

Addendum to Wetland Mapping and Classification Methodology - Overall Framework - A Method to Provide Baseline Mapping and Classification for Wetlands in Queensland (Version 1.2)

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1 Introduction

This addendum replaces Table 4 Local Hydrology/Disturbance Modifiers on page 20 to 24 of the ‘Wetland Mapping and Classification Methodology - Overall Framework - A Method to Provide Baseline Mapping and Classification for Wetlands in Queensland (Version 1.2)’, Environmental Protection Agency (2005).

Local Hydrology Modifiers are based on a set of defined activities that alter wetland hydrology. They do *not* define what hydrological change has occurred. There are nine categories of activities identified that alter wetland hydrology (Table 1). These activities can apply at any scale and to any wetland system. They may cause a change in wetland system or the loss of the wetland. For example, partial draining of a lacustrine wetland may cause the wetland system to change to palustrine wetland, while complete draining would cause the loss of the wetland.

Table 1. Activity categories that alter wetland hydrology.

Activity	Definition
Bunding	The construction of a barrier (e.g. barrage, bund, dam, embankment, ridge, wall) within or outside of a channel to modify surface movement of water (including tidal waters and the surface expression of groundwater). The intended purpose of this construction may be to capture, contain or exclude water.
Excavation	The mechanical removal of substrate to create a depression in the land surface. This includes dredging, mining and quarrying. In some cases, these depressions may extend below the local water table or high astronomical tide limit.
Partial Draining	The reshaping of the land surface, typically through excavation of drains, to enable the removal of surface and sub-surface water from an area usually through gravity discharge. Complete draining results in the loss of a wetland.
Partial Infilling	The mechanical emplacement of artificial sediment (including concrete, garbage, soil, spoil, rock) to raise the land surface level. This activity excludes the non-mechanical process of sedimentation. Complete infilling results in the loss of a wetland.
Controlled Surface Hydrology	The construction of bunding and/or excavation to manage water in a state that is divorced from the surface water hydrology at the location. Typically, the surface water of the constructed feature is controlled by mechanical means (e.g. pumping). Control is exhibited over surface water hydrology (e.g. inflow and outflow), however other aspects of the local hydrology may remain uncontrolled (e.g. evaporation, rainfall and groundwater connectivity).
Channel Construction	The construction of bunding and/or excavation of a linear waterway laterally enclosed by banks. Artificial creation of a channel (i.e. open conduit) which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water (Langbein and Iseri 1960).
Cultivation and Cropping	Cultivation: The preparation of soil by mechanical agitation for the purpose of raising crops. Cropping: Agricultural production (including cultivation, growth and harvest) of a plant product, usually as a monoculture, for either food, fibre, ornamental, or industrial (e.g. oilseeds, timber, fuels) purposes.
Extraction	The removal of water typically through mechanical means (e.g. pumping).
Addition	The discharge of water typically through mechanical means (e.g. pumping).

2 Local Hydrology Modifiers

Local Hydrology Modifiers incorporate activity category (as outlined above), affected wetland system, and resultant wetland system (Table 2). Local Hydrology Modifiers are applied based on available remote sensing imagery. In many cases, observable structures in remote sensing imagery provide mappable surrogates for these activities. Multiple activities may be occurring in a single wetland area; however, the current method applies one Local Hydrology Modifier representing the most dominant activity.

