

Draft Floodplain Management Plan for the Macquarie Valley Floodplain 2018

Report card for Management Zone C

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More information

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Report card for Macquarie Valley Management Zone C (MZ C)—flood fringe and flood-protected developed areas (MZ C)

Table 1. Overview of Management Zone C

<p>Description</p>	<p>Flood fringe areas for large floods including existing developed areas (yellow areas on the draft management zone map)</p> <p>Management Zone C (MZ C) includes areas that are typically outside the extent of the design floods.</p> <p>MZ C also includes existing developed areas that are flood-protected. That is, not overtopped by large floods.</p> <p>Flood work development in MZ C is unlikely to have a significant effect on flood behaviour. However, the construction or amendment of flood works requires assessment and approval to protect the health of the floodplain environment.</p>	
<p>Ecological assets</p>	<p>The basis for MZ C is not ecological. If any ecological assets fall within MZ C, the relevant local government authority will be notified and provided with relevant contact details.</p>	
<p>Cultural assets</p>	<p>The basis for MZ C is not cultural. If any cultural assets fall within MZ C, the relevant local government authority will be notified and provided with relevant contact details.</p>	
<p>Key statistics</p>	<p>Area (ha)</p> <p>Area (% total floodplain area)</p>	<p>628,200 ha</p> <p>51%</p>
<p>Flood works that can be applied for:</p>	<p>Any type of flood work can be applied for in MZ C.</p> <p>Flood works must also be assessed and approved against the proposed criteria</p>	



Figure 1. Sample map

Proposed management zone rules

Table 2. All flood works

Management	All flood works
Proposed rule (R1.)	All new and amended flood works in MZ C require assessment and approval under the <i>Water Management Act 2000</i> , except those that are covered by a statewide exemption.
Key factor(s) for decision making	<p>The types of flood works that are eligible for approval have not been restricted in MZ C, as MZ C will generally only be inundated in very large flood events.</p> <p>An application for a new or amended flood work approval in MZ C does not need to be advertised.</p> <p>Applications for the construction or amendment of all flood works in MZ C are required to demonstrate the fulfilment of the assessment criteria for MZ C as part of the approvals process.</p>

Proposed assessment criteria

Table 3. Ecological impacts

Management	Ecological impacts
Proposed assessment criteria (AC1.)	A flood work approval must not be granted or amended to authorise the construction or modification of a flood work in MZ C unless, in the minister's opinion, the flood work can be constructed to maintain adequate flood connectivity to ecological assets, and to facilitate fish passage, under a range of flood scenarios, including at a minimum, scenarios for the 1990, 2000 and 2012 design floods.
Current management	<p><i>Macquarie (Narromine to Oxley Station) 2008 Floodplain Management Plan (FMP):</i></p> <p>Non-complying works must:</p> <ul style="list-style-type: none"> not block, impede or divert the natural flooding regimes in wetlands and related ecosystems, or in habitats benefiting from periodic flooding located in the FMP floodway network and other areas where works are specified as non-complying be consistent with actions specified in the Macquarie Marshes Environmental Management Plan (Section 8.2) relating to the delivery of environmental water to identified ecological assets in the Macquarie Marshes. <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for:</p> <ul style="list-style-type: none"> the need to maintain the natural flood regimes in wetlands and related ecosystems and the preservation of any habitat, animals (including fish) or plants that benefit from flooding any geographic features, or other matters, of Aboriginal interest that may be affected by a controlled work the protection of the environment. <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
Key factor(s) for decision-making	The management zones were designed at a strategic scale and may not always account for the complex network of flow paths and pathways that are important for maintaining the ecological character of flood-dependent floodplain assets. Therefore, this criterion is

Management	Ecological impacts
	proposed to ensure that all flood-dependent floodplain assets are specifically considered during the assessment of flood work applications. Flood connectivity that facilitates fish passage is specifically dealt with in the assessment criteria because consultation with agency experts determined that fish habitat on the floodplain is a significant asset that requires additional protection measures.

Table 4. Aboriginal values and heritage site impacts

Management	Aboriginal values and heritage site impacts
Proposed assessment criteria (AC2.)	A flood work approval must not be granted or amended to authorise the construction or modification of a flood work in MZ C unless, in the minister's opinion, the flood work can be constructed to maintain adequate flood connectivity to Aboriginal values and to heritage sites under a range of flood scenarios, including at a minimum, scenarios for the 1990, 2000 and 2012 design floods.
Current management	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Non-complying works must:</p> <ul style="list-style-type: none"> not block, impede or divert the natural flooding regimes in wetlands and related ecosystems, or in habitats benefiting from periodic flooding located in the FMP floodway network and other areas where works are specified as non-complying be consistent with actions specified in the Macquarie Marshes Environmental Management Plan (Section 8.2) relating to the delivery of environmental water to identified ecological assets in the Macquarie Marshes. <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for:</p> <ul style="list-style-type: none"> the need to maintain the natural flood regimes in wetlands and related ecosystems and the preservation of any habitat, animals (including fish) or plants that benefit from flooding any geographic features, or other matters, of Aboriginal interest that may be affected by a controlled work the protection of the environment. <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
Key factor(s) for decision-making	The management zones were designed at a strategic scale and may not always account for the complex network of flow paths and pathways that are important for maintaining the character of flood-dependent floodplain Aboriginal value/heritage site assets. Therefore, this criterion is proposed to ensure that all flood-dependent Aboriginal value/heritage site assets are specifically considered during the assessment of flood work applications.

