Department of Science, Information Technology, Innovation and the Arts

Western Cape York groundwater study

2. Groundwater dependent ecosystems investigation supporting the assessment of groundwater sustainability in the Great Artesian Basin of Cape York

Attachment 1: Spatial analysis technical description and maps of potential groundwater dependent ecosystems

April 2014

Prepared by

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Contents

Description of spatial analysis methods

Spatial analysis incorporating Landsat satellite images, field data and existing GIS layers were used to determine vegetation patches which may be groundwater dependant ecosystems (GDEs). Vegetation persistently maintaining vigour throughout inter-annual and annual climate regimes and variable surface water supply may be accessing water from groundwater sources for consistent water supply. A regional assessment of potential groundwater dependent ecosystems (GDEs) was conducted from vegetation signals in long-term vegetation trend data using satellite imagery. This project used Landsat data as part of a multiple line of evidence approach to detect potential GDE locations.

The Landsat program is the longest continuous Earth-observing satellite in operation (USGS, 2014). The program consists of numerous satellites including Landsat 5 Thematic Mapper (TM); Landsat 7 Enhanced Thematic Mapper + (ETM+) and Landsat 8 Operational Land Imager (OLI), which together have repeatedly captured observations over the same location on Earth every 16 days since 1985.

Thirteen Landsat scenes were required to cover the Cape York study area (Figure 1). For each of the Landsat scenes, Landsat 5TM (Years 2000–2011), Landsat 7 ETM+ (Year 2012) and Landsat 8 OLI (Year 2013) were acquired for GDE modelling purposes.

The GDE spatial analysis assessment was undertaken in two stages. Stage one consisted of the pre-field assessment which aimed to identify field data collection locations additional to existing known spring locations. Stage two consisted of the spatial analysis of remote sensing derived inputs, field data and existing GIS environmental spatial layers in order to generate a Spatial Analysis GDE likelihood product. The Spatial Analysis GDE likelihood layer contained locations ranked from 1–6 (Lowest–Highest) in order of likelihood of supporting GDEs.

The Spatial Analysis GDE likelihood layer was then used to identify terrestrial vegetation patches (as represented by regional ecosystem mapping), wetlands, baseflow streams and potential spring locations that may be accessing groundwater across the Cape York project area. The results of which were used to conduct a risk assessment of GDEs that may be potentially vulnerable to further Great Artesian Basin (GAB) groundwater extraction.

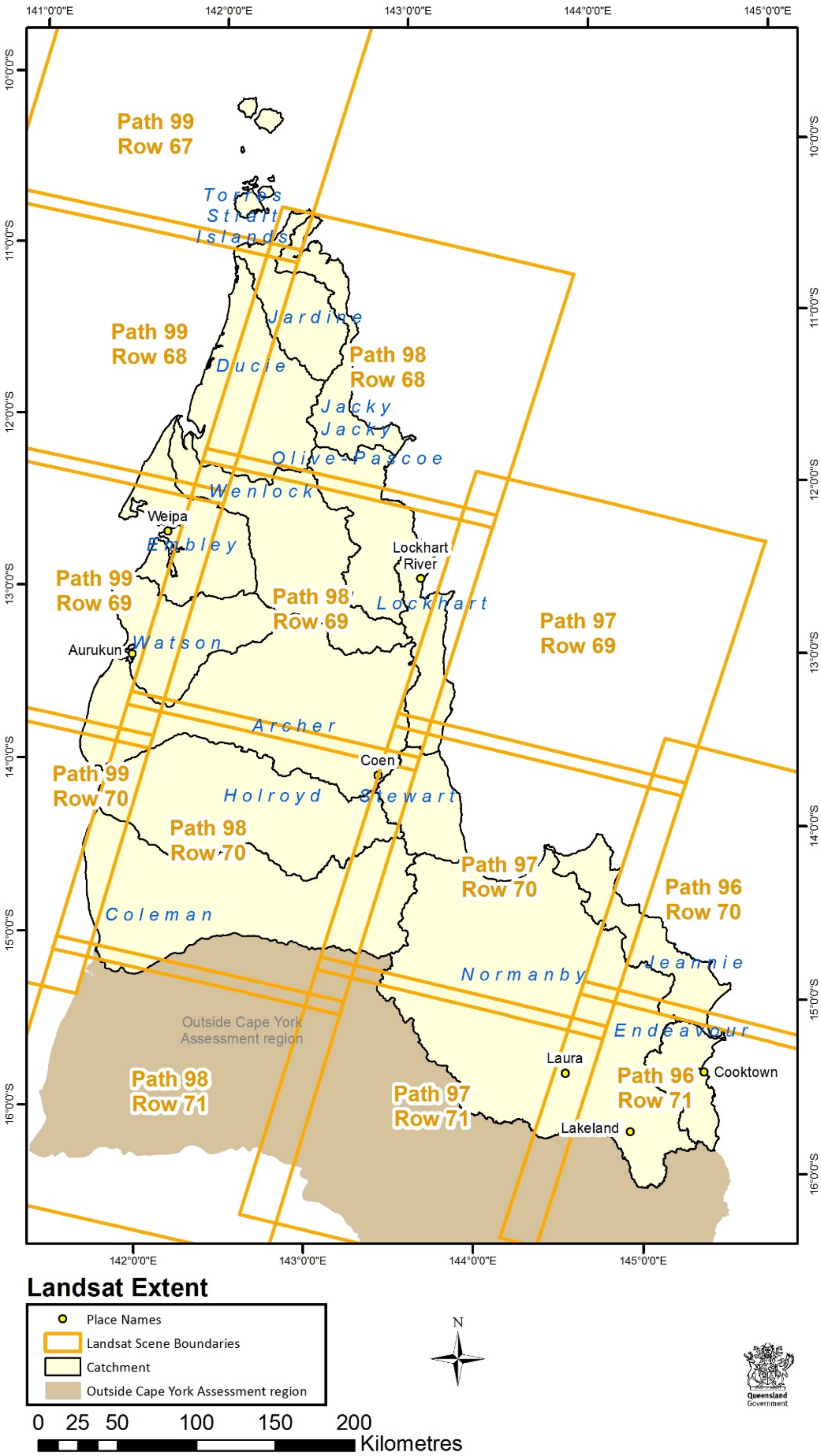

Figure 1 Extent of Landsat scenes across the catchment areas within the Cape York Peninsular project area

Data preparation

Data selection

Both time-series and single-date images were used in the spatial analysis modelling. Single-date Landsat imagery from the years 2002 (Stage 1 pre-field assessment) and 2013 (Stage 2 GDE likelihood assessment) were used in combination with long-term time-series Landsat imagery in the pre-field and GDE assessments.

A search was conducted to select the single-date images with the least cloud cover for each scene across the project area. Table 1 outlines the scenes selected for Stage 1 and Stage 2 of the analysis. Both the optical band (surface reflectance) and thermal band information was collected for each scene. Cloud masks were also used to remove cloud cover artefacts, where present in the single-date images.

Table 1 List of Landsat scene dates selected for single-date assessment of GDEs

Path/Row	Stage 1 Single-date – Pre-field Assessment	Stage 2 Single Date – GDEs Assessment
99/70	30 May 2002	08 August 2013
99/69	02 August 2002	08 August 2013
99/68	14 May 2002	08 August 2013
99/67	17 July 2002	08 August 2013
98/71	07 May 2002	18 September 2013
98/70	10 July 2002	18 September 2013
98/69	10 July 2002	04 October 2013
98/68	10 July 2002	04 October 2013
97/71	16 May 2002	27 September 2013
97/70	04 August 2002	20 April 2013
97/69	-	20 April 2013
96/71	-	02 July 2013
96/70	-	02 July 2013

The remote sensing analysis required the selection of:

- dry-season medoid (a multi-dimensional median) dominant green fraction products (Flood, 2013)
- single-date fractional cover products (Scarth et al. 2010)
- single-date Normalised Difference Vegetation Index products (Rouse et al. 1973)
- single-date thermal Landsat 8 products (Roy et al. 2014)
- single-date water masks (Feysia et al. 2014; Muir and Danaher 2010)
- time-series mean green fraction and coefficient of variation products (developed from Scarth 2013).
- Long-term persistent green fraction products (Gill et al. 2013)

Fractional cover separates Landsat pixels into proportions of the land’s surface that are bare, non-green and green. Bare land covers include rock, exposed soil and infrastructure, non-green land covers include leaf litter and senescent grasslands, and green land covers include woody vegetation and vigorously growing non-woody vegetation. In this project, the ‘green-faction’ was used to indicate areas potentially accessing water despite climate and rainfall patterns.

Single-date and seasonal dry-season fractional cover products were used in Stage 1 while the long-term persistent green and time-series mean green fraction and coefficient of variation products were used in Stage 2 extrapolation.

Stage 1 – Pre-field assessment

A desktop pre-field assessment was undertaken to ascertain a range of field sites for use in the GDE spatial analysis model calibration and validation. Hydrographs across the Cape York peninsular were assessed to determine the most recent extended dry season following relatively dry wet-season conditions. The year 2002 was selected and single-date Landsat 5TM imagery was assessed (as per Table 1).

Time-series dry season seasonal medoid fractional cover products and single-date fractional cover and NDVI products were used to predict the location of dry-season dominant green vegetation and coincident high vigour vegetation patches.

Field site selection

Sites were selected based on the spatially coincident agreement with the pre-field criteria analysis and proximity to access roads. A variety of sites were selected in order to discriminate between once-off high-vigour vegetation patches and those exhibiting long-term, sustained, dominantly green vegetation. Sites which were detected in the Fractional Cover products and not the NDVI (and vice versa) were also sampled in order to understand the on-ground conditions at those locations and how they relate to spring detection.

An example of the dry-season single-date 2002 fractional cover derived product in relation to the selected field sampling polygons is shown in Figure 2. Blue areas depict areas with the highest fractions of green cover. Yellow areas depict the lowest fractions of green cover.

An example of the dry-season medoid fractional cover in relation to the pre-field polygons selected for field sampling is shown in Figure 3. The areas in dark green depict pixels which on average during the dry season of 2002 maintained a dominant fractional green cover signal.

An example of the dry-season single-date 2002 NDVI product used in the selection of the targeted field sampling sites is shown in Figure 4. Areas in bright green depict pixels which exhibited the highest vigour across the scene (greater than a value of 180 in the scaled NDVI image).

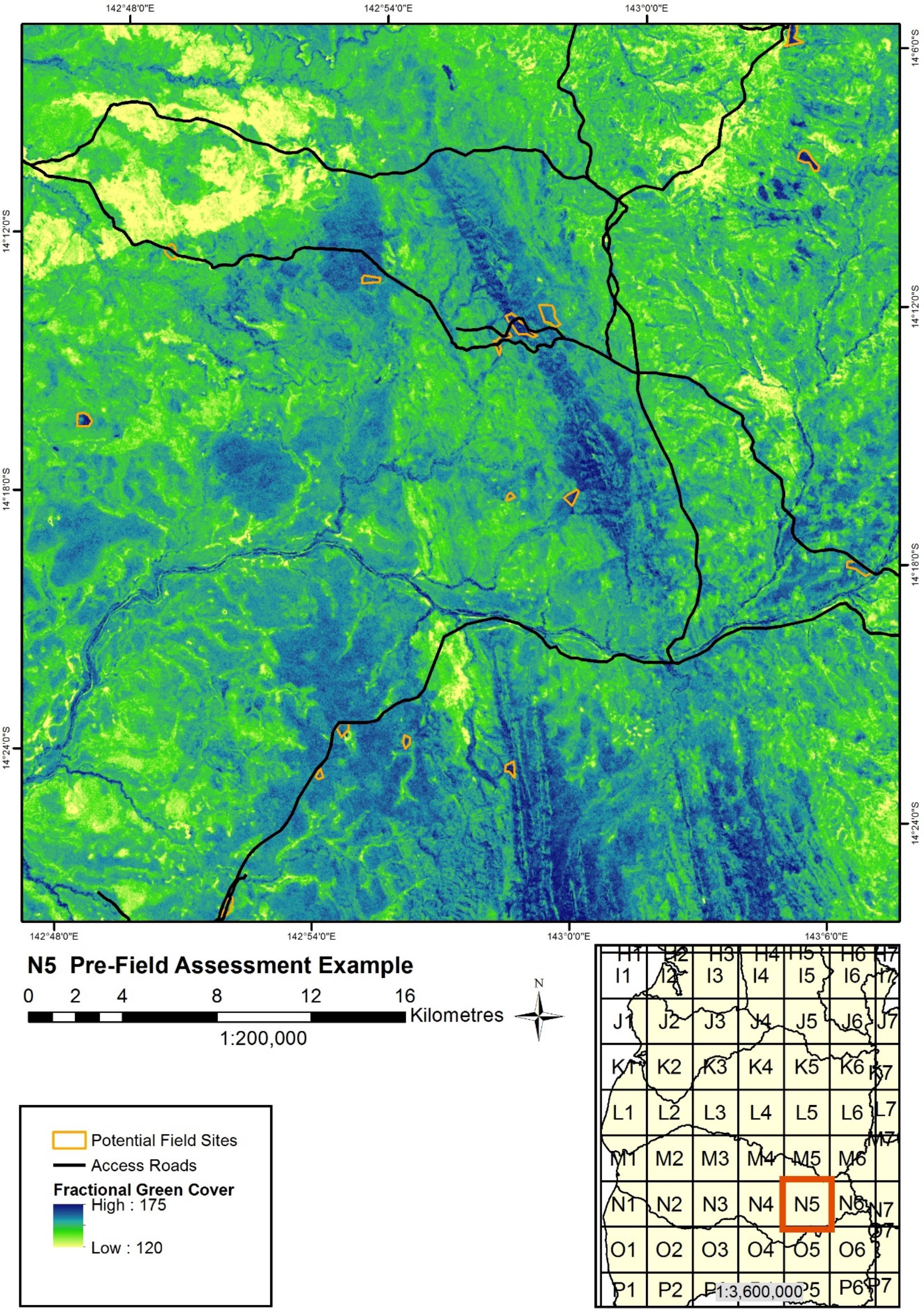

Figure 2 Pre-field single-date Fractional Cover (green fraction) investigation

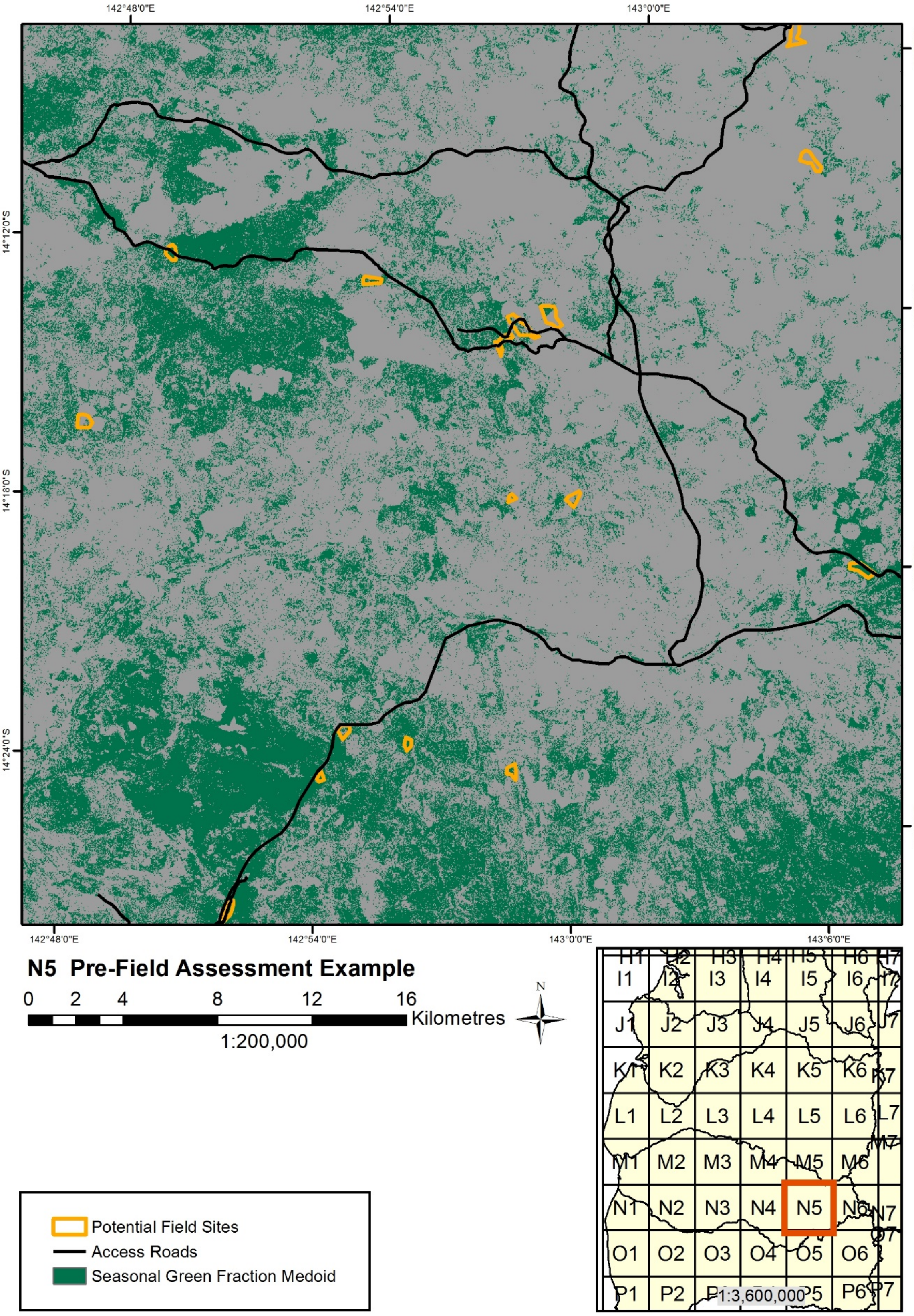

Figure 3 Pre-field Seasonal Green Fraction Medoid (a multi-dimensional median) investigation