Table 2. Local Hydrology Modifiers

Activity	Affected Wetland System	Resultant Wetland System	Local Hydrology Modifier	Local Hydrology Modifier (Version 4 Equivalent)	Notes
No local hydrological modification (H1)					
None	E, L, M, P, R	E, L, M, P, R	H1	H1	No evidence of activities (including surrogate structures) are distinguishable from satellite imagery and/or aerial photography. This modifier does not indicate the extent to which the wetland may have exotic species or otherwise be in poor condition.
Modified local hydrology (H2)					
Bunding (within a channel)	R	L, R	H2M1	H2M1	Bunding within a channel observable (e.g. dams, weirs, etc.) Where wetland extent exceeds pre-existing channel boundaries, the wetland system is classified as lacustrine. Otherwise, the wetland system is classified as riverine. Wetlands with this Local Hydrology Modifiers are in the process of re-allocation to appropriate subunits (H2M1a, H2M1b, H2M1c, and H2M1d).
	R	L, R	H2M1a	H2M1	Bunding within a riverine channel observable (e.g. dams, weirs, etc.) Where wetland extent exceeds pre-existing channel boundaries, the wetland system is classified as lacustrine. Otherwise, the wetland system is classified as riverine.
	E	L, R	H2M1b	H2M1	Bunding within an estuarine channel observable. Bunding activity causes conversion from tidal to non-tidal water regime. For example, Fitzroy barrage.
Excavation (within a channel)	R	L, R	H2M1c	H2M1	Excavation in a riverine channel observable. Where wetland extent exceeds pre-existing channel boundaries, the wetland system is classified as lacustrine. Otherwise, the wetland system is classified as riverine.
	R	E	H2M1d	H2M1	Excavation within a riverine channel observable. Excavation activity (e.g. removal of natural tidal barriers in river causes) conversion from non-tidal to tidal water regime. For example, the historic Brisbane River.

Activity	Affected Wetland System	Resultant Wetland System	Local Hydrology Modifier	Local Hydrology Modifier (Version 4 Equivalent)	Notes
Bunding	E, L, P	E, L, P	H2M2	H2M2	Bunding observable. Bunding activity intends to raise and stabilise water levels. Wetlands with this Local Hydrology Modifier are in the process of re-allocation to appropriate subunits (H2M2a, H2M2b, H2M2c, H2M2d, H2M2e, H2M2f, H2M2g).
	L, P	L, P	H2M2a	H2M2	Bunding in lacustrine or palustrine wetland observable. Bunding activity intends to raise and stabilise water levels.
	E	E	H2M2b	H2M2	Bunding in estuarine wetland observable. Bunding activity intends to raise and stabilise water levels, but in this case does not completely exclude periodic tidal inundation.
	E	L, P	H2M3	H2M3	Bunding in estuarine wetland observable. Bunding activity intends to raise and stabilise water levels. Bunding activity causes the conversion from tidal to non-tidal water regime with wetlands no longer subject to periodic tidal inundation.
Excavation	L, P	L, P	H2M2c	H2M2	Excavation within lacustrine or palustrine wetland observable.
	L, P	L	H2M2e	H2M6	Excavation within lacustrine or palustrine wetland observable (i.e. gravel and sand extraction pits).
	L, P	E	H2M2f	H2M7	Excavation within lacustrine or palustrine wetland observable. Excavation activity causes conversion from non-tidal to tidal water regime. For example, excavation within freshwater wetland to create to create a boat harbour.
	E	E	H2M2g	H2M2	Excavation within estuarine wetland observable. For example, excavation within saltmarsh to create boat harbours.
Partial Drainage	L, P	L, P	H2M2d	H2M2	Construction of drains observable. Construction of drains intends to remove water by gravity. Partial removal of water may cause a change in wetland system. The complete removal of water (i.e. complete drainage) results in the loss of the wetland.

Activity	Affected Wetland System	Resultant Wetland System	Local Hydrology Modifier	Local Hydrology Modifier (Version 4 Equivalent)	Notes
Cultivation and Cropping	L, P	L, P	H2M5	H2M5	Cropping or cultivation of a pre-existing wetland observable and the inundation/saturation regime remains consistent with the agreed definition of wetland (Environmental Protection Agency 2005). This Local Hydrology Modifier does not include irrigated areas.
Controlled Surface Hydrology	E, L, P, R	L	H2M6	H2M6	Activities and/or structures observable (e.g. construction of bunds, pumping, etc.) causing conversion to a storage with controlled surface hydrology. Typically includes enclosed (i.e. four walled) structures with pumps. Wetlands with this Local Hydrology Modifier are in the process of being re-allocated to appropriate subunits (H2M6a, H2M6b, H2M6c, H2M6d, H2M6e).
	L, P	L	H2M6a	H2M6	Activities and/or structures in lacustrine or palustrine wetlands observable (e.g. construction of bunds, pumping, etc.) causing conversion to a lacustrine wetland storage with controlled surface hydrology. Typically includes enclosed (i.e. four walled) structures with pumps.
	E	L	H2M6b	H2M6 in part	Activities and/or structures in estuarine wetlands observable (e.g. construction of bunds, pumping, etc.). Activity causes the conversion from tidal to non-tidal lacustrine wetland storage with controlled surface hydrology. Typically includes enclosed (i.e. four walled) structures with pumps. For example, prawn farms, and salt evaporation ponds.
	E, L, P, R	L	H2M6c	H2M7	Activities and/or structures observable (e.g. construction of channels). Activity causes the conversion from tidal wetland to a non-tidal lacustrine wetland storage with controlled surface hydrology. For example, channels within prawn farms or salt works.
	R	L	H2M6e	H2M6	Activities and/or structures in riverine wetlands observable (e.g. construction of bunds, pumping, etc.). Activity causes the conversion from riverine wetland to a lacustrine wetland storage with controlled surface hydrology. Typically includes enclosed (i.e. four walled) structures with pumps.