Table 5. Heritage site impacts

Management	Heritage site impacts
Proposed assessment criteria (AC3.)	A flood work approval must not be granted or amended to authorise the construction or modification of a flood work in MZ C if, in the minister's opinion, the construction of the flood work is likely to disturb the ground surface of a heritage site or cause more than minimal erosion to a heritage site.
Current management	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Non-complying works must:</p> <ul style="list-style-type: none"> not block, impede or divert the natural flooding regimes in wetlands and related ecosystems, or in habitats benefiting from periodic flooding located in the FMP floodway network and other areas where works are specified as non-complying be consistent with actions specified in the Macquarie Marshes Environmental Management Plan (Section 8.2) relating to the delivery of environmental water to identified ecological assets in the Macquarie Marshes. <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for:</p> <ul style="list-style-type: none"> the need to maintain the natural flood regimes in wetlands and related ecosystems and the preservation of any habitat, animals (including fish) or plants that benefit from flooding any geographic features, or other matters, of Aboriginal interest that may be affected by a controlled work the protection of the environment. <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
Key factor(s) for decision-making	Consultation with agency experts identified that some heritage sites are at risk from being impacted during the construction of a flood work or as a result of erosion from changes to flood behaviour caused by a flood work. In combination with the <i>National Parks and Wildlife Act 1974</i> , and by referencing sources identified in Division 3 of the FMP, this assessment criterion will help to ensure that the sites are not impacted by a flood work proposal.

Table 6. Drainage impacts

Management	Drainage impacts
Proposed assessment criteria (AC4.)	A flood work approval must not be granted or amended to authorise the construction or modification of a flood work in MZ C unless, in the minister's opinion, the flood work can be constructed to maintain adequate drainage on: <ul style="list-style-type: none"> (i) adjacent landholdings, and (ii) other landholdings that may be affected by the proposed flood work.
Current management	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Non-complying works must:</p> <ul style="list-style-type: none"> not block, impede or divert the natural flooding regimes in wetlands and related ecosystems, or in habitats benefiting from periodic flooding located in the FMP

Management	Drainage impacts
	<p>floodway network and other areas where works are specified as non-complying</p> <ul style="list-style-type: none"> be consistent with actions specified in the Macquarie Marshes Environmental Management Plan (Section 8.2) relating to the delivery of environmental water to identified ecological assets in the Macquarie Marshes. <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for the effect or likely effect of a controlled work on existing dominant floodways or exits from floodways, rates of flow, flood water levels and the duration of inundation.</p> <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
Key factor(s) for decision-making	<p>This criterion was developed to ensure that flood work applications do not impact drainage on neighbouring properties. The management zones were designed on a strategic scale and may not always account for the possibility that a type of flood work might impact on local drainage, which may cause a significant disruption to the daily life of surrounding landholders.</p>

Table 7. Hydraulic—local impacts

Management	Hydraulic—local impacts
Proposed assessment criteria (AC5.)	<p>Redistribution</p> <p>In determining whether to grant or amend a flood work approval to authorise the construction or modification of a flood work in MZ C, the minister may consider whether construction of the flood work would be likely to redistribute the peak flood flow by more than 5% on:</p> <ul style="list-style-type: none"> (i) adjacent landholdings, and (ii) other landholdings <p>that may be affected by the proposed flood work when compared to the peak flood flow under existing development conditions for one or more flood scenarios.</p>
Current Management	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Non-complying works must not cause a redistribution of floodway flows of more than 10% of the unimpeded floodway flow distribution for all floods up to and including the adopted 1990 design peak floodway flows (upstream of Warren), or the adopted 1955 design peak floodway flows (downstream of Warren).</p> <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for the effect or likely effect of a controlled work on the passage, flow and distribution of any flood waters.</p> <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
Key factor(s) for decision-making	<ul style="list-style-type: none"> To ensure that the construction or amendment of flood works will not significantly change key hydraulic parameters in the local area. This assessment criterion provides the capacity to consider the potential for a proposed flood work in MZ C to redistribute flood water. This application of this assessment criterion in MZ C is discretionary rather than