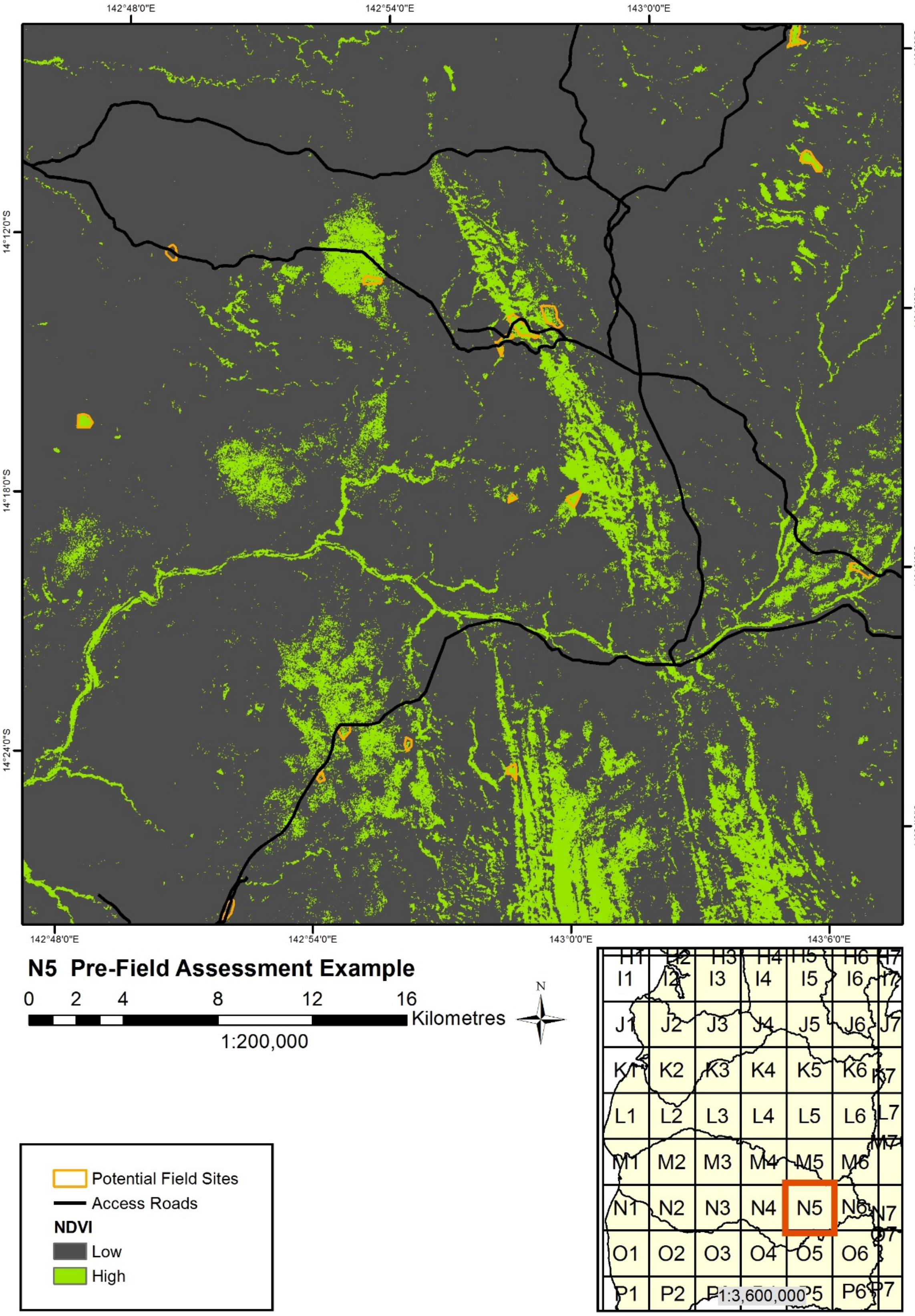

Figure 4 Pre-field Normalised Difference Vegetation Index (NDVI) investigation

Stage 2 – Post-field GDE assessment

Field observations were used to calibrate Stage 2 – Post-field GDE assessment. The field observations revealed that the 2013 dry-season would be ideal to use as the single-date input, superseding the 2002 assessment. The use of 2013 Landsat scenes would also contribute to better assessing the most recent dry-season land covers across the Cape York project area.

Additionally, thermal band imagery and two water indices were introduced and correlated with the field-based calibration sites to determine whether the sites could be separated based on thresholding the additional algorithms as part of the decision criteria approach.

Pixels in a 3 x 3 grid around field data points were sampled and correlated with the input Landsat derivatives. Thresholds were chosen based on the separation of the spring sites from non-spring sites as observed in the field. The thresholds were then applied to all pixels within the project area to determine other potential sites which could support GDEs.

Data inputs

Seven data inputs were applied to account for six decision criteria (as specified in Table 2). Two time-series of the same product were input in order to minimise temporal noise signals. The two data inputs (two time-series of the mean green fraction and coefficient of variation) were analysed in combined rule criteria for a total potential criteria maximum of “6”.

Long-term persistent green product

The extent of persistently green woody vegetation was classified using the long-term persistent green product (Gill et al. 2013) whereby a time-series of fractional cover (from 2000–2010) were analysed and the fraction of persistent green cover calculated (Table 2). This layer was used to locate terrestrial vegetation extent.

Fractional cover mean and variability products

Two time-series (across the years 2000–2005 and 2008–2013) were analysed to determine the mean green fractional cover and the coefficient of variation for the two discrete time-series (Scarth 2013). The time-series used all the Landsat images available between the years 2000–2005 and also between the years 2008–2013 to produce a mean fractional green estimation. The coefficients of variation for each pixel in the time-series were also calculated. Only those pixels with low coefficients of variation and high mean fractional green were selected as potential areas for groundwater dependant ecosystems with surface expressions (Table 2). This rule set classified areas of persistently maintaining a high green fraction as distinguished from vegetation experiencing green flushing and drying conditions driven by climate regimes.

Normalised Difference Vegetation Index (NDVI)

The Normalised Difference Vegetation Index (NDVI) (Rouse et al. 1973) is a widely used vegetation index. The NDVI product used in this project was calculated based on the top-of-atmosphere reflectance Landsat scene and scaled from a range of -1 to 1 into 8-bit range (0–255). Pixels with a higher value (i.e. greater than 180) are considered to signify healthy green vegetation pixels. Pixels with lower values (i.e. less than 100) are considered to signify infrastructure/bare pixels and pixels with values lower than 50 are considered to signify waterbodies. Only those pixels with high values (greater than 180) were considered potential areas for groundwater dependant ecosystems (Table 2).

Thermal

Landsat 8 OLI contains thermal bands which are sensitive to plant functional characteristics and land/water management and soil/water relationships and condition (Roy et al. 2014). The Landsat TM/ETM+ thermal bands have been used previously in evapotranspiration studies as an input to understanding physical processes of the transfer of water from soil and vegetation through to the atmosphere (Kalma et al. 2008).

Water availability is a key component as part of the evapotranspiration budget; thus vegetation communities with a relatively cooler thermal response (actively transpiring) may be one line of evidence that the vegetation patch or community may be accessing sub-surface aquifers. The ‘cool pixels’ indicate that they have maintained high transpiration rates in dry season conditions, where surface water availability is scarce. Table 2 outlines the criteria used to determine ‘cool pixels’ of interest. The Landsat Thermal product used in this project was the thermal brightness temperature in Kelvin.

Water indices

The water indices were used to detect waterbody extent and also to identify moisture-holding terrestrial vegetation communities. Two water indices, the SLATS Water Index developed by Muir and Danaher, (2008) and the Automated Water Extraction Index (AWEI) developed by Feyisa et al. (2014) were used as both indices provided information with varying sensitivities to waterbodies and vegetation moisture signals. In the context of the multi-criteria approach, both water indices were applied to minimise errors of omission and commission across the project area. The water indices were used in a two-fold approach to classify areas which contained water bodies and also vegetation communities with relatively high moisture signatures.

Water bodies were extracted using values from the lower (darker) values of the SLATS Water Index and higher (brighter) values of the AWEI index. Vegetation communities which appeared ‘bright’ in the SLATS Water Index and or were adjacent to the water signal within the AWEI index were classified as moisture holding vegetation communities.

GDE likelihood extrapolation model

Spectral indices were derived from the single-date images to obtain layers relating to vegetation vigour, vegetation moisture and percent of the pixel covered by green, actively photosynthesising vegetation. Time-series products were also used to model the location of persistent green vegetation patches across the Cape York project area.

The thresholds and rules based on the calibration from field observations were applied to the images within the project area as outlined in Table 2. The criteria were processed for each path/row described in Table 1.

Table 2 Criteria and thresholds applied for spatial analysis GDE likelihood product creation

Criteria	Threshold	Classified True Value	Classified False Value
Time-series Persistent Green (2000-2010)	Pixel >= 155	10	1
Time-series Mean Fractional Cover AND Coefficient of Variation (2000-2005 and 2008-2013)	Pixel >= 155 AND Coefficient of Variation <=12 for each time series	10	1
2013 Normalised Difference Vegetation Index (NDVI)^	Pixel >=180	10	1
2013 Thermal band^	Pixel <=30150	10	1
2013 SLATS Water Index (WI)^	(a) Pixel <=70	80	See (b)
	(b) Pixel >=89	10	1
2013 Automated Water Extraction Index (AWEI)^	(a) Pixel >= 120	80	See (b)
	(b) Pixel >= 40 AND < 120	10	1

^ The single date images were not analysed in locations where clouds were present in the Landsat scene date.

Water was given a value of 80 and masked all other classifications. A pre-existing Queensland Regional Geology Structures layer (created and owned by the State of Queensland, 2014) was buffered by 500m (to account for scale limitation of the Geology layer) and then intersected with the GDE likelihood layer. This buffered zone represented a Geology contact zone. An additional score was applied to those GDEs located within the Geology contact zone layer.

All values were summed and categorised into likelihood ranks based on the number of criteria which were classified as “True” (Table 3).

Table 3 Categorisation of summed values into GDE criteria ranks

Criteria Rank	Summed Value
1	60–65
2	50–55
3	40–45
4	30–35
5	20–25
6	10–15
80	80–85 (water)
125	Cloud Mask

The output model scenes were clipped using a standardised template derived to minimise overlap of USGS WRS2 path/row boundaries as per the Queensland Government Statewide Landcover and Trees Study methodology (Queensland Department of Science, Information Technology, Innovation and the Arts, 2012). The individual scenes were then mosaicked in order of paths from South to North and rows from West to East.

The mosaicked product was then clumped into patches containing the same Criteria Rank Value. Patches of values less than 6 pixels in area were removed to account for potential geometric shifts in the time-series analysis and to minimise noise in the classified GDE likelihood product.

Potential GDEs were classified as all patches containing Criteria Ranks 1 and 2. The GDE likelihood product was then used as part of the criteria for determining the potential presence of GDEs.

Identifying areas containing potential GAB dependent GDEs

In order to identify locations within the Western Cape York study area which may contain potential GAB dependant GDEs, modelled hydrogeology layers were introduced. Modelled potentiometric surfaces for the years 2005 (pre-development) and 2058 (post-extraction) were intersected with the 1-second hydrologically-corrected Shuttle Radar Topographic Mission (SRTM) Digital Elevation Model (DEM) (Farr et al. 2007; Dowling et al. 2011). The pixel resolution of the modelled potentiometric surfaces was 100 metres.

Areas in the modelled potentiometric surface intersect with the ground surface level (with a -5 metre buffer applied to account for minimum mapping units in the *z* direction), were considered to be in a zone where the GAB has sufficient water pressure to provide a hydrologic connection to the ground surface should flow pathway be present.

The difference in area between the two modelled scenarios (2005 and 2058) indicates the modelled change in potentiometric surface, and represents the ‘potential drawdown area’.

Based on the premise that upward leakage is more likely to occur where the confining beds are thin and hydraulic gradients are high (CSIRO, 2009), such areas were represented by a ratio of confining layer thickness relative to the hydraulic gradient. These potential leakage areas were identified using the ratio between the early 1970's pre-development modelled hydraulic gradient and confining bed thickness. A ratio value of 0.5 was selected after a sensitivity analysis was conducted to examine a range of ratio values. The spatial area did not significantly change by increasing the ratio value. The 0.5 ratio value represented the most robust threshold from which to assess potentially vulnerable GDEs. Intersecting the defined 'potential drawdown area' with these potential leakage areas produced the spatial extent considered to be the Area of Vulnerability (AoV). The three new spatial boundaries created were:

- zone of 2005 modelled potentiometric surface above the DEM (potential connectivity zone);
- zone of drawdown (difference between 2005 and 2058 connectivity zones); and
- zone of Area of Vulnerability.

The three new spatial boundaries were intersected with the spatial data layers containing the GDE types (terrestrial vegetation/wetlands/baseflow streams and springs) and metrics calculated to determine the extent, range and type of GDE classified within each zone.

Discussion

The GDE likelihood layer was designed to be used at the regional scale for determining vegetation patches, which could be dependent on groundwater. The method assumes that vegetation accessing groundwater will maintain ecosystem health despite climate variability.

The water indices were not optimised to classify moisture-holding vegetation communities; therefore, the thresholds identified in this project could be refined with further investigations into the biophysical relationship between Landsat and moisture holding vegetation communities.

Fire was not masked out of the assessment. Cape York experiences significant ‘scars’ from fire events. DSITIA has released a Historical Fire Mapping product which could be integrated into the product in the future. The timing of this project did not allow for the integration of the Fire product as part of this assessment. Fire scar artefacts may result in a lower classified rank; however, it was noted in the field observations that fires did not affect spring locations due to presence of water on the surface. Fire may still affect marginal expressions of groundwater seeps.

Some locations within the Cape York study area experienced persistent cloud conditions. These areas may contain GDEs but were mapped with either a mask value (if no data was available for assessment) or have a reduced rank as not all information was available for the assessment.

Uncertainty in the GDE likelihood layer produced needs to be quantified. Additional field data on spring locations needs to be collected across the Cape area. The additional field information can be used to train, validate and refine errors of omission and commission in the GDE likelihood layer. The additional field data may also be used to better understand the sensitivities of input spatial layers, such as the water indices, and create new spatial layers which are optimised for detecting spring locations and GDEs.

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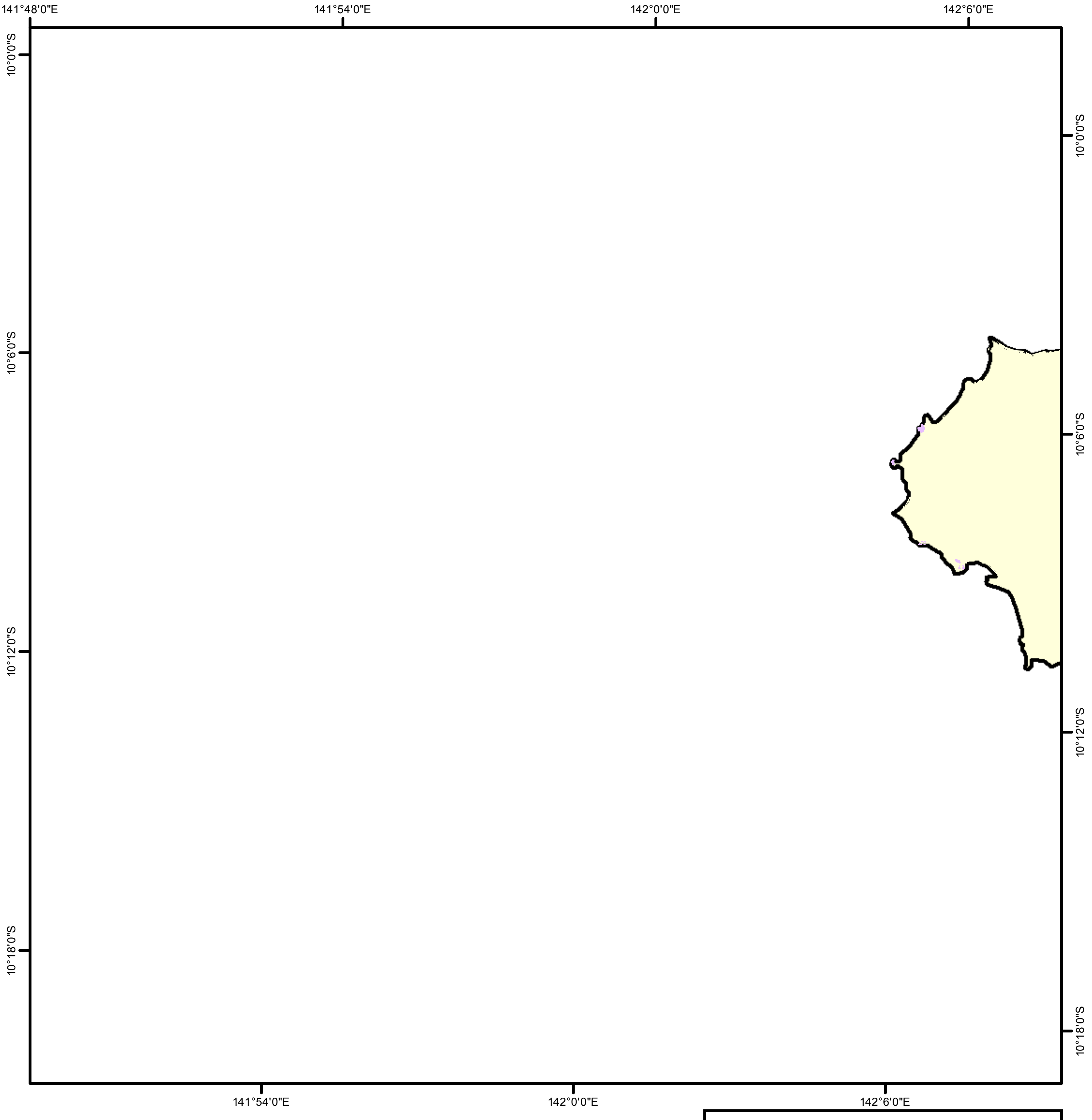
Maps of potential GDEs of Cape York Peninsula



