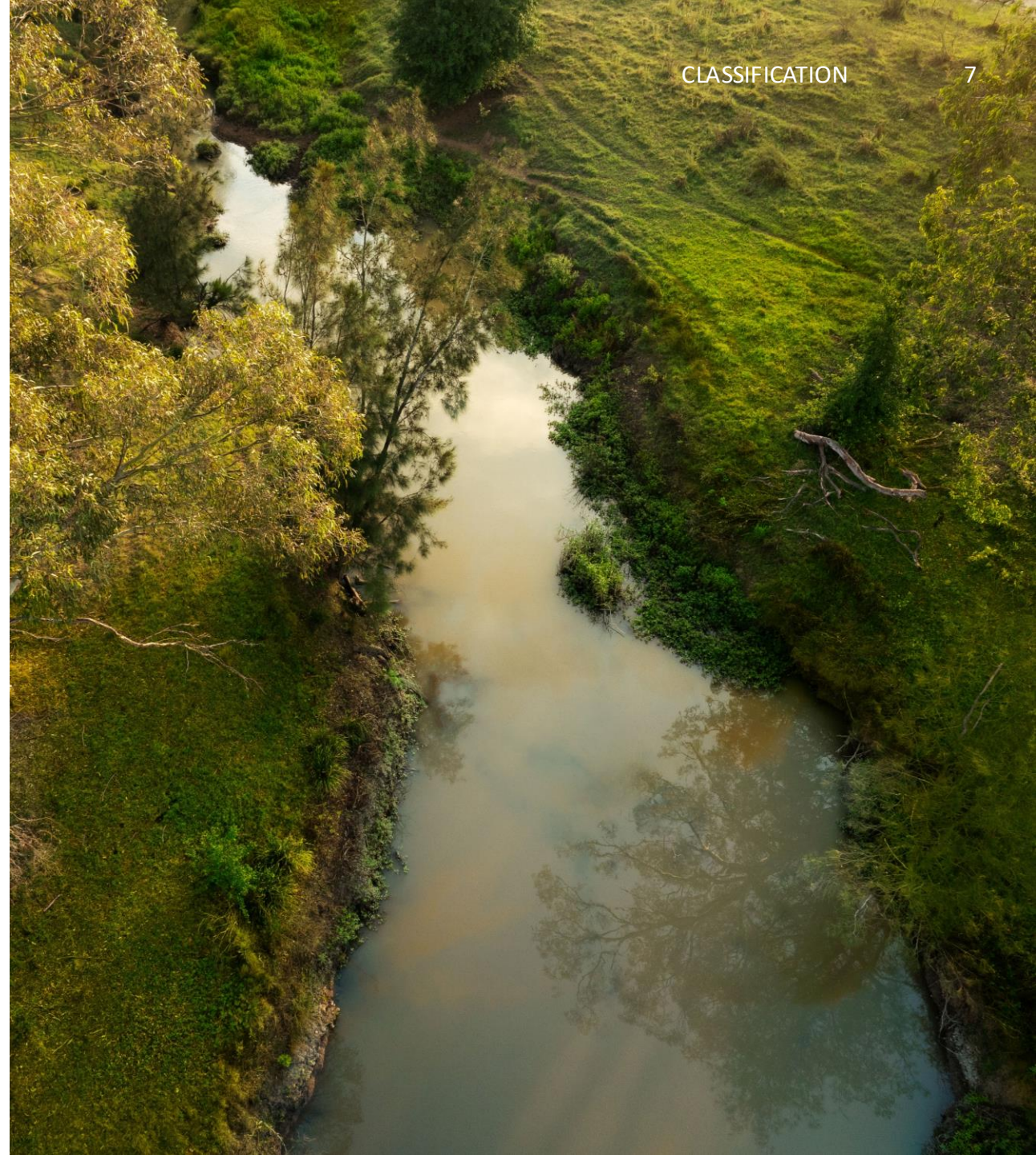


## ENVIRONMENTAL IMPACT STATEMENT

## VOLUME 2b STAGE 1 DEVELOPMENT

# Western Sydney Airport Environmental Impact Statement 2016

- The site-specific local standards are expected to reflect the pre-existing pre-construction water quality at the site
- The EIS states *'Because water quality at the airport site is already degraded and does not meet existing water quality criteria, it is unlikely that the proposed airport will be able to achieve water quality criteria outlined in the AEPR. To take into account these existing conditions, local standards for water quality will be developed under Part 5 of the AEPR, with due consideration to the ANZECC Guidelines. The development of local standards will be based on the results of baseline water quality monitoring, derived from a minimum of 24 months of data collected prior to the commencement of Main Construction Works'*