Management	Hydraulic—local impacts
	mandatory.
Proposed assessment criteria (AC6.)	<p>Flood levels</p> <p>In determining whether to grant or amend a flood work approval to authorise the construction or modification of a flood work in MZ C, the minister may consider whether construction of the flood work is likely to increase flood levels by more than 10 cm on:</p> <ul style="list-style-type: none"> (i) adjacent landholdings, and (ii) other landholdings <p>that may be affected by the proposed flood work when compared to flood levels under pre-development and existing development conditions under one or more flood scenarios.</p>
Current Management	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Non-complying works must not cause increases in water levels for all floodway flows up to and including the adopted 1990 design flow conditions (upstream of Warren) or the adopted 1955 design flow conditions (downstream of Warren) that exceed 100 mm on neighbour's boundaries and must not create flood levels that exceed 1990 design flood levels.</p> <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for the effect or likely effect of a controlled work on existing dominant floodways or exits from floodways, rates of flow, flood water levels and the duration of inundation.</p> <p><i>Floodplain Management Plan for the Barwon–Darling valley floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
Key factor(s) for decision-making	<ul style="list-style-type: none"> • To ensure that flood work applications will not significantly change key hydraulic parameters in the local area. • The effect of a flood work on flood levels under a range of flood scenarios and pre-development or existing development conditions is considered. • The application of this assessment criterion in MZ C is discretionary rather than mandatory. • Introducing a threshold to other areas improves the consistency and effectiveness of flood work approvals.
Proposed assessment criteria (AC7.)	<p>Flood flow velocities</p> <p>In determining whether to grant or amend a flood work approval to authorise the construction or modification of a flood work in MZ C, the minister may consider whether construction of the flood work is likely to increase flow velocity by more than 50% on:</p> <ul style="list-style-type: none"> (i) the landholding under application, and (ii) adjacent landholdings, and (iii) other landholdings <p>that may be affected by the proposed flood work when compared to flood flow velocity under pre-development and existing development conditions under one or more flood scenarios, unless:</p> <ul style="list-style-type: none"> (i) increases by more than 50% are in isolated areas where the landholder mitigates the impact on the flood wave so that the average impact across the landholding under application is no greater than 50%, and (ii) flow velocity is not increased by more than 50% at the boundary of the landholding under application

Management	Hydraulic—local impacts
<p>Current Management</p>	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Non-complying works must not cause any significant increase in floodway velocities for all floodway flows up to and including the adopted 1990 design flow conditions (upstream of Warren) or the adopted 1955 design flow conditions (downstream of Warren). Velocities should be of an order that is below the threshold of erosion for the potential land usage.</p> <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for the effect or likely effect of a controlled work on existing dominant floodways or exits from floodways, rates of flow, flood water levels and the duration of inundation.</p> <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
<p>Key factor(s) for decision-making</p>	<ul style="list-style-type: none"> • To ensure that flood work applications will not significantly change key hydraulic parameters in the local area. • This assessment criterion provides the capacity to consider the potential for a proposed flood work in MZ C to increase flow velocities. • This application of this assessment criterion in MZ C is discretionary rather than mandatory.
<p>Proposed assessment criteria (AC8.)</p>	<p>Flow velocities and soil erodibility</p> <p>In determining whether to grant or amend a flood work approval to authorise the construction or modification of a flood work in MZ C, the minister may consider whether construction of the flood work is likely to increase flood flow velocity by an amount that is likely to have more than a minimal impact on soil erodibility on:</p> <ul style="list-style-type: none"> (i) the landholding under application, and (ii) adjacent landholdings, and (iii) other landholdings <p>that may be affected by the proposed flood work, taking into account the ground cover on those landholdings.</p>
<p>Current Management</p>	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Non-complying works must not cause any significant increase in floodway velocities for all floodway flows up to and including the adopted 1990 design flow conditions (upstream of Warren) or the adopted 1955 design flow conditions (downstream of Warren). Velocities should be of an order that is below the threshold of erosion for the potential land usage.</p> <p>Lower Macquarie Designated Floodplain and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for the effect or likely effect of a controlled work on existing dominant floodways or exits from floodways, rates of flow, flood water levels and the duration of inundation.</p> <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
<p>Key factor(s) for decision-making</p>	<ul style="list-style-type: none"> • To ensure that the construction or amendment of flood works will not significantly change key hydraulic parameters in the local area. • This assessment criterion provides the capacity to consider the potential for a proposed flood work in MZ C to impact flow velocities and soil erodibility. There is also flexibility to consider ground cover when assessing the potential impact of a flood work