A3 Torres Strait Islands Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

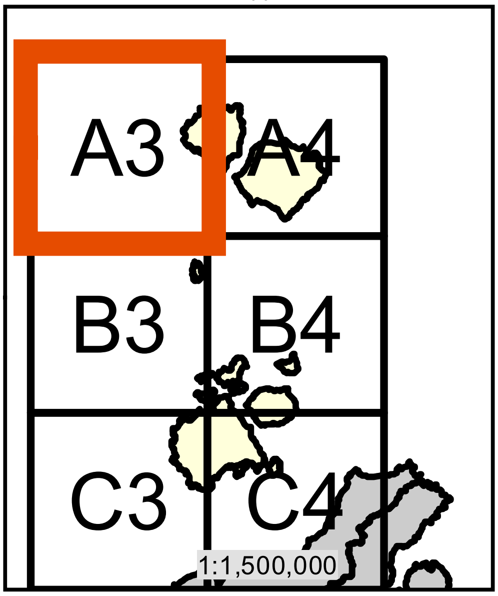
Likely

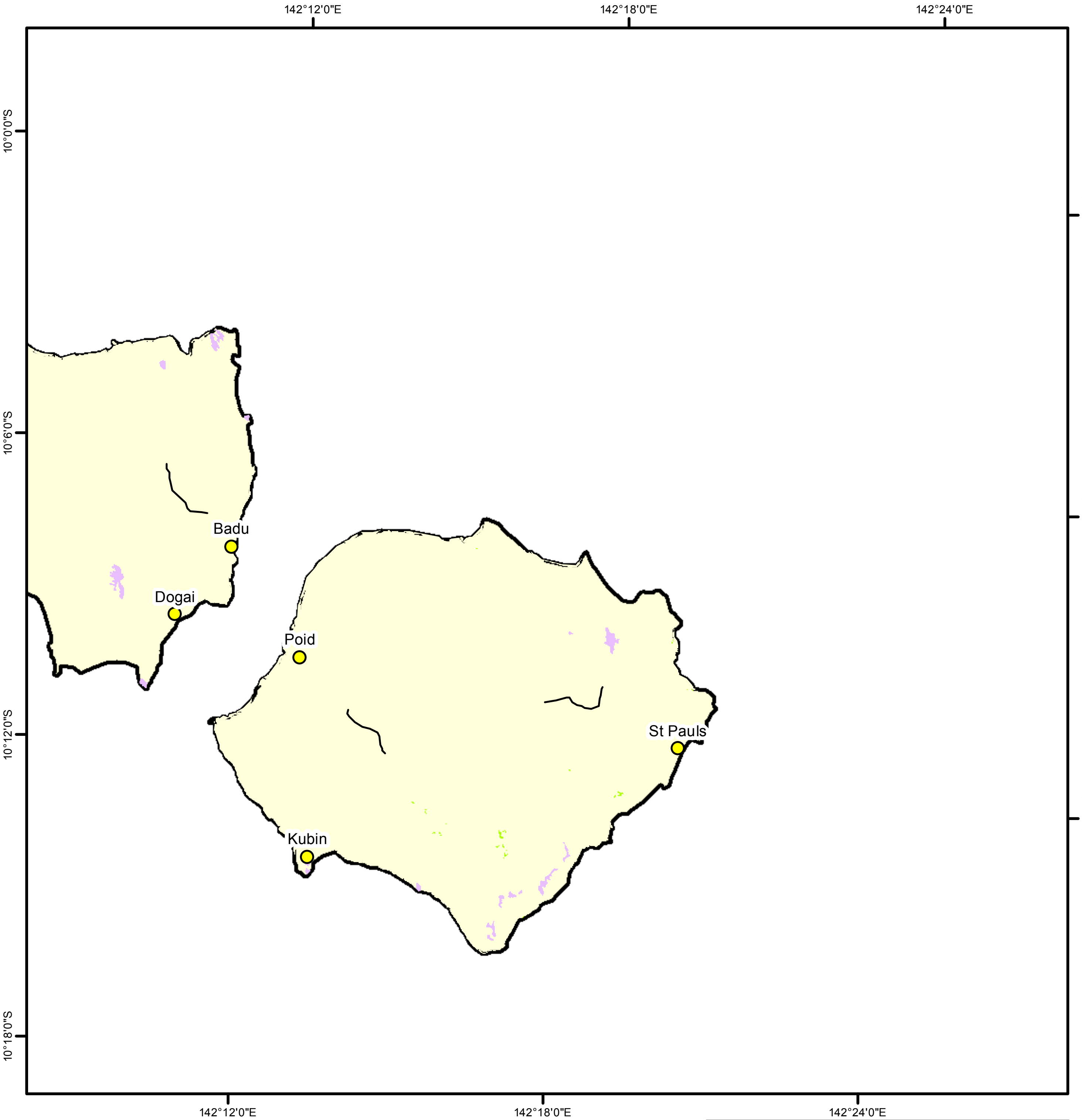
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





A4 Torres Strait Islands Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

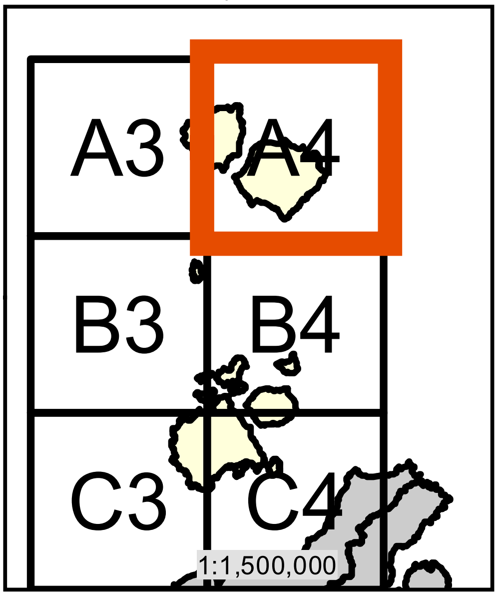
- Known Springs

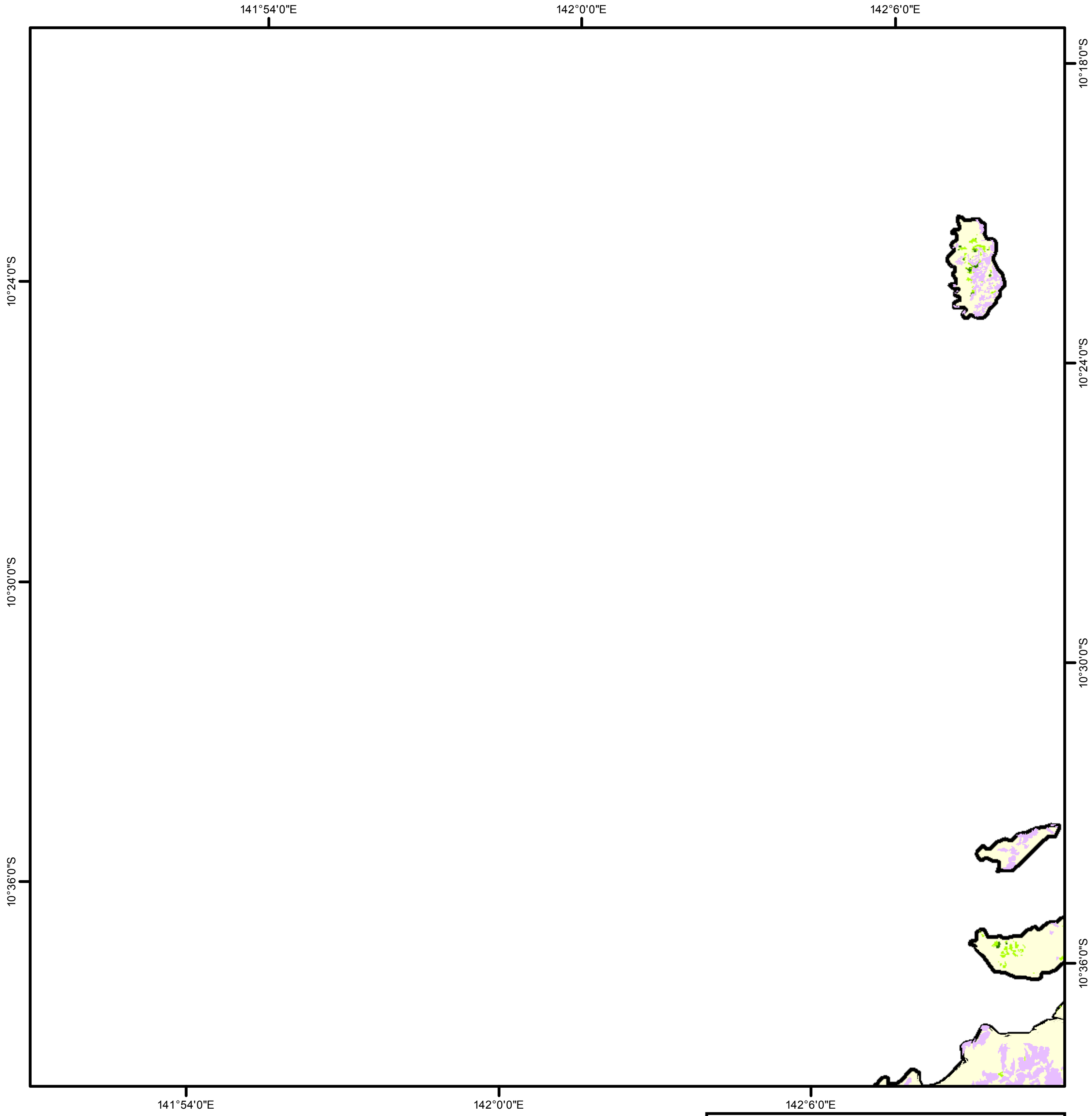
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





B3 Torres Strait Islands Catchment

0 2 4 8 12 16 Kilometres

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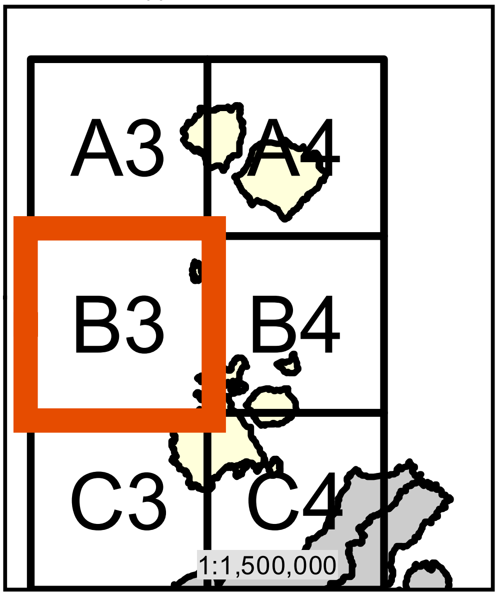
N