Activity	Affected Wetland System	Resultant Wetland System	Local Hydrology Modifier	Local Hydrology Modifier (Version 4 Equivalent)	Notes
Channel Construction	E, L, P, R	E, L, P, R	H2M7	H2M7	Channel construction observable. Activity may include evidence of excavation and/or bunding. Channel construction includes canal estates openly connected to estuaries and excludes activities that control surface hydrology.
	L, P, R	L, P, R	H2M8	H2M8	No observable activities and/or structures, however the wetland is modified by activities (e.g. pumping, use as water storage, balancing area, etc.) associated with an irrigation scheme. While this is not included in the activity categories underpinning this table of Local Hydrological Modifiers, it has been included in this table for legacy purposes.
Artificial wetlands (H3)					
Bunding	N/A	L	H3C1	H3C1	Construction of an artificial wetland by bunding to capture overland flow observable. For example, farm dams. Wetlands with this Local Hydrology Modifier are in the process of being re-allocated to appropriate subunits (H3C1a, H3C1b, H3C1c, H3C1d).
	N/A	L	H3C1a	H3C1	Construction of an artificial wetland by bunding to capture overland flow observable. For example, farm dams.
	N/A	L	H3C3	H3C3	Construction of an artificial wetland by bunding to capture overland flow observable on floodplain.
Excavation	N/A	L	H3C1b	H3C1	Construction of an artificial wetland through excavation observable. For example, mine pits, quarries, gravel pits, etc.
	N/A	E	H3C1d	H3C1	Construction of an artificial estuarine wetland through excavation observable. Excavation occurs to depths below the level of Highest Astronomical Tide (HAT) and connected to areas subject to periodic tidal inundation.
Controlled Surface Hydrology	N/A	L	H3C1c	H3C1 & H3C3	Activities and/or structures (e.g. construction of bunds, pumping, etc.) observable resulting in an artificial wetland with controlled surface hydrology. Typically includes enclosed (i.e. four walled) structures with pumps.
	N/A	L	H3C2	H3C2	Construction of an artificial channel with controlled surface hydrology observable.
Channel construction	N/A	L, E	H3C2	H3C2	Construction of an artificial channel without controlled surface hydrology observable.

Notes Related to Table 2

Note 1: If the Local Hydrology Modifier cannot be determined, the default value is 'H1' (no local hydrological modification).

Note 2: 'H1' (no local hydrological modification) and 'H2' (modified local hydrology) water bodies must be identified as a wetland on either 'Biodiversity status of pre-clearing regional ecosystems' data, aerial photography, or as a drainage line. Otherwise, water bodies will be assigned to 'H3' (artificial wetlands).

Note 3: If water bodies are not able to be identified as a wetland using 'Biodiversity status of pre-clearing regional ecosystems' data, then aerial photography will need to be checked to verify that the wetland is artificial prior to being assigned to 'H3' (artificial wetlands) because any absence may relate to map scale.

Note 4: 'H3' (artificial wetland) water bodies must be indicated as "not a water body" on 'Biodiversity status of pre-clearing regional ecosystems' data or aerial photography and must not be connected to a drainage line.