# Reasons for poor water quality at the WSI site

- The poor quality of water and the presence of analytes in excess of acceptable limits, under the AEPRs and ANZG, at the site and within the broader catchments are considered to reflect pre-existing (pre-construction) land use, particularly agricultural practices, and/or result from a combination of local geology, historical agricultural/horticultural land use and stormwater runoff from roads.
- The EIS Technical Paper 7 also found the groundwater contained high levels of salinity making it unsuitable for most practical uses. The source of this salinity is likely to be the local geology, in particular the marine lithology of the Wianamatta Group, of which the Bringelly Shale is the uppermost unit.
- The off-airport and/or catchment wide geological sources of these high levels of analytes makes achieving the accepted limits in the AEPR unreasonable.





# EIS 2016 Interim site-specific trigger levels

- The AEPRs do not provide any technical guidance on how a local standard should be derived.
- The approach used in the EIS for the development of interim site-specific trigger levels in accordance with the ANZECC Guidelines was therefore adopted to develop interim site-specific water quality criteria as part of assessment.
- It was expected that these interim site-specific water quality criteria would be reviewed following the completion of 24 months of water sampling. At that stage formal approval would be sought for final site-specific trigger levels in accordance with Part 5 of the AEPR.

- Despite the management measures, developed by WSI during construction and for the operation of the airport, resulting in overall improved water quality, the water quality would still be unlikely to meet the accepted limits in the AEPR.
- To take into account the existing site-specific conditions, local standards for water quality were anticipated to be developed under Part 5 of the AEPR, with due consideration to the ANZECC Guidelines.
- The development of local standards would be based on the results of baseline water quality monitoring, derived from a minimum of 24 months of data collected prior to the commencement of Main Construction Works.

# Consideration of the reasonableness for applying prescribed Local Standards

- WSI will improve water quality however we can't influence all aspects including those related to;
  - Geology
  - Climate
  - Geomorphology
  - External areas within the catchments
- The EIS 2016 also supports this stating that the water management systems proposed for WSI both during construction and the operation of the airport will address likely pollution risks and would be expected to improve the water quality on site but pollutants will still exceed AEPR criteria due to the pre-existing poor water quality.
- Therefore, it is unreasonable to apply all the existing standards under Schedule 2 of the AEPRs, as WSI is unable to alter and/or mitigate the abovementioned considerations specific to the local geography in which WSIA is located.

WSI location specific climate,  
topographical and geological  
conditions

02

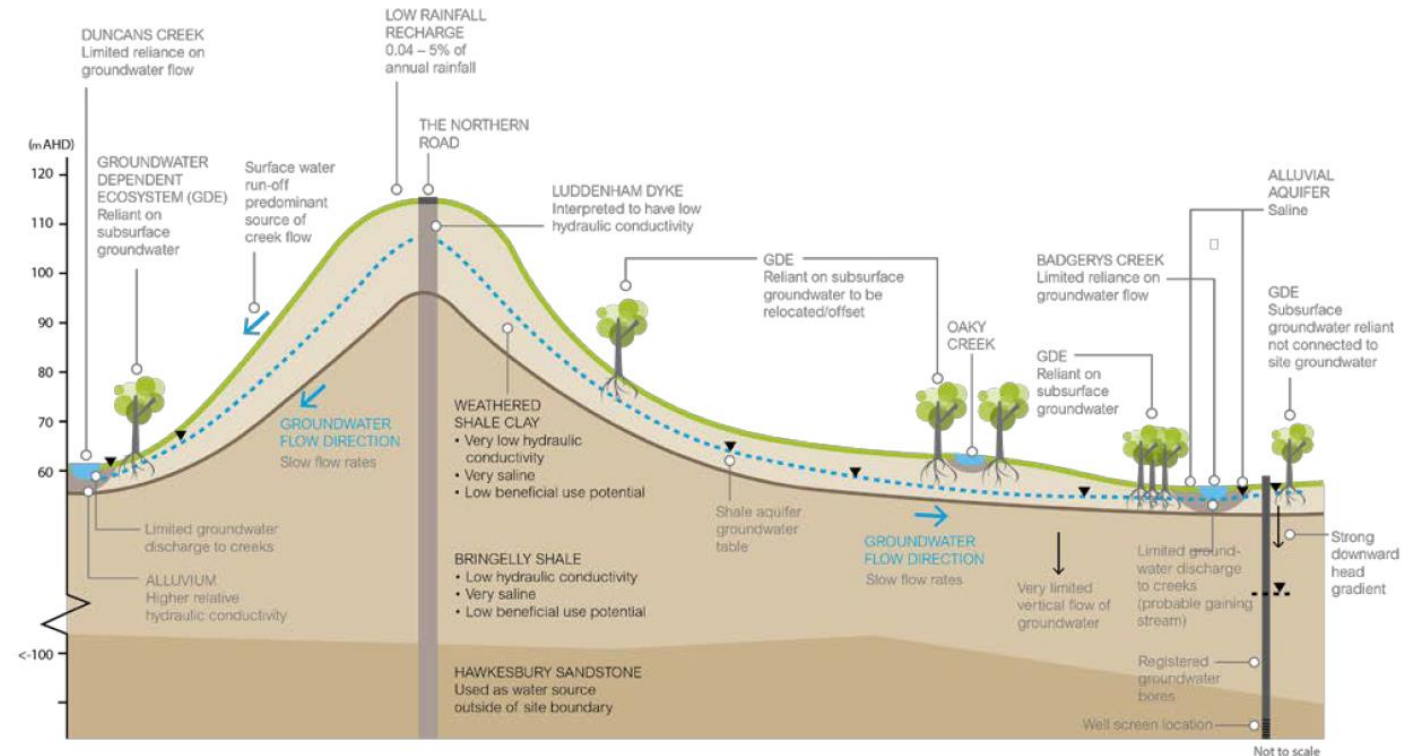
The following sections outlines the reason for WSI's substitution to some of the water quality criteria in Schedule 2 of the AEPRs. The reasons are categorised according to the requirements under Part 5 of the AEPRs and are as follows:

- Geological
- Historical land uses
- Topographical
- Climatic

Overall, the substitution is to allow for meaningful monitoring to ensure the airport management can be demonstrated and level of effectiveness determined

# Pre-existing (pre-construction) factors affecting water quality - Geological

- Shallow alluvial aquifer discharges at Badgerys Creek, Cosgrove Creek and Duncans Creek.
- This groundwater :
  - Has very low conductivity
  - Is very saline
  - Percolates through shallow soils



Conceptual hydrogeological model from WSA EIS (2016) Chapter 18 -

# Pre-existing (pre-construction) factors affecting water quality - Geological

## **Salinity in groundwater:**

- Groundwater is too saline for most practical uses
- Source is likely to be the marine lithology of the Wianamatta Group. Bringelly Shale is the upper most unit of this group.

## **Metals:**

- Runoff from surrounding geological strata and soils
- Chromium (III), Zinc, Copper, Lead

## **Turbidity:**

- Fine clay soils

# Pre-existing (pre-construction) factors affecting water quality– Historical landuse practices

## **Salinity in surface water:**

- Farming practices and land clearing

## **Total Phosphorus and Total Nitrogen:**

- Probably due to agricultural practices reflected as nitrogen enriched systems with poor levels of dissolved oxygen

## **Metals:**

- Chromium - likely from historical agricultural use eg copper chromium arsenite
- Copper- Fungicides in market gardens
- Zinc numerous sources eg runoff from galvanised iron in buildings
- Zinc, copper, lead can be in stormwater runoff from roads or from airborne deposition



# Pre-existing (pre-construction) factors affecting water quality - Topographical

## **Total Phosphorus and Total Nitrogen:**

- Pre-existing water courses and drainage lines

## **Total Suspended Solids (TSS)**


- Evidence of creek bed degradation

# Pre-existing (pre-construction) factors affecting water quality - Climatic

- Possible climate change influences:
  - Impacts on hydrology and geomorphology could be exacerbated by climate change
  - Changes to rainfall seasonality and intensity eg increased summer rainfall and decrease spring rainfall
  - Increased levels of Nitrogen and Phosphorous due to increased runoff from heavy rainfall events
  - Potential impacts on scouring and erosion in creeks
- The EIS considers WSI management of surface water and the on airport drainage and basin system will minimise these potential impacts.