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

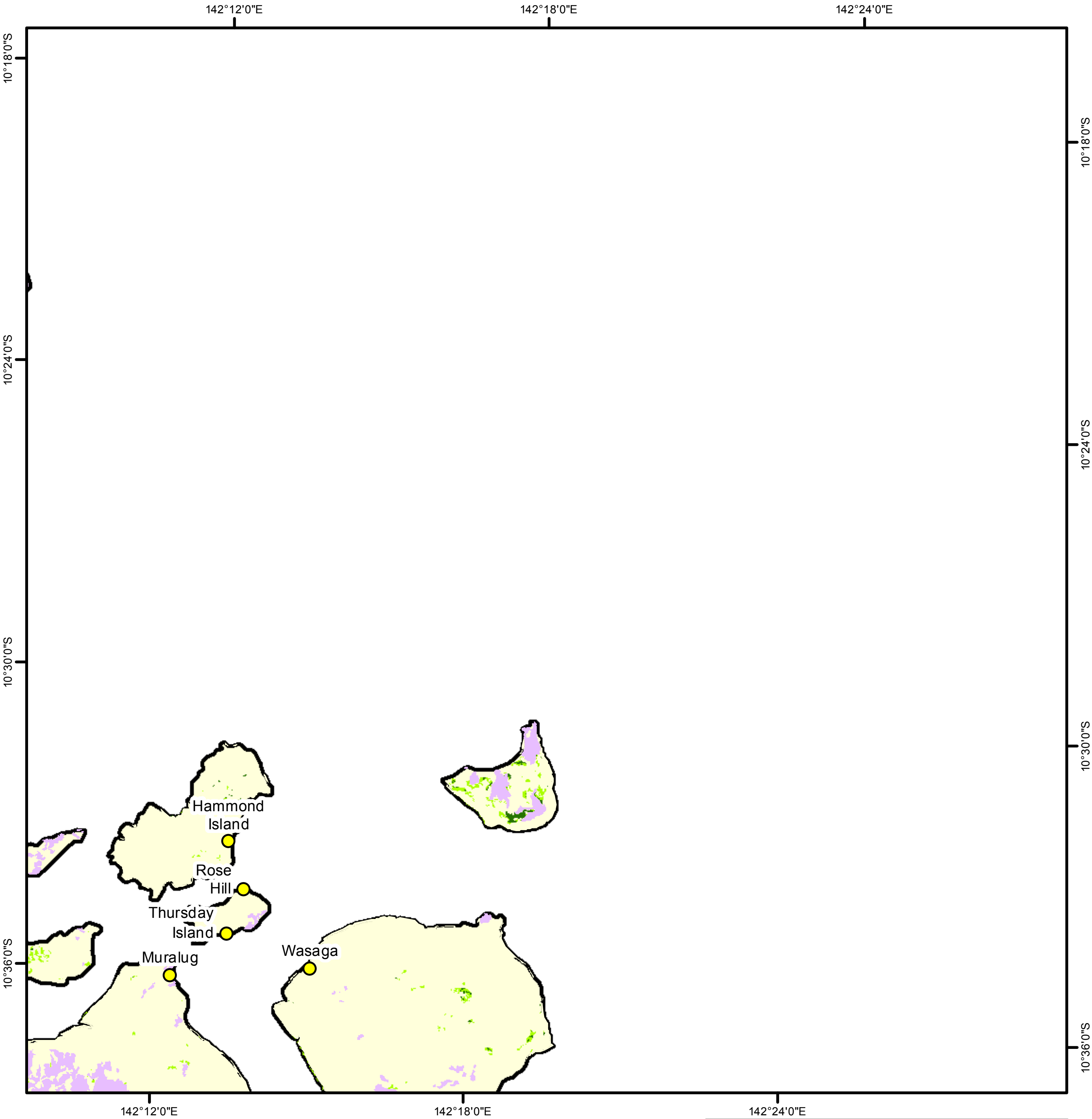
- Known Springs

Potential Springs

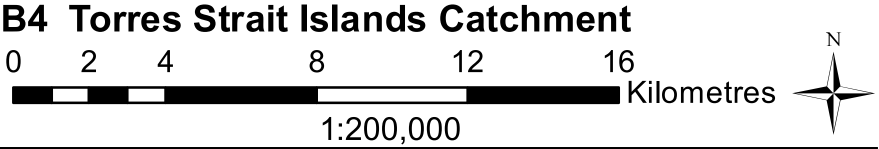
- Highly Likely
- Likely

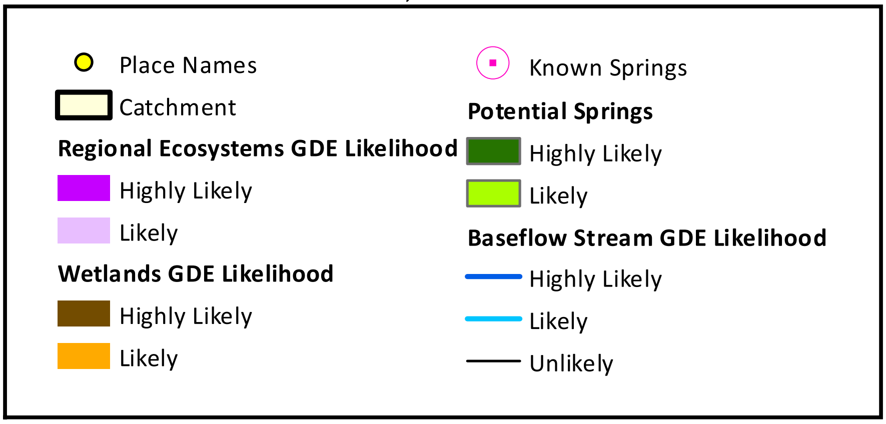
Baseflow Stream GDE Likelihood

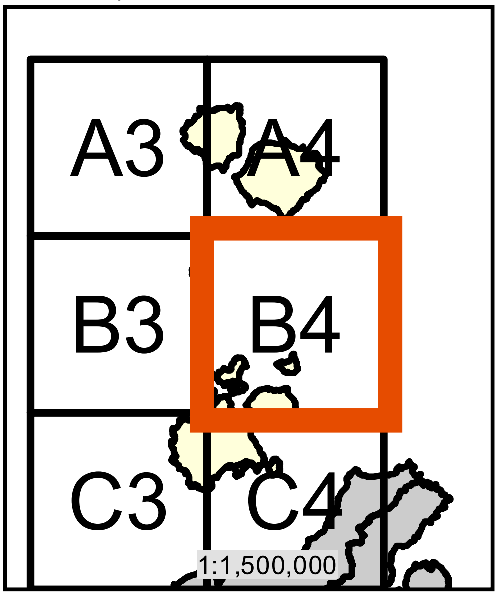
- Highly Likely
- Likely
- Unlikely

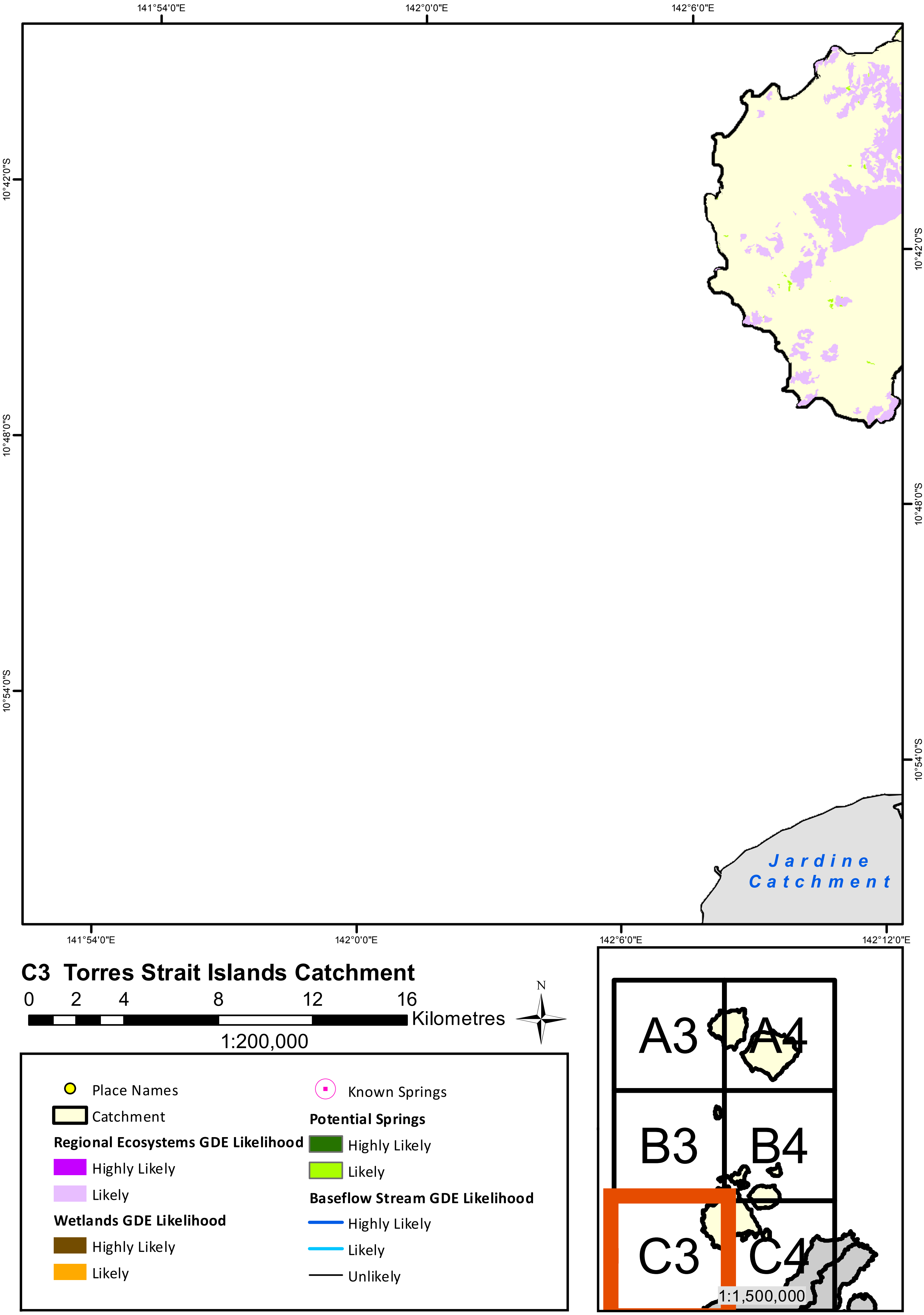


B4 Torres Strait Islands Catchment









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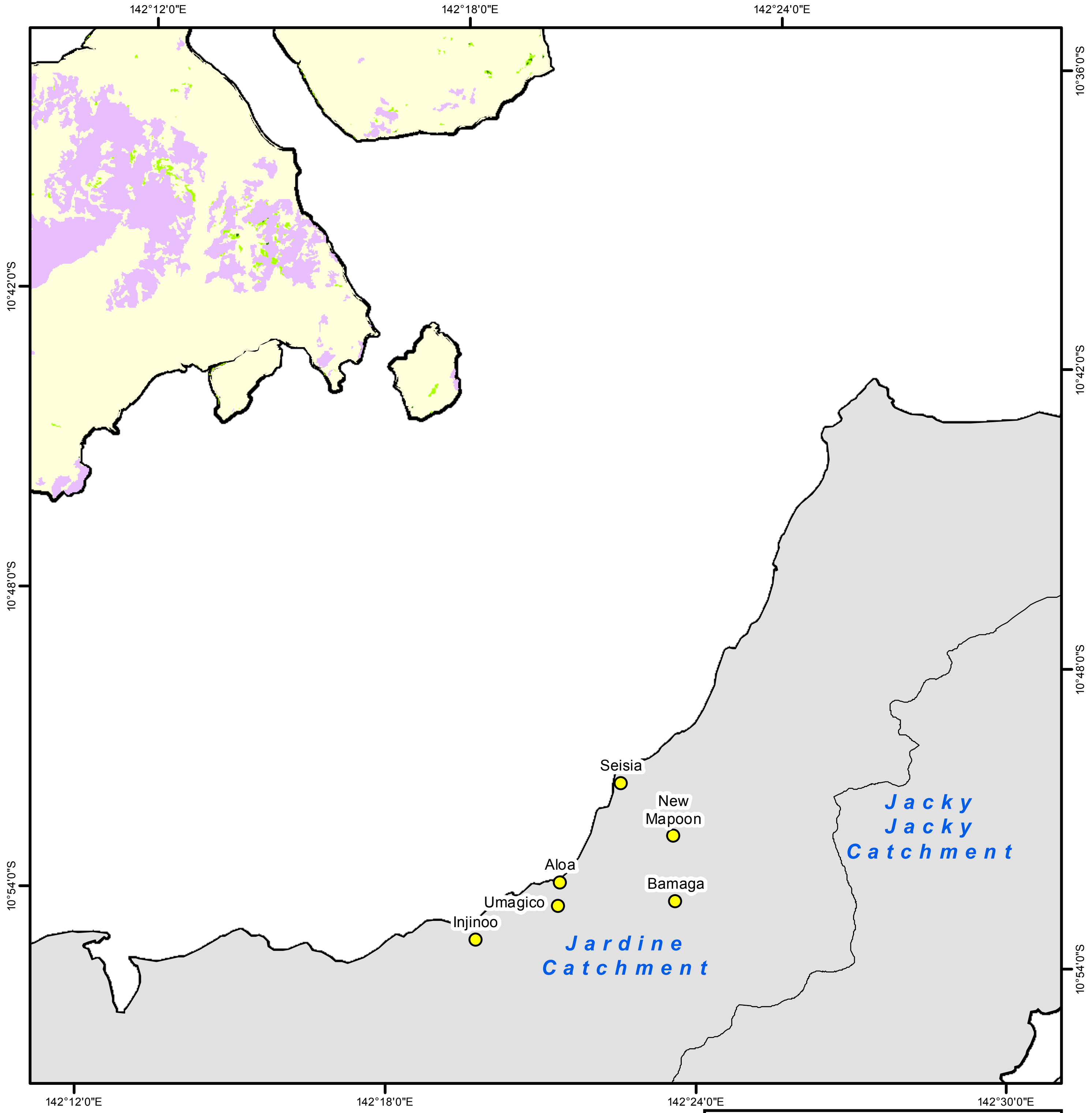
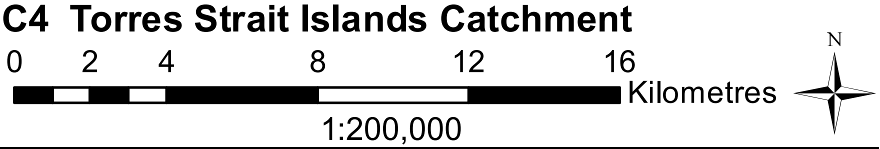
142°0'0"E
142°6'0"E
142°12'0"E
10°42'0"S
10°48'0"S
10°54'0"S
Jardine Catchment
C3 Torres Strait Islands Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Known Springs
Catchment
Potential Springs
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Wetlands GDE Likelihood
Highly Likely
Highly Likely
Likely
Likely
Unlikely
A3
A4
B3
B4
C3
C4
1:1,500,000



C4 Torres Strait Islands Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

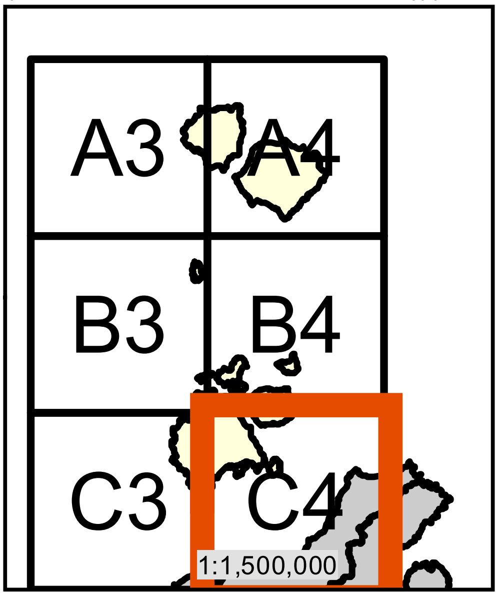
Likely

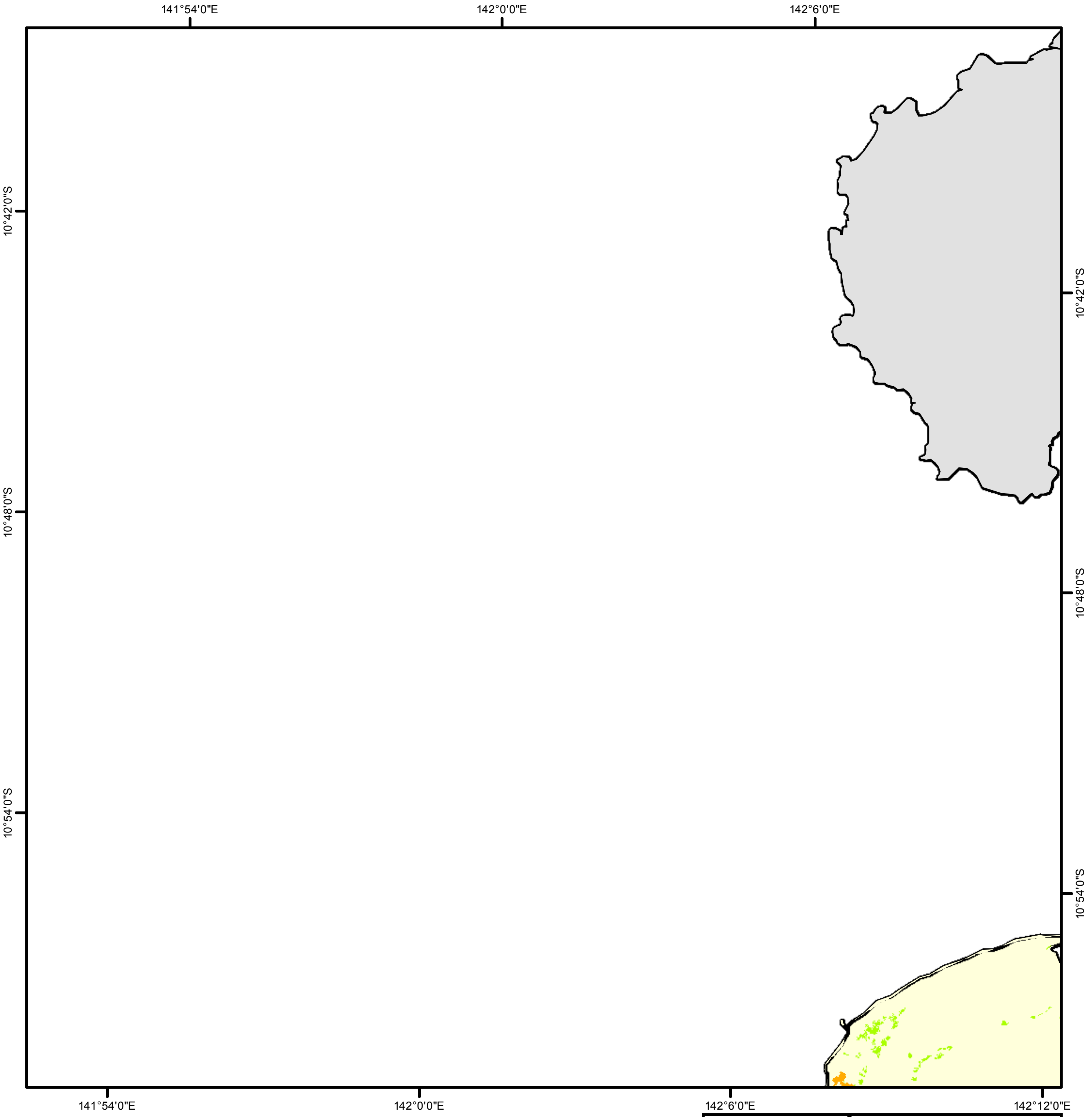
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