Management	Hydraulic—local impacts
	<p>on soil erodibility.</p> <ul style="list-style-type: none"> This application of this assessment criterion in MZ C is discretionary rather than mandatory.
Proposed assessment criteria (AC9.)	<p>Flood levels and impact on high value infrastructure</p> <p>In determining whether to grant or amend a flood work approval to authorise the construction or modification of a flood work in MZ C, the minister may consider whether construction of the flood work is likely to increase flood levels such that they impact high value infrastructure when compared to flood levels under pre-development and existing development conditions under one or more flood scenarios.</p>
Current Management	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>No equivalent assessment criteria for high value infrastructure except for, non-complying works must not cause increases in water levels for all floodway flows up to and including the adopted 1990 design flow conditions (upstream of Warren) that exceed 100 mm on neighbour's boundaries and must not create flood levels that exceed 1990 design flood levels.</p> <p>Lower Macquarie Designated Floodplain 1985 and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for the effect or likely effect of a controlled work on the passage, flow and distribution of any flood waters.</p> <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
Key factor(s) for decision-making	<ul style="list-style-type: none"> High value infrastructure is seen as important in terms of requiring a high level of protection. This criterion provides the capacity to consider the potential for a proposed flood work in MZ C to impact high value infrastructure through increased flood levels. The application of this assessment criterion in MZ C is discretionary rather than mandatory.

Table 8. Hydraulic—cumulative impacts

Management	Hydraulic—cumulative impacts
Proposed assessment criteria (AC10.)	<p>In determining whether to grant or amend a flood work approval to authorise the construction or modification of a flood work in MZ C, the minister may consider whether construction of the flood work is likely to redistribute the peak flood flow by more than 5% under existing development conditions at any of the Peak Discharge Calculation Points shown on the Peak Flood Flow Distribution (1990) Map at any location and under any other flood scenario considered relevant by the minister.</p>
Current management	<p><i>Macquarie (Narromine to Oxley Station) 2008 FMP:</i></p> <p>Requires that the cumulative impact on flooding characteristics of a proposed non-complying work be addressed comprehensively.</p> <p>Lower Macquarie Designated Floodplain 1985 and all other areas:</p> <p>Part 8 Matters for General Consideration (Section 166C <i>Water Act 1912</i>) requires regard for the effect or likely effect of a controlled work on the passage, flow and distribution of any flood waters.</p> <p><i>Floodplain Management Plan for the Barwon–Darling Valley Floodplain 2017</i> (adjoins the</p>

Management	Hydraulic—cumulative impacts
	<p>draft Macquarie Valley FMP to the north):</p> <p>Equivalent assessment criteria included in the Barwon–Darling FMP 2017.</p>
<p>Key factor(s) for decision-making</p>	<ul style="list-style-type: none"> • This assessment criterion was developed to prevent the approval of multiple flood work applications, which individually may have an acceptable impact but in combination could have an unacceptable regional cumulative impact on a key hydraulic parameters. • This assessment criterion provides the capacity to consider the potential for a proposed flood work in MZ C to impact the cumulative redistribution of flood water. • The application of this assessment criterion in MZ C is discretionary rather than mandatory.

Statewide exemptions

Table 9. Statewide exemptions

Management	Statewide exemptions
Statewide exemptions	<p>As per the Water Management (General) Amendment (Flood Work Approvals) Regulation 2015, the following exemptions from the requirement to hold a flood work approval under the <i>Water Management Act 2000</i> apply in MZ C:</p> <ul style="list-style-type: none"> • Works constructed by the State Emergency Service. • Works constructed by a local council within a managed, designated, high flood-risk area under a development authorisation granted by the local council. • Works constructed by a person (other than a local council) within a managed, designated, high flood-risk area, on a total area of no more than 0.2 ha, under a development authorisation granted by the local council. • Ring embankments around homes and farm infrastructure, protecting not more than 2 ha in area and not more than 10% of the total property area. • Public roads and railways. • Earthworks less than 150 mm above natural surface level including farm tracks and check banks.
Background information	<p>The exemptions are part of the Water Management (General) Amendment (Flood Work Approvals) Regulation 2015 and are not part of this plan.</p> <p>The exemptions are for works or types of works which are considered to be low risk or necessary for public safety, or which are more appropriately overseen by another government body such as a local council. For these types of works, requiring a flood work approval is considered to be unnecessary red tape.</p>

Other key factors

- The construction of new flood works and the amendment of existing Part 8 *Water Act 1912* licensed flood works require approval under the *Water Management Act 2000*.
- Applications for new and amended flood works in MZ C do not require advertising.
- Applications for the construction and/or modification of flood works may require the submission of technical studies or supporting information to demonstrate that the proposed flood work meets the assessment criteria for MZ C.

Public exhibition

Feedback is sought from stakeholders on the proposed assessment criteria for MZ C.

More information

This report card has been provided as a summary of the rules and assessment criteria for MZ C. To view the exact wording of the *Draft Floodplain Management Plan for the Macquarie Valley Floodplain 2018*, written in the required statutory format, please visit the NSW Department of Industry website.

www.industry.nsw.gov.au/water

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