Identification and proposed of  
local standards

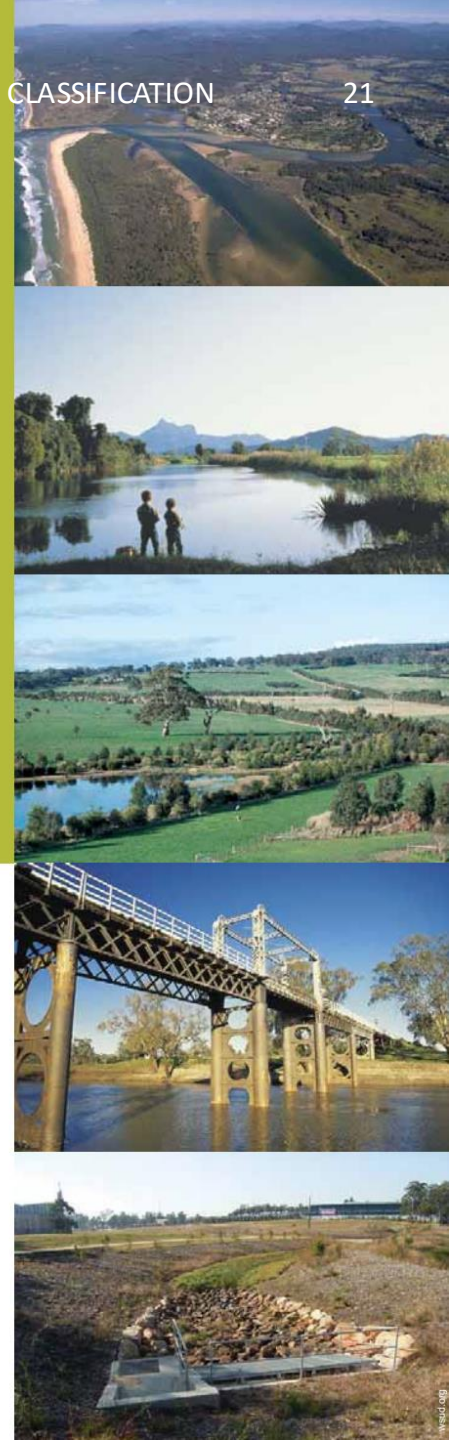
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The background of the slide is a photograph of a tree trunk with peeling, light-colored bark, set against a dense background of green foliage. The text is overlaid on the left side of the image.

The following sections provides an overview of the development of the proposed local standards which will be used during the 90-day consultation process

# Identification of analytes expected to require a local water quality standard

- WSI has engaged water quality specialist to analyse the result of surface water and groundwater monitoring undertaken since 2015 to the present
- The analysis identified the preliminary analytes that exhibited exceedances following comparison of calculated averages for the period 2015 to the present to the AEPR and ANZG 2018 criteria and therefore likely to require a local standard.
- This analysis is ongoing and at this stage will provide initial information for the consultation process



Using the ANZECC  
Guidelines

and Water Quality  
Objectives in NSW



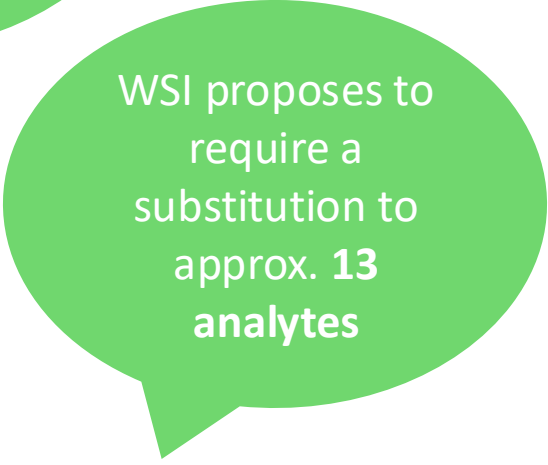
# Preliminary list of analytes likely to require local standards

- Ammonia as N
- Nitrate as N
- Total Nitrogen
- Total Phosphorus
- Chlorophyll a
- Copper (filtered)
- Lead (filtered)
- Zinc (filtered)
- Faecal Coliforms
- Dissolved Oxygen
- Turbidity
- Electrical Conductivity
- Total Suspended Solids

Note: this list may be revised as further analysis of the water quality monitoring data is undertaken



There are a total of **82 analytes** in Schedule 2 of the AEPRs



WSI proposes to require a substitution to approx. **13 analytes**

# The determination of appropriate local standards - Technical process

- WSI will progress local water quality standards consistent with the process set out in the ANZECC 2000 guidelines for deriving site-specific guideline values
- These site-specific guideline values will be used to determine the water quality local standards to be submitted by WSI for approval.
- Additionally, the proposed local standards:
  - would be consistent with the objectives and measures in the WSI Airport Plan or the yet to be prepared Environment Strategy as part of the development of the Master Plan
  - avoid any inconsistency with National Environment Protection Measures made under section 14 of the *National Environment Protection Council Act 1994*

Consultation

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The following sections provides an overview of the consultation to be undertaken and the process required under the AEPRs in the development and submission of the Local Standards