C3 Jardine Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

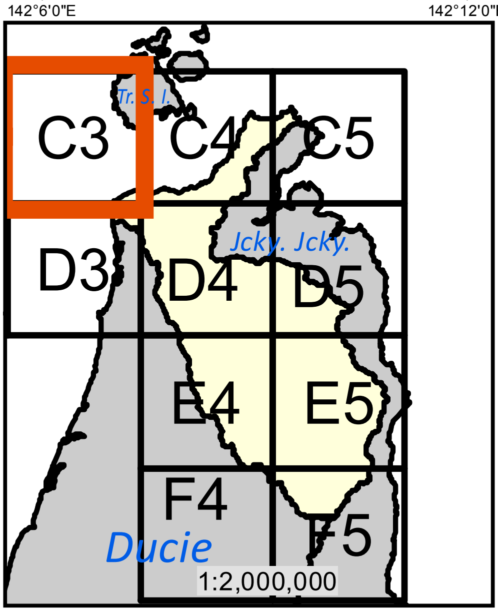
Likely

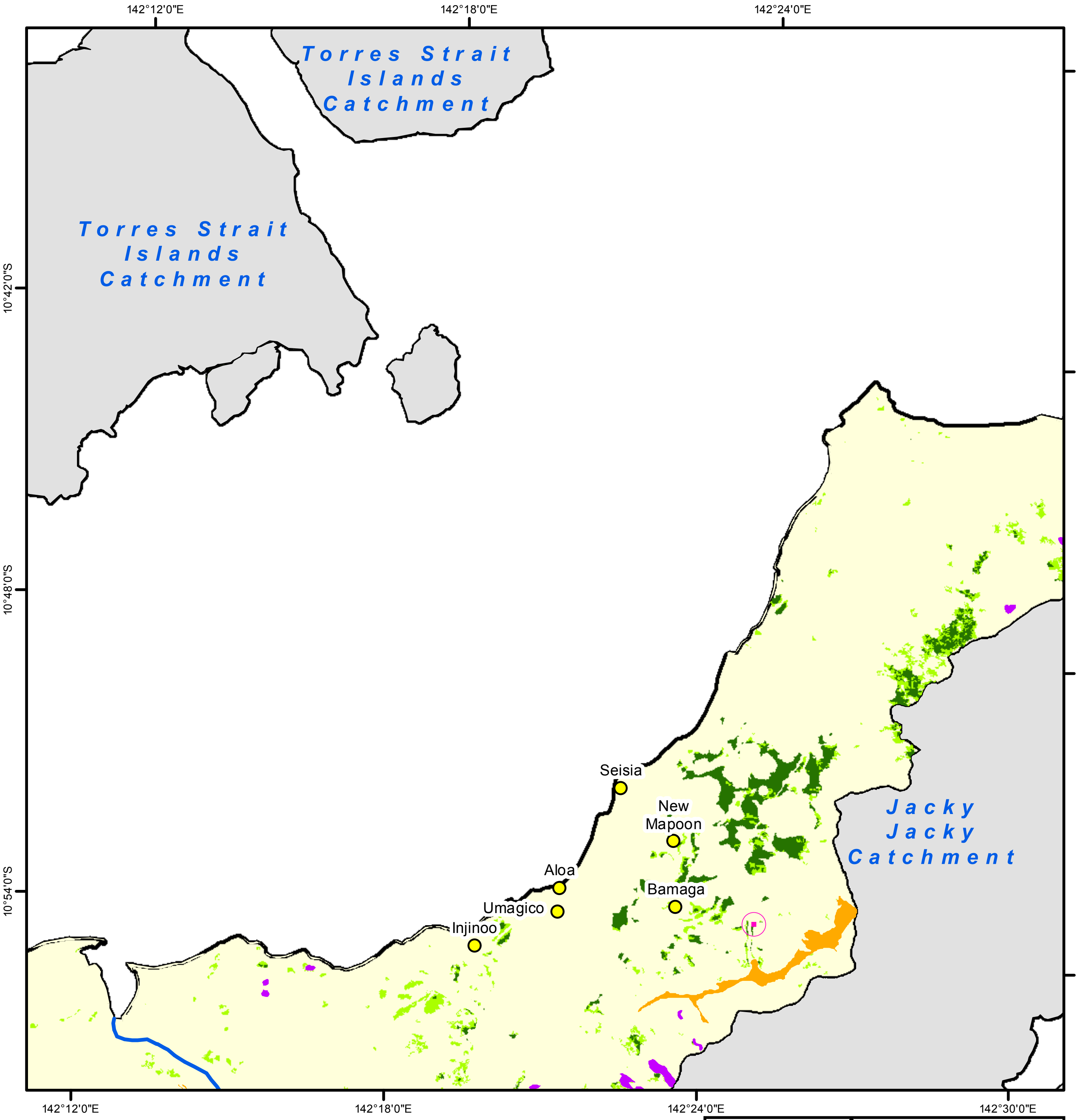
Baseflow Stream GDE Likelihood

Highly Likely

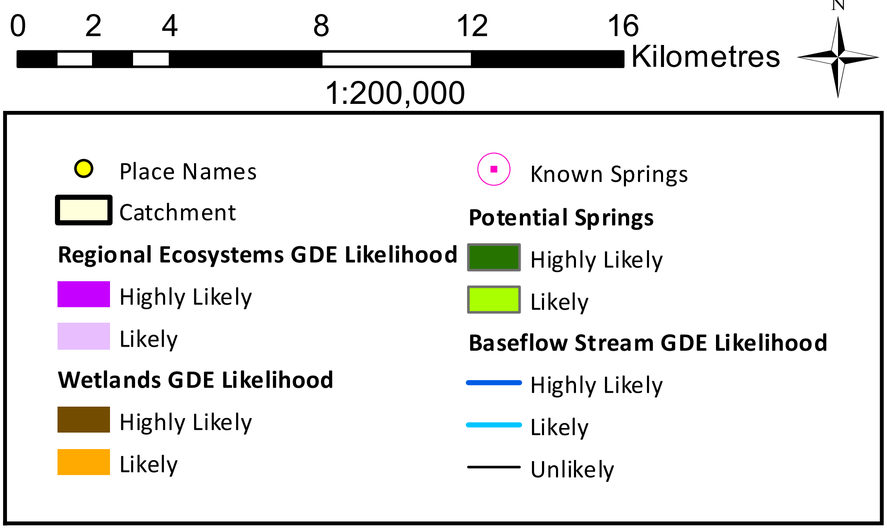
Likely

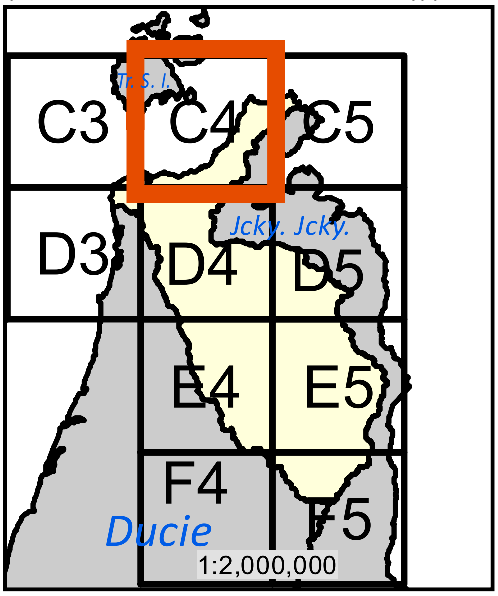
Unlikely

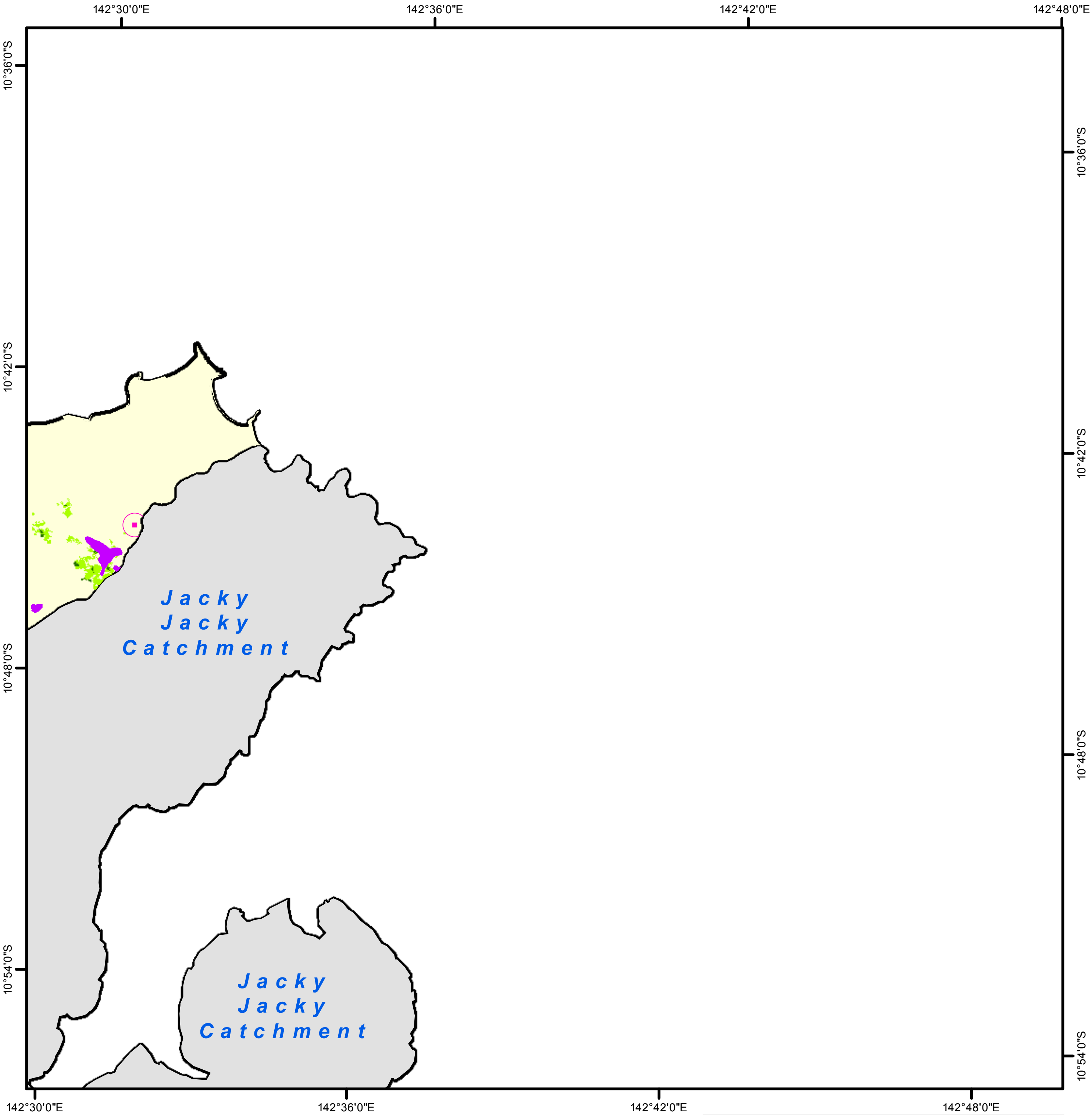




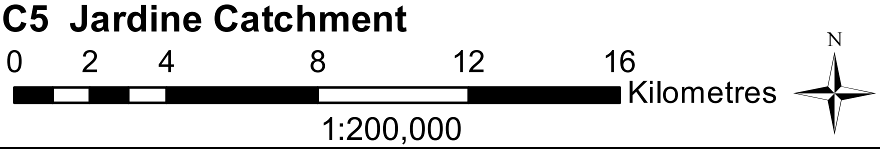
C4 Jardine Catchment



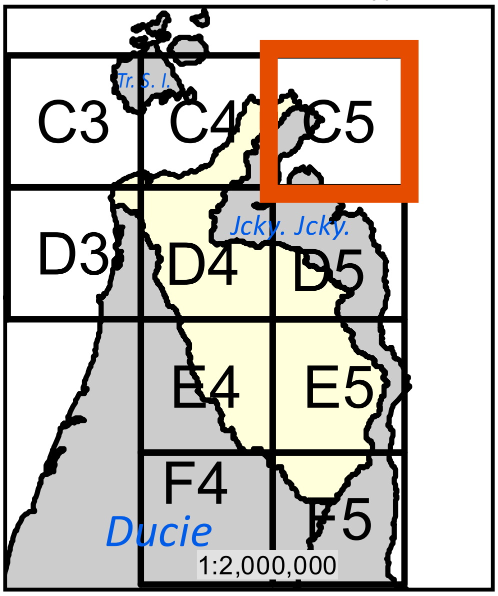


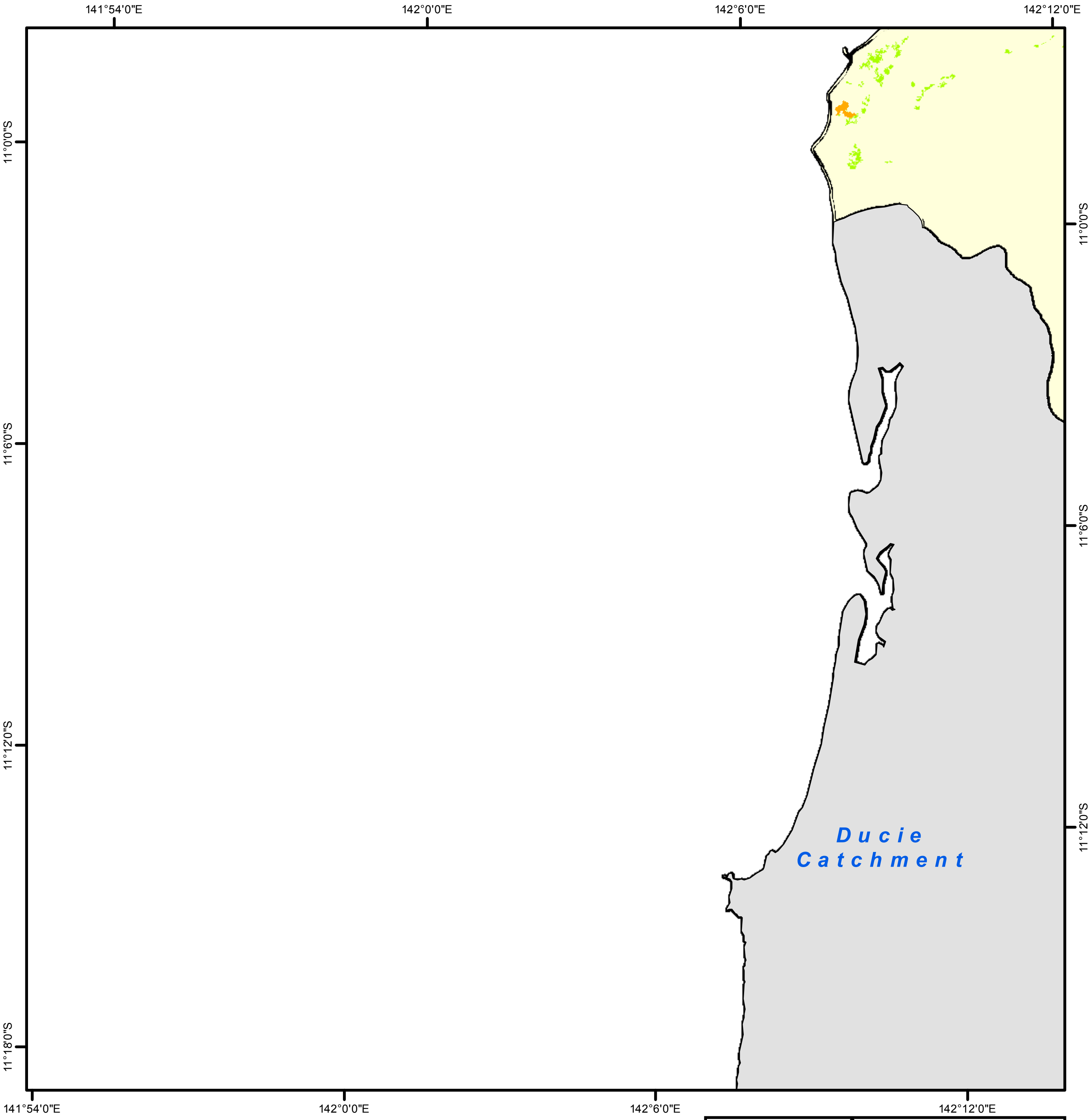


C5 Jardine Catchment



Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





D3 Jardine Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

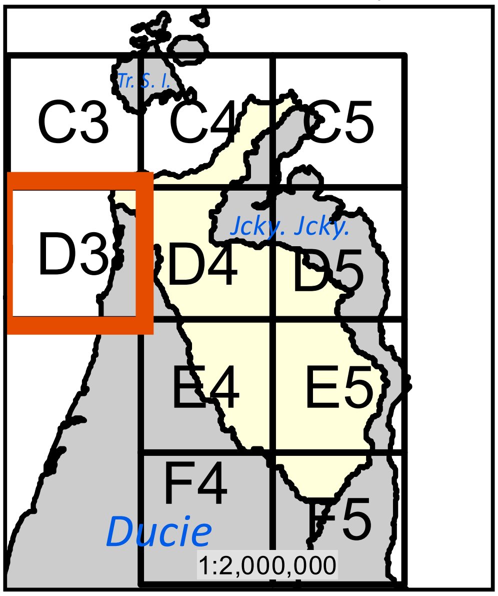
- Known Springs

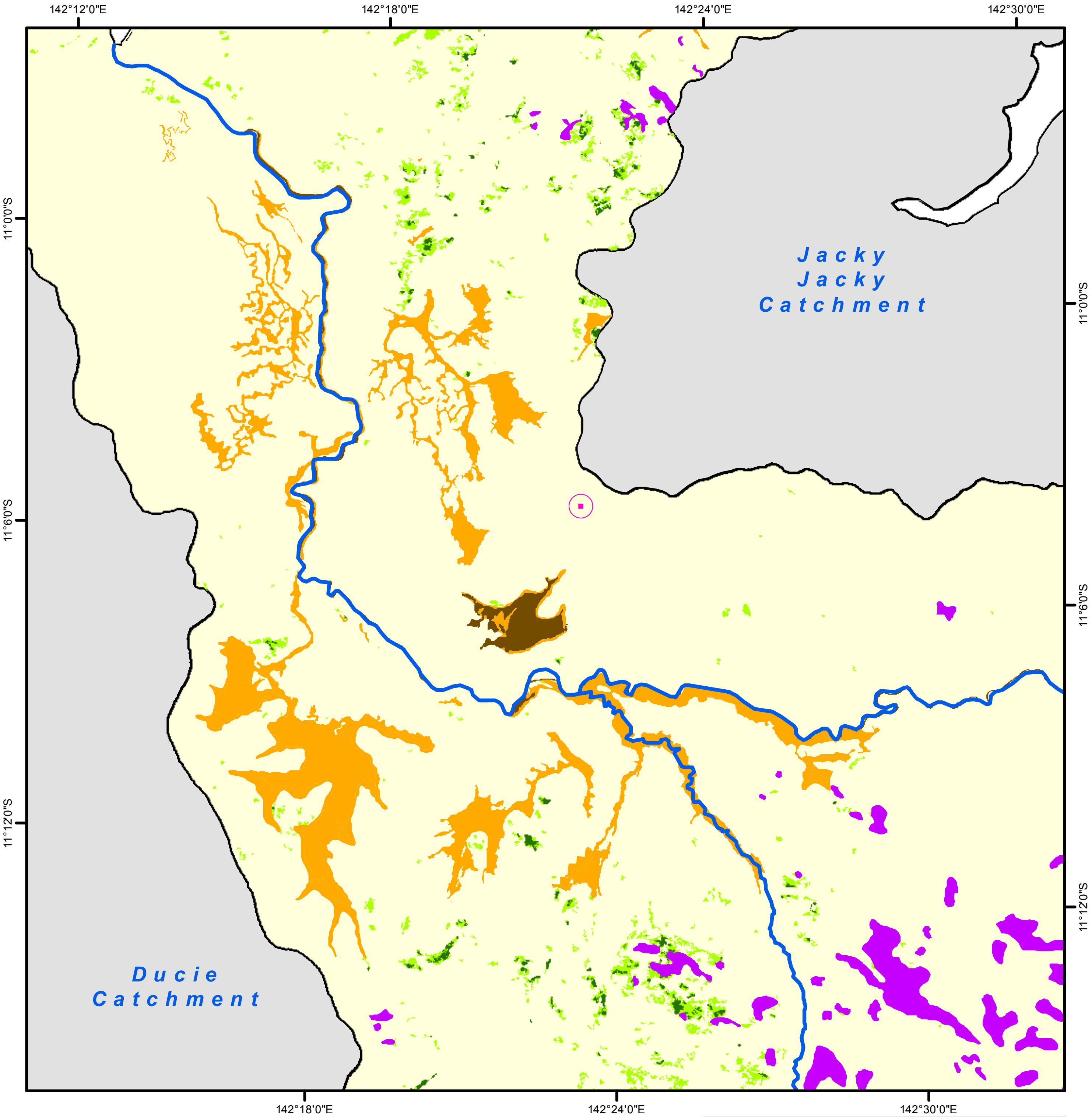
Potential Springs

- Highly Likely
- Likely

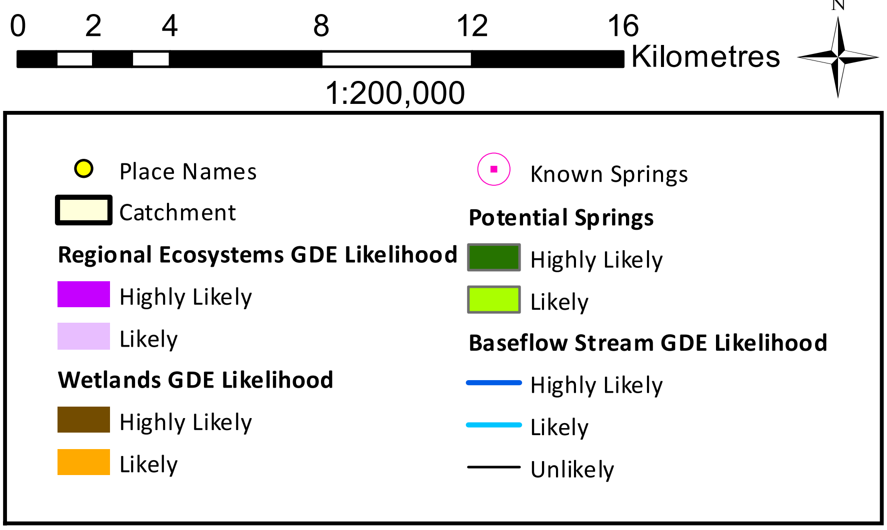
Baseflow Stream GDE Likelihood

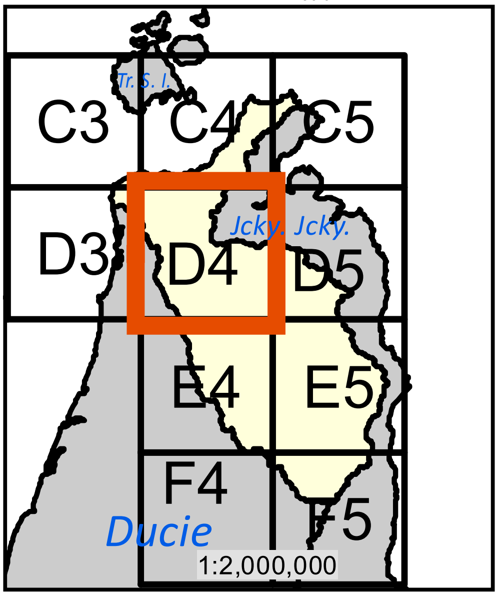
- Highly Likely
- Likely
- Unlikely

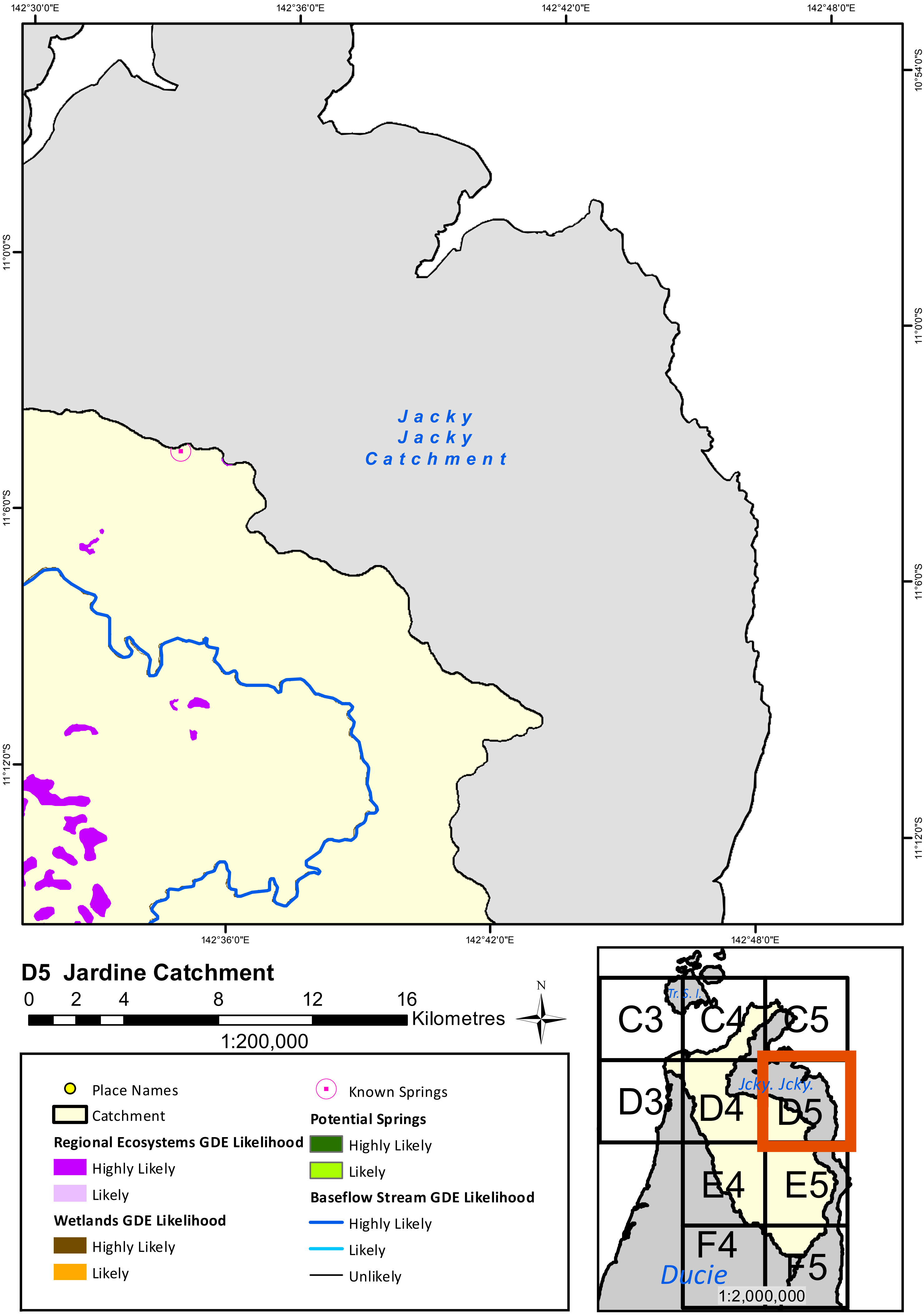




D4 Jardine Catchment







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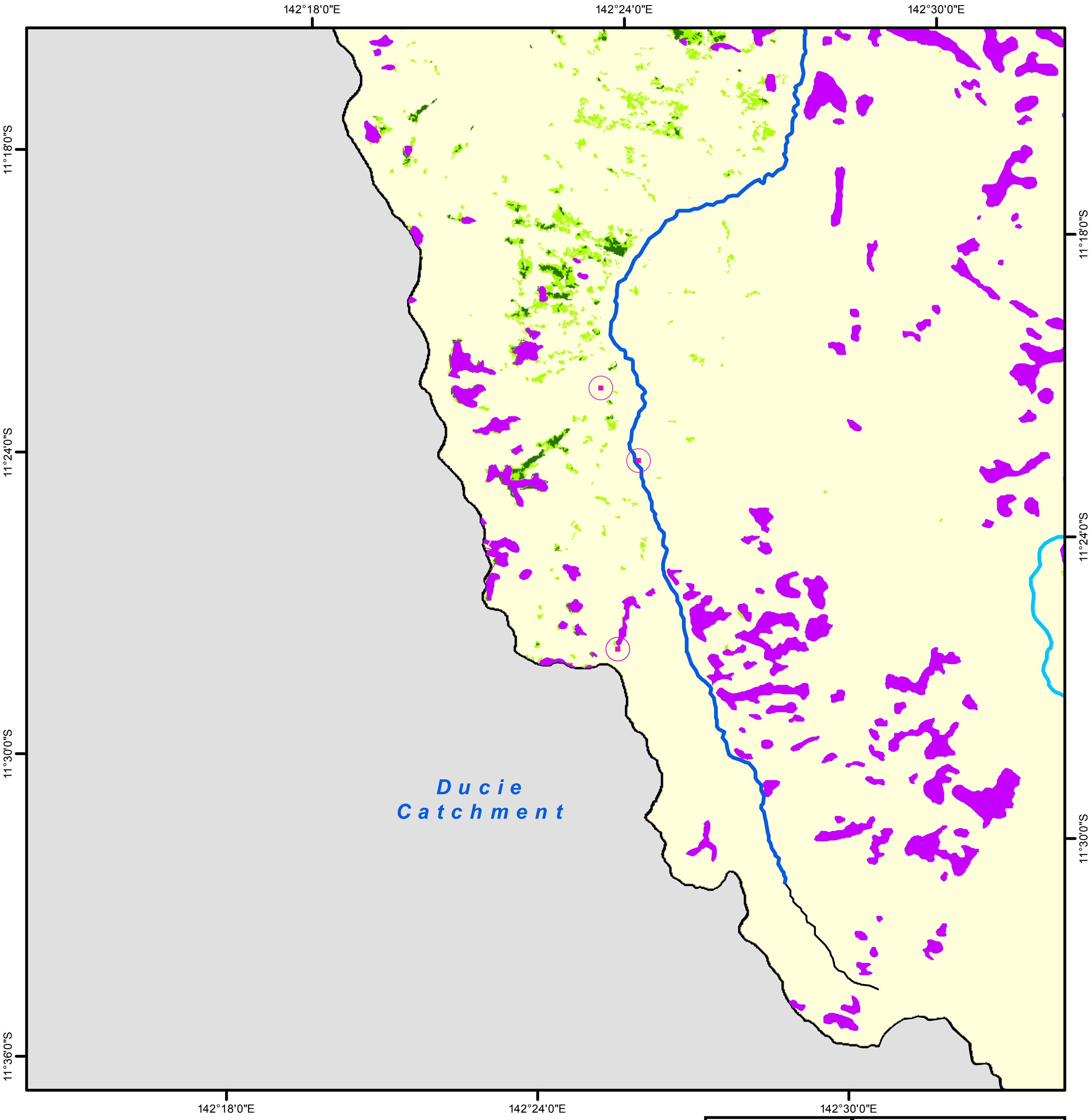
142°36'0"E
142°42'0"E
142°48'0"E
10°54'0"S
11°0'0"S
11°6'0"S
11°12'0"S
Jacky Jacky Catchment
D5 Jardine Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Tr. S. I.
C3
C4
C5
D3
D4
D5
Jcky. Jcky.
E4
E5
F4
F5
Ducie
1:2,000,000

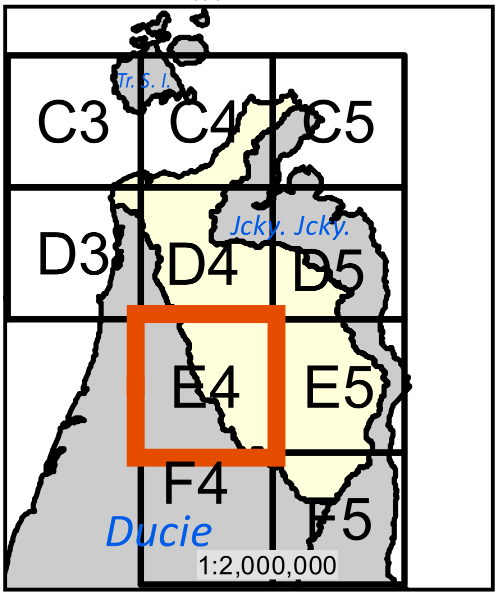


E4 Jardine Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

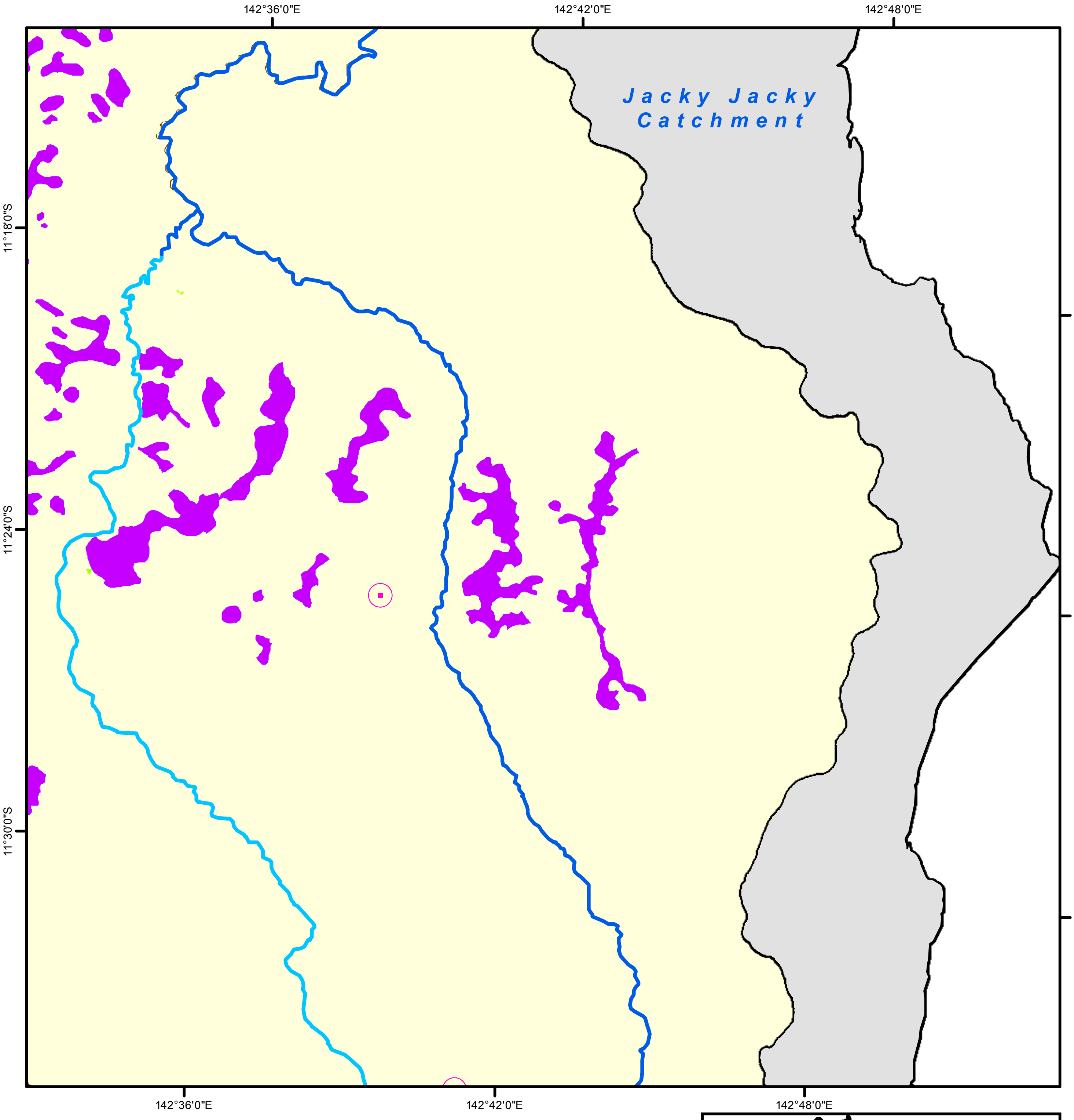
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



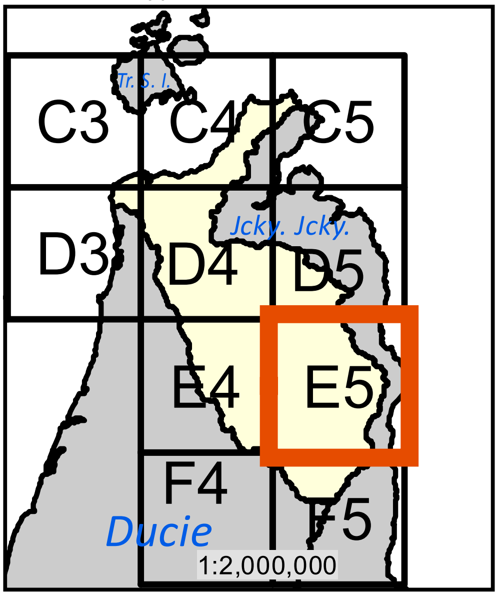
E5 Jardine Catchment

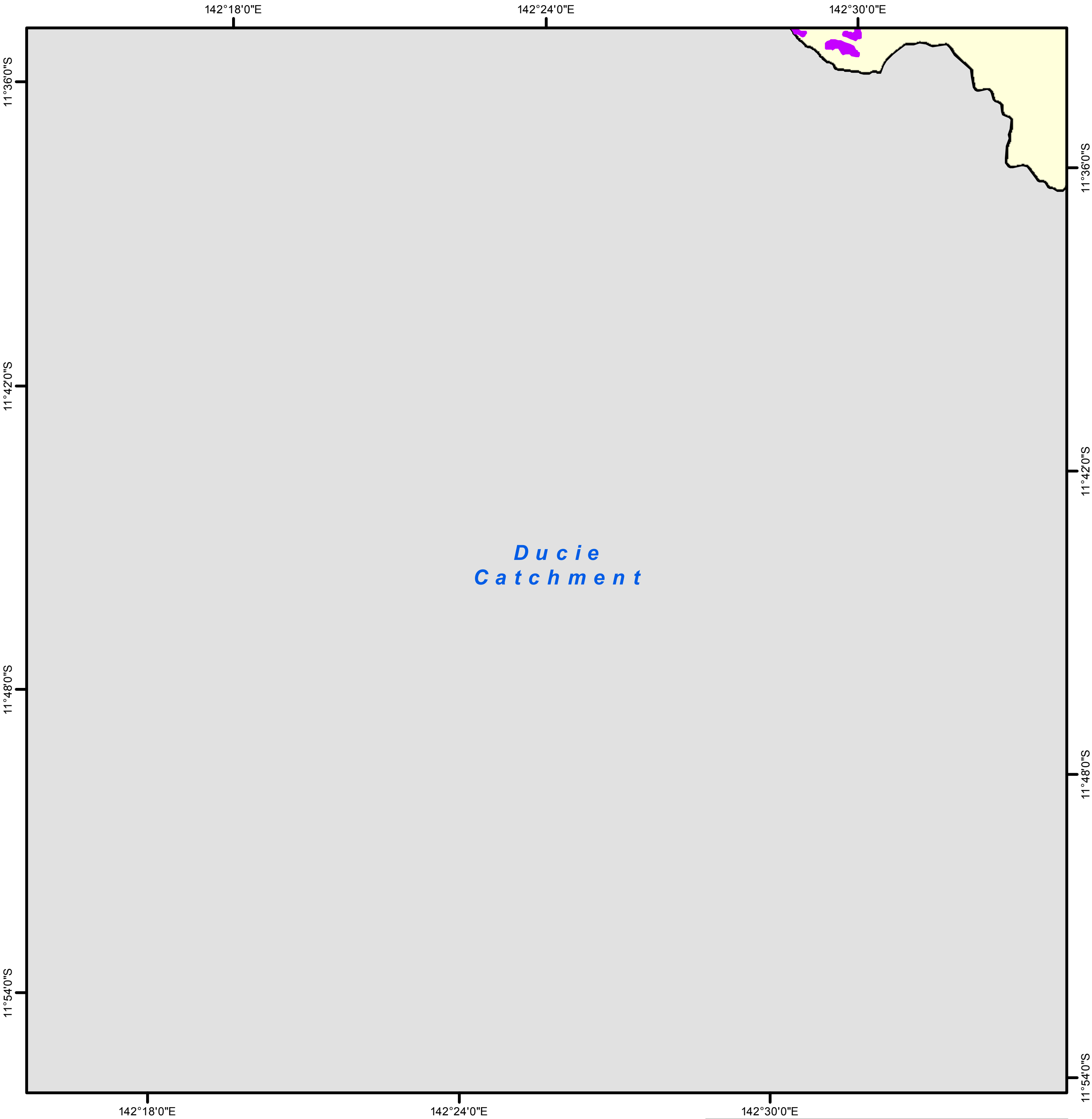
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