# The determination of appropriate local standards

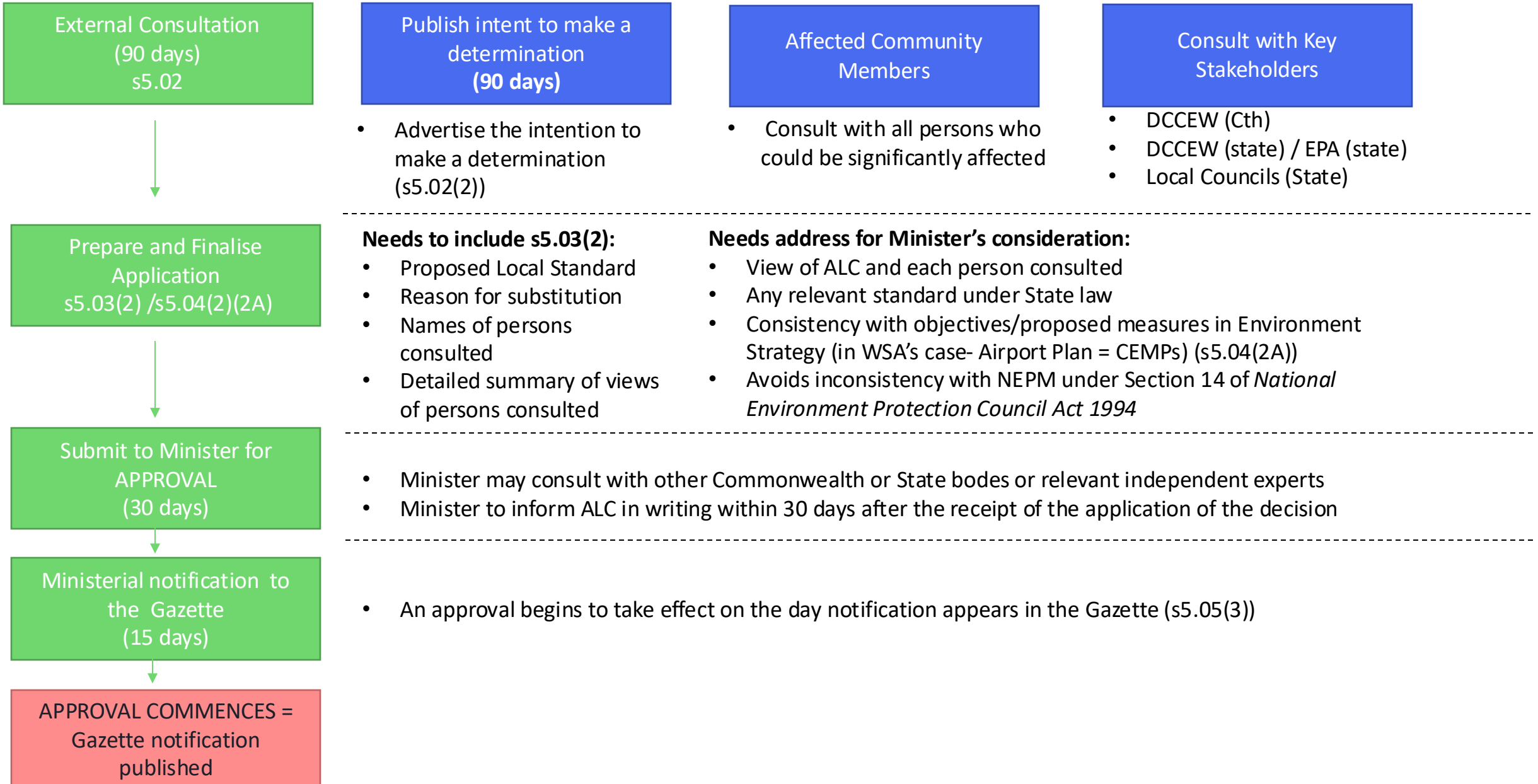
## - Consultation

As required by the AEPR, determination of appropriate local standards by WSI will be undertaken with:

- consideration of any comments received during the 90-day consultation period, and in consultation with;
  - relevant NSW state bodies such as NSW DCCEEW, NSW EPA and local councils
  - the Commonwealth DCCEEW
  - all persons who could be significantly affected\* by the new criteria

\*the *Significant impact guidelines 1.2 - Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies (2013)* has been used to assess likely significant impact on any persons.

# Process for Local Standards under Part 5 of AEPRs



# Next steps

If you would like more information, make a submission or to be contacted during the consultation of the proposed Local Standards prior to submission to the Minister, please contact WSI via the email address below.

A hard copy of this document, the advertisement and all website information will be available at the WSI Experience Centre located at 100 Eaton Road, Luddenham.

Additional information during the consultation will be published on the website.

The submission period will close **Thursday 29 August 2024.**

For further information please contact: WSI Environment and Sustainability team [wsaenvironment@wsaco.com.au](mailto:wsaenvironment@wsaco.com.au).