F4 Jardine Catchment

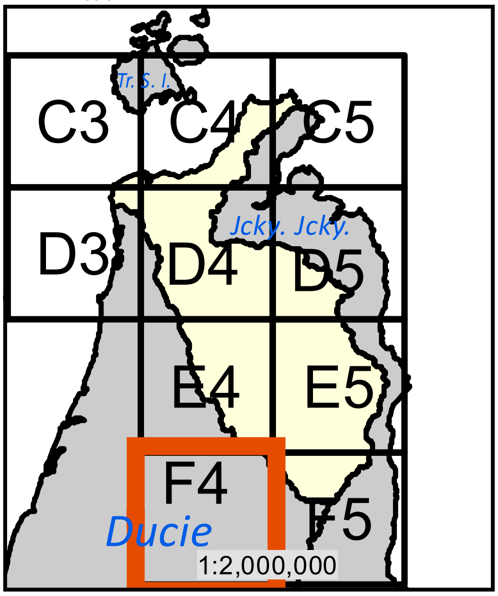
0 2 4 8 12 16 Kilometres

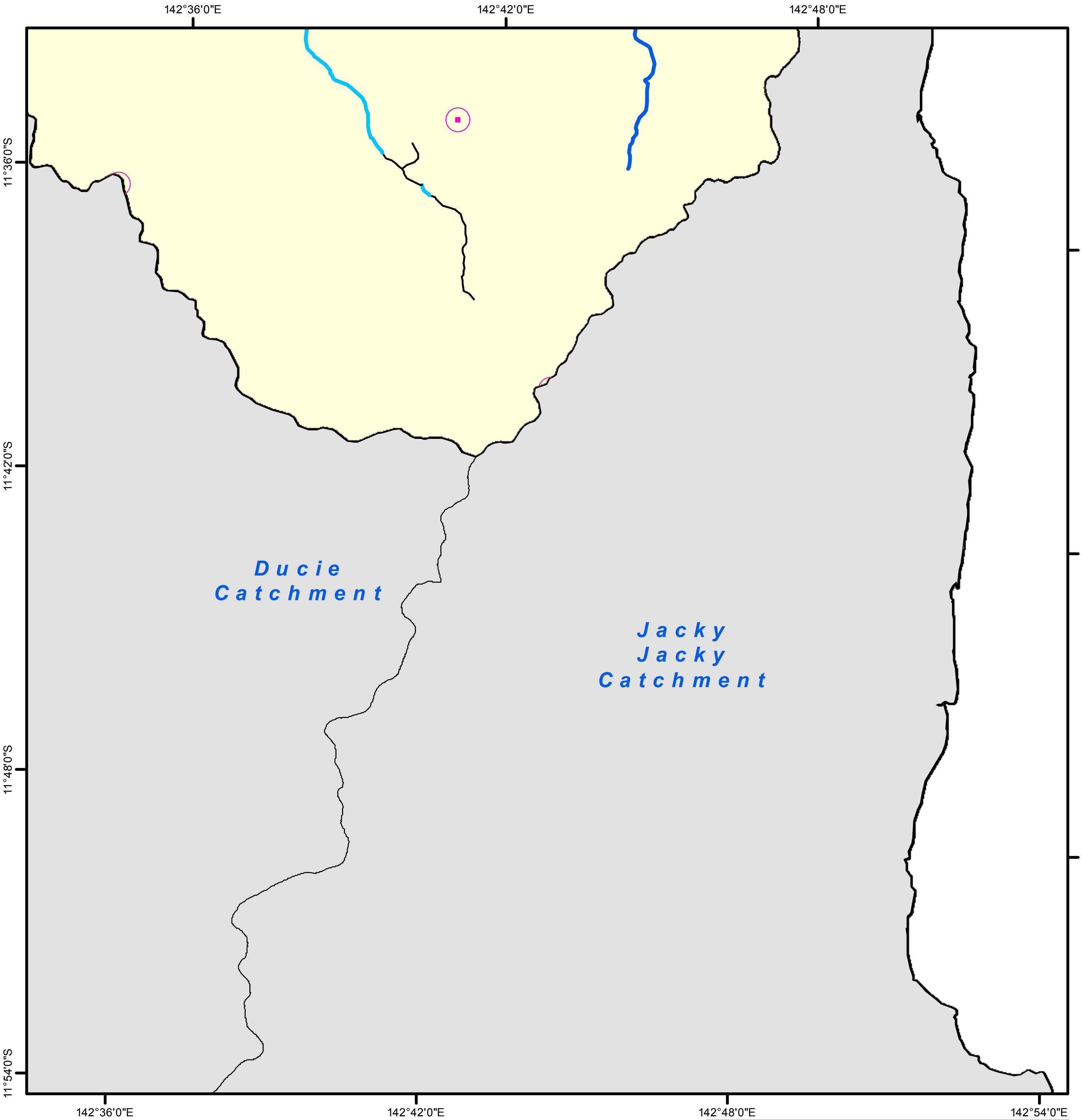
1:200,000

N

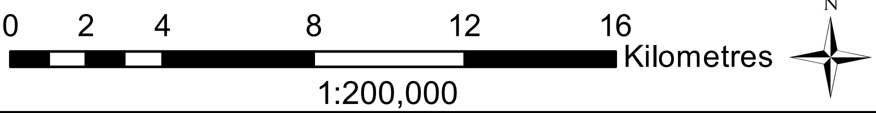
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





F5 Jardine Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

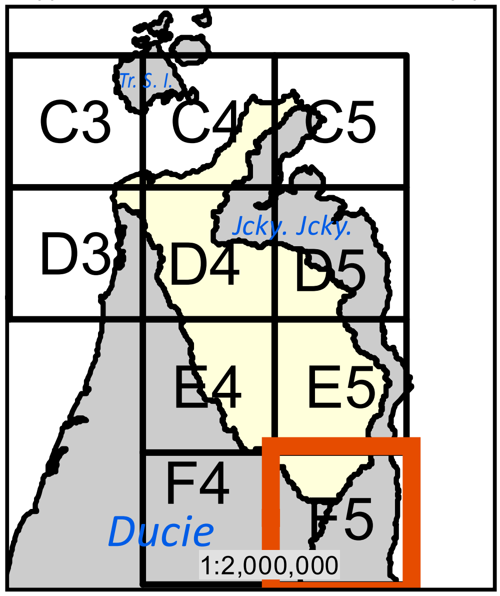
Likely

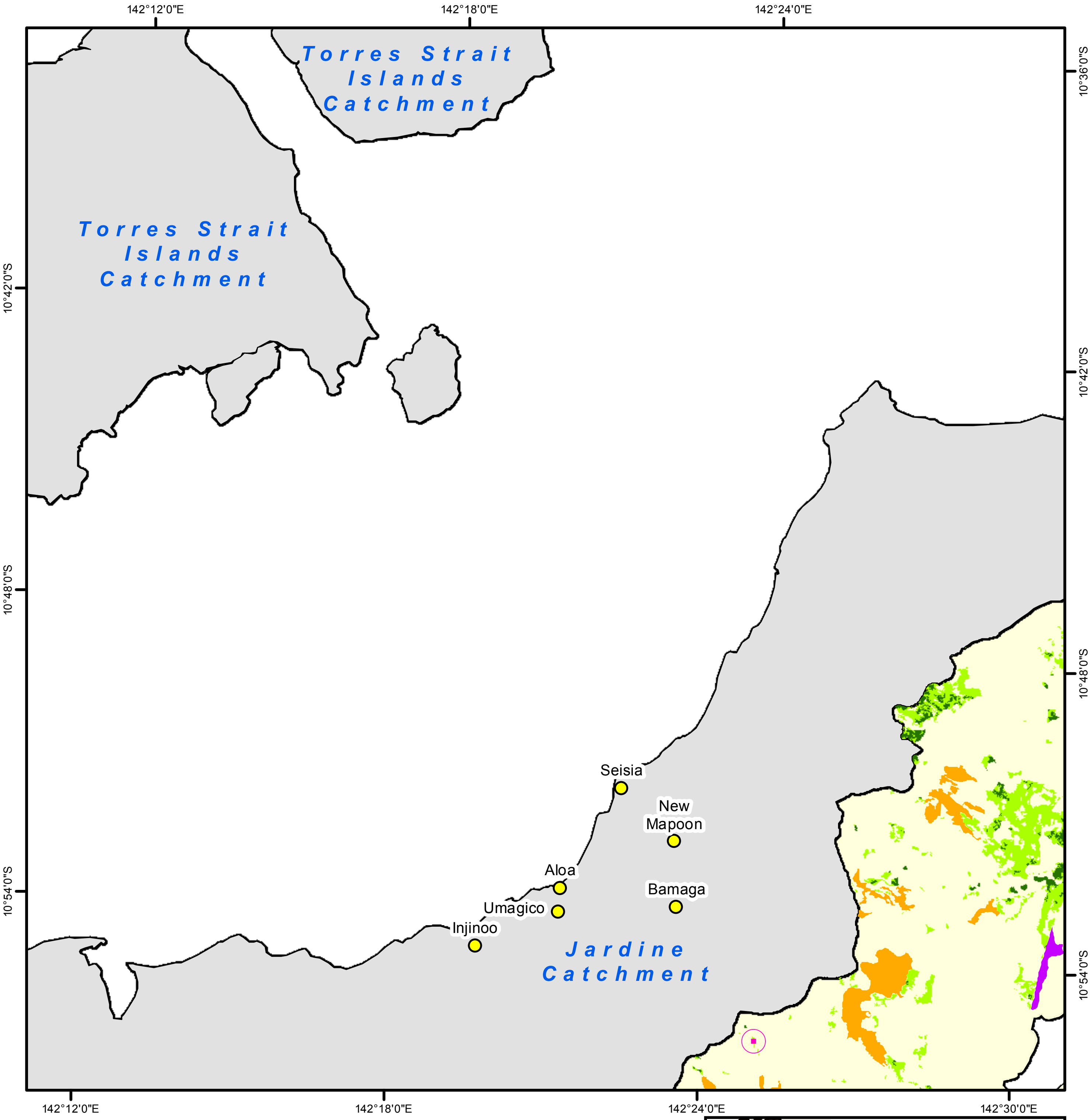
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





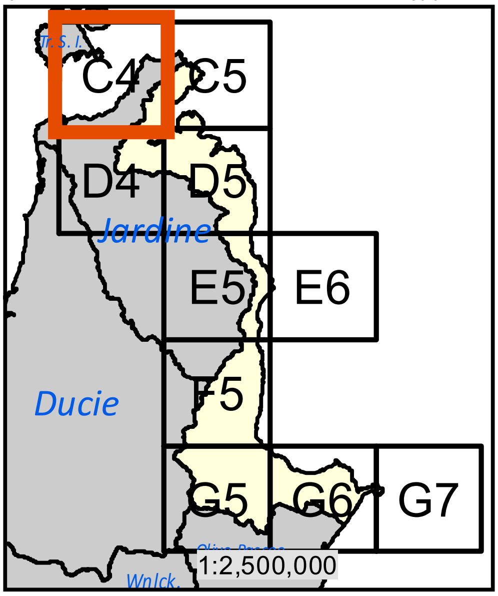
C4 Jacky Jacky Catchment

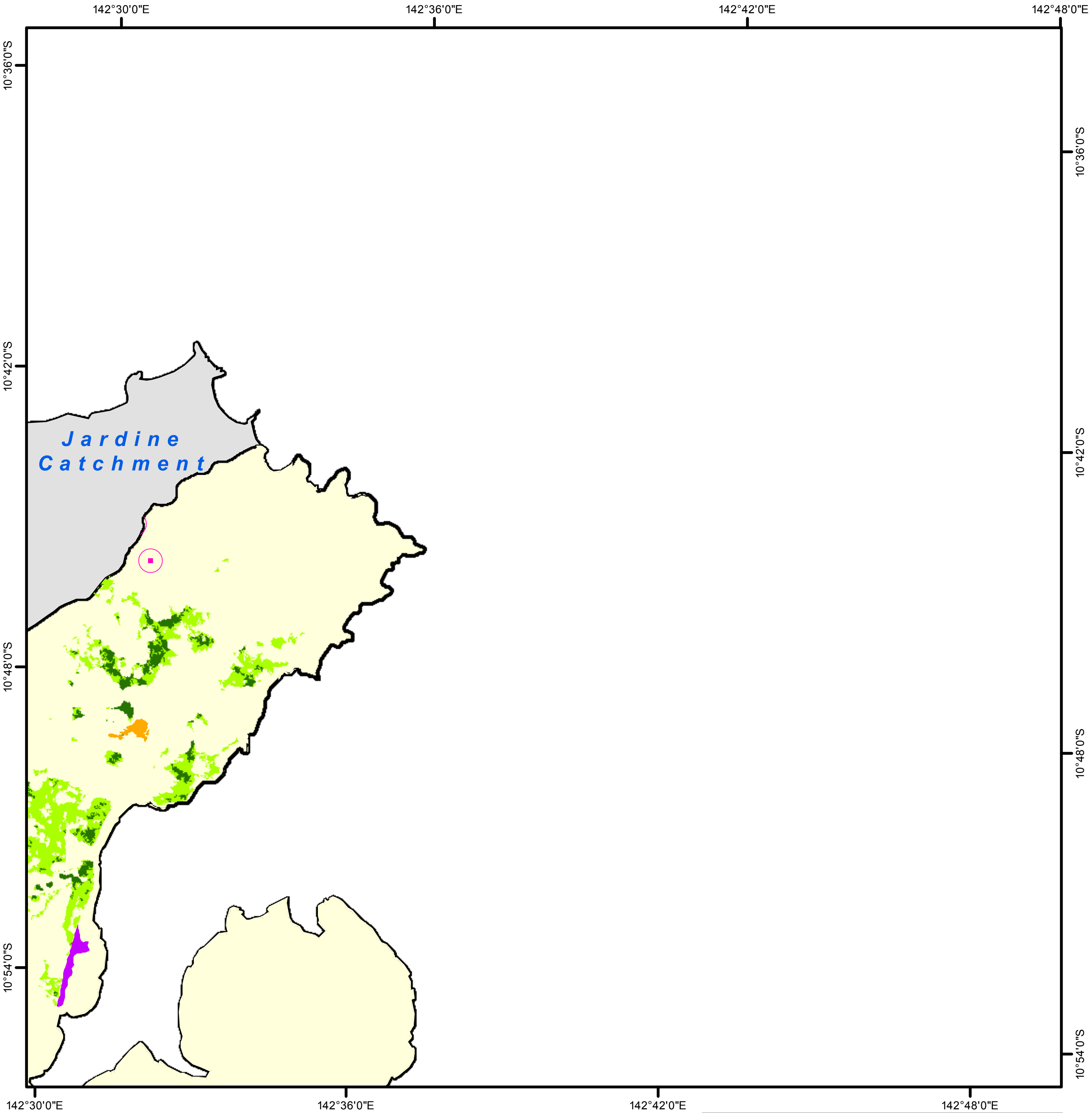
0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment
- **Regional Ecosystems GDE Likelihood**
  - Highly Likely
  - Likely
- **Wetlands GDE Likelihood**
  - Highly Likely
  - Likely
- Known Springs
- **Potential Springs**
  - Highly Likely
  - Likely
- **Baseflow Stream GDE Likelihood**
  - Highly Likely
  - Likely
  - Unlikely





C5 Jacky Jacky Catchment

0 2 4 8 12 16 Kilometres

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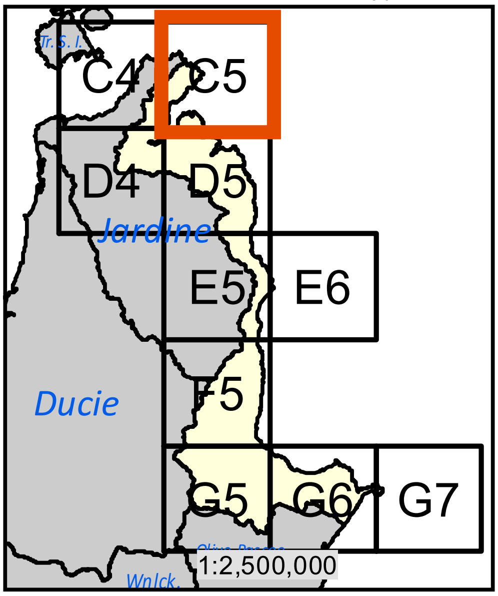


Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

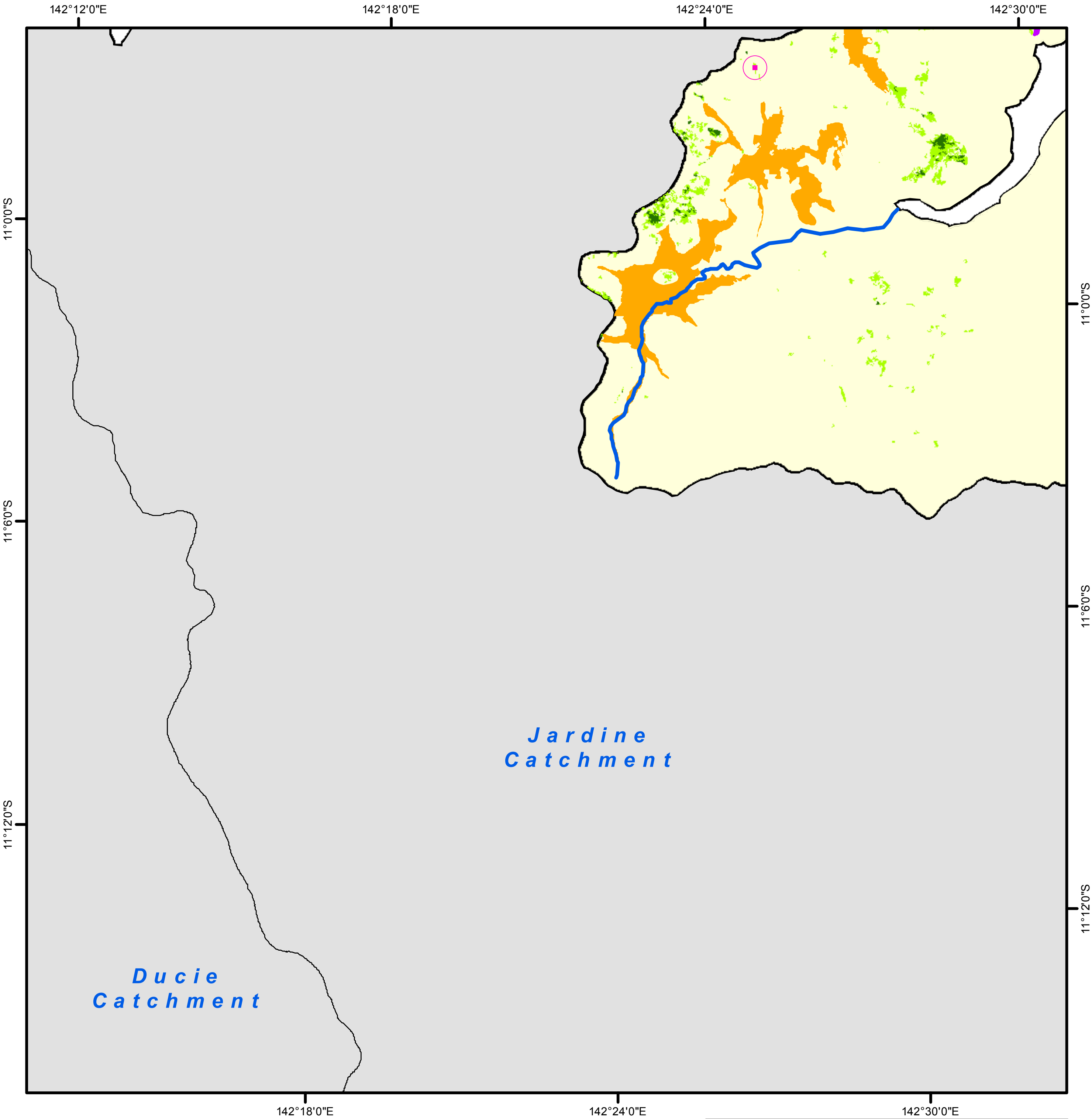
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



D4 Jacky Jacky Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

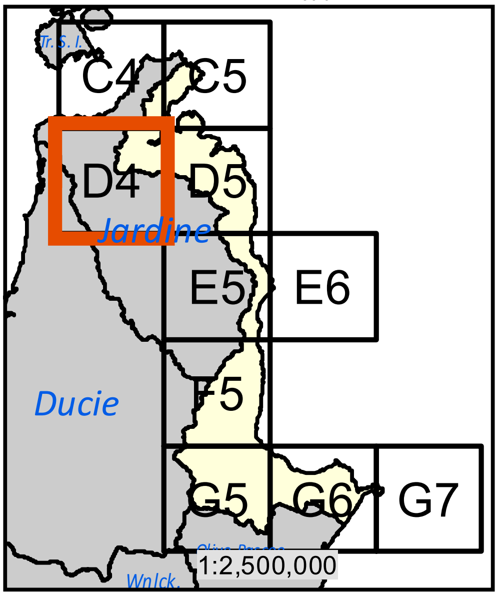
Likely

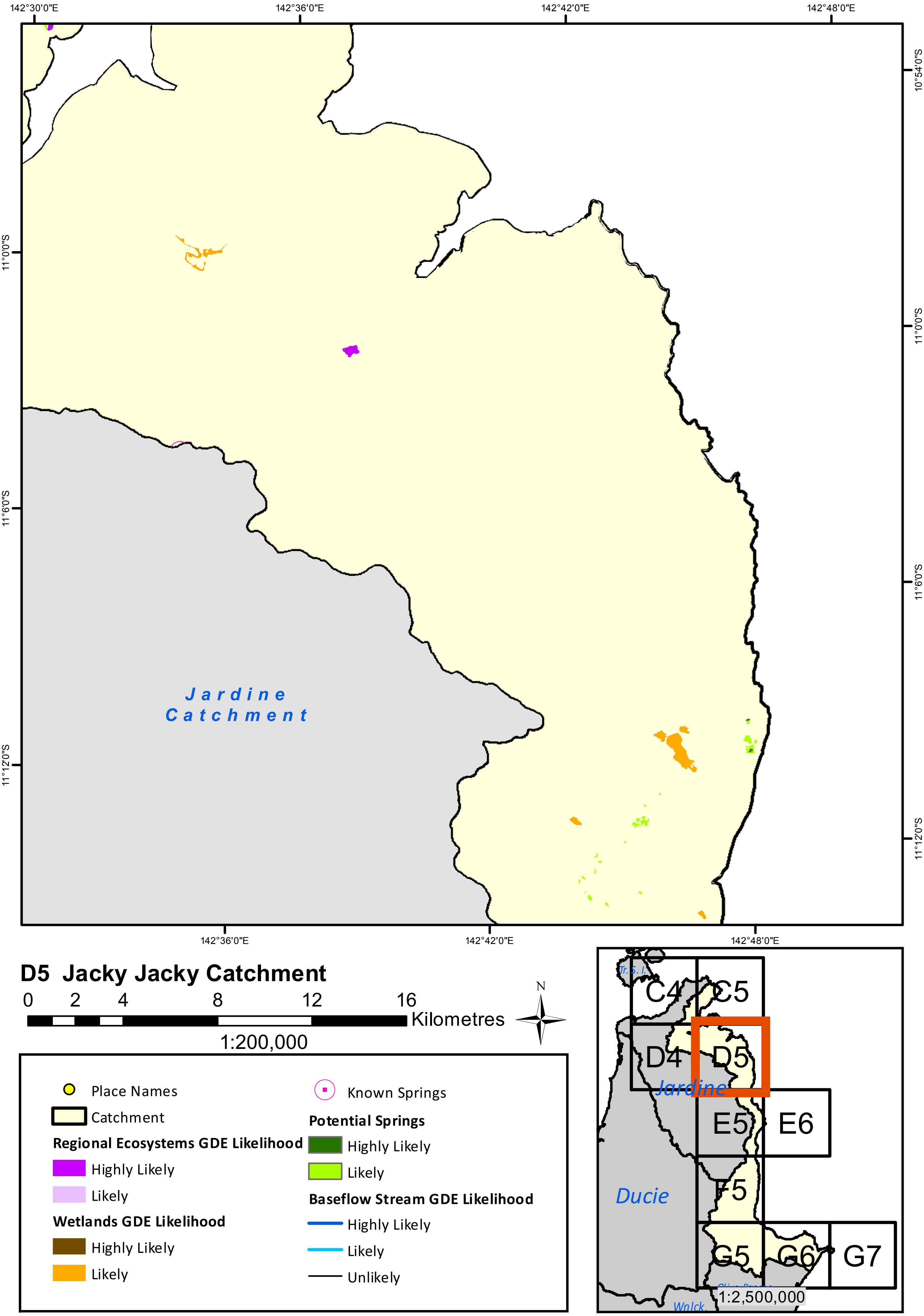
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely

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11°6'0"S
11°12'0"S
Jardine
Catchment
D5 Jacky Jacky Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Known Springs
Catchment
Potential Springs
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Wetlands GDE Likelihood
Highly Likely
Highly Likely
Likely
Likely
Unlikely
C4
C5
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D5
Jardine
E5
E6
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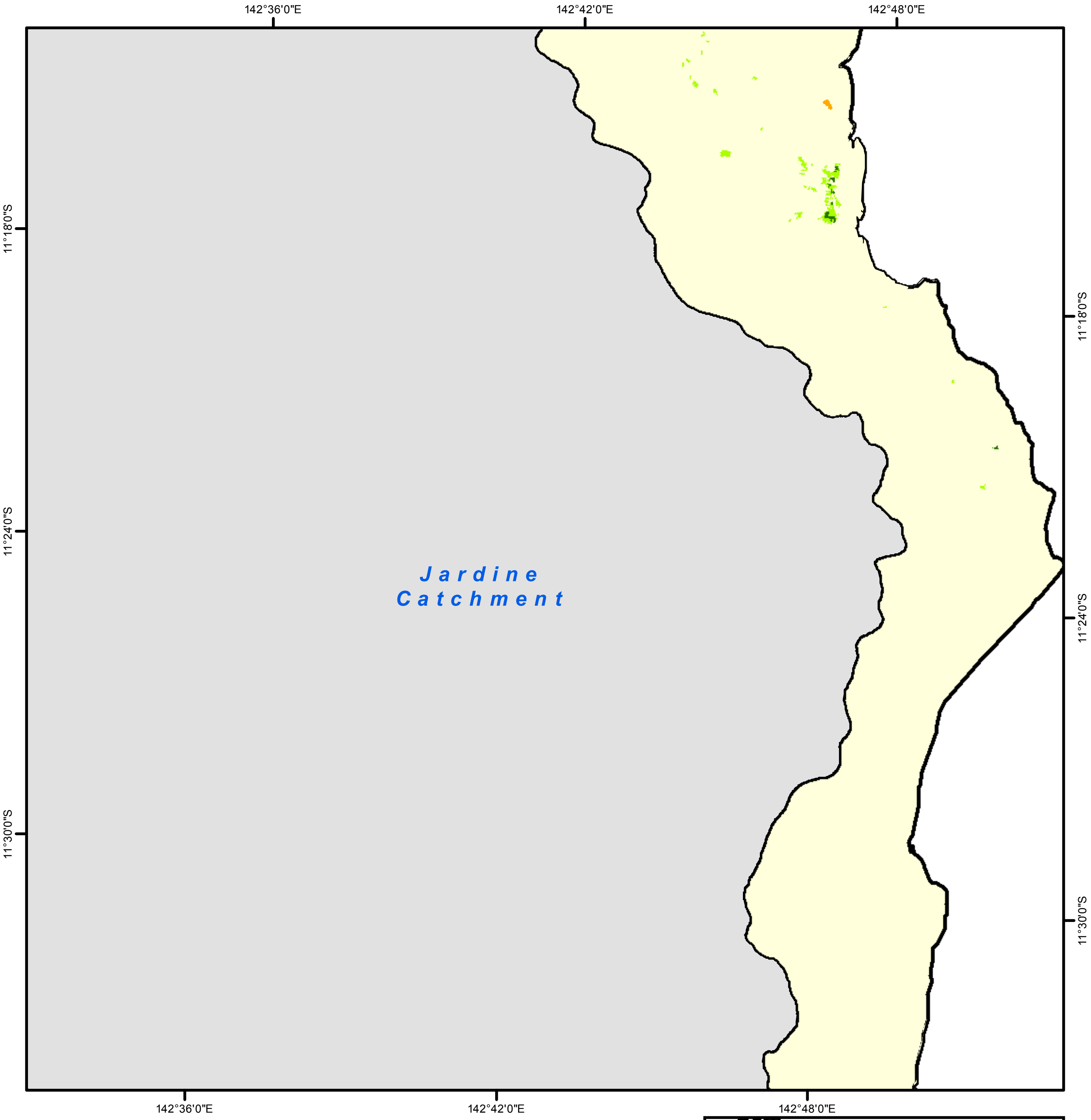
F5
G5
G6
G7
1:2,500,000



E5 Jacky Jacky Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

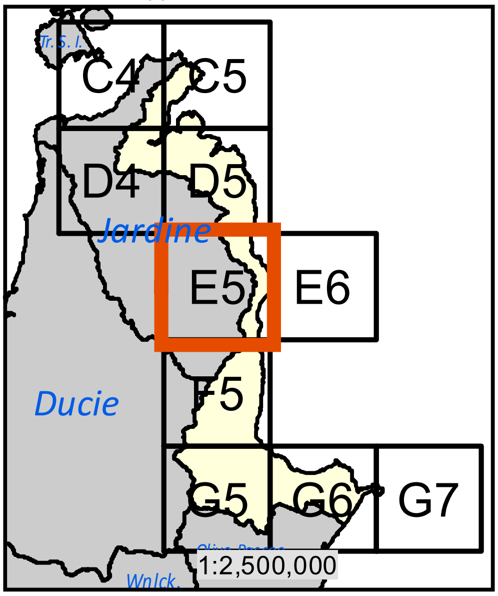
- Known Springs

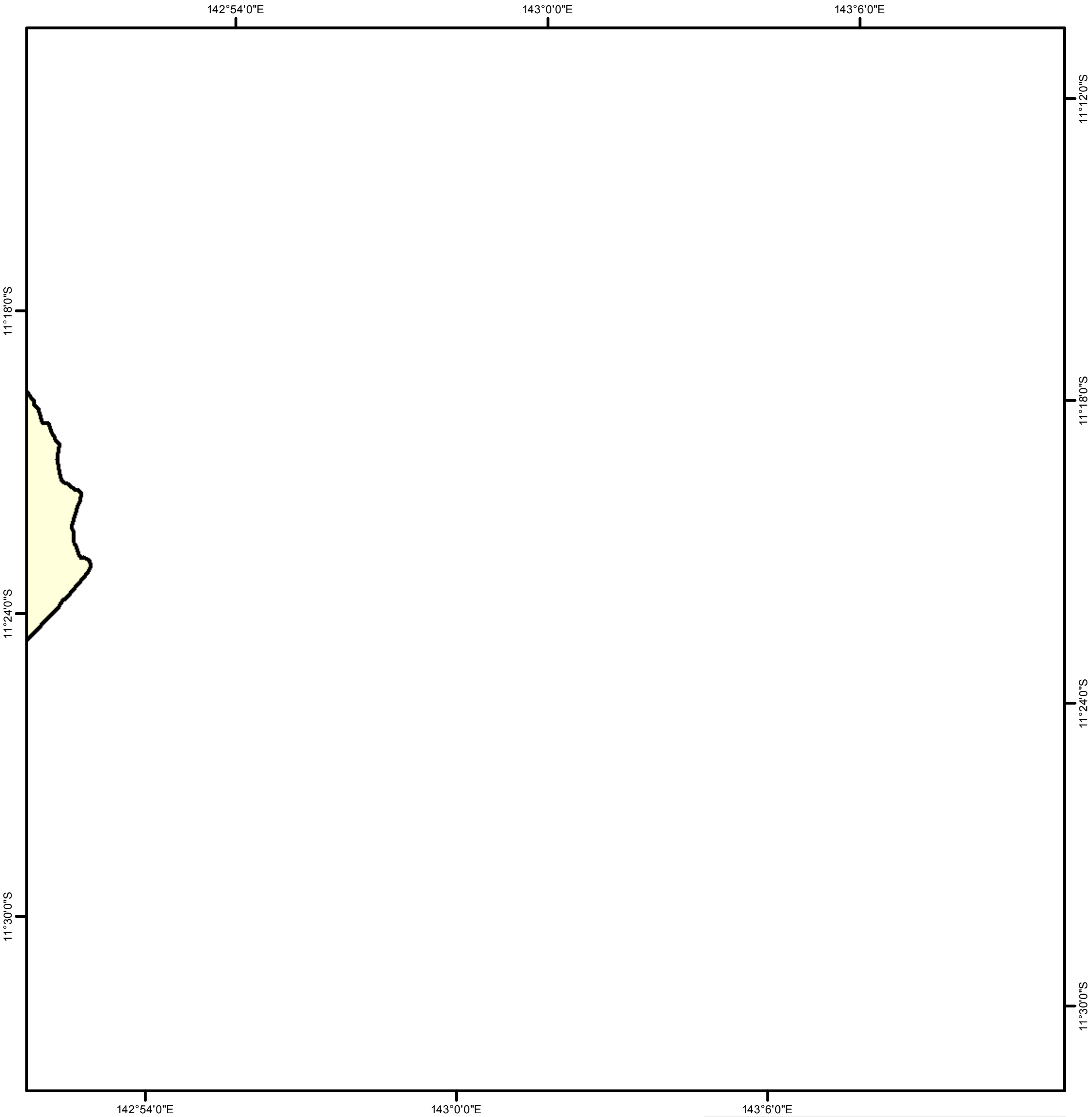
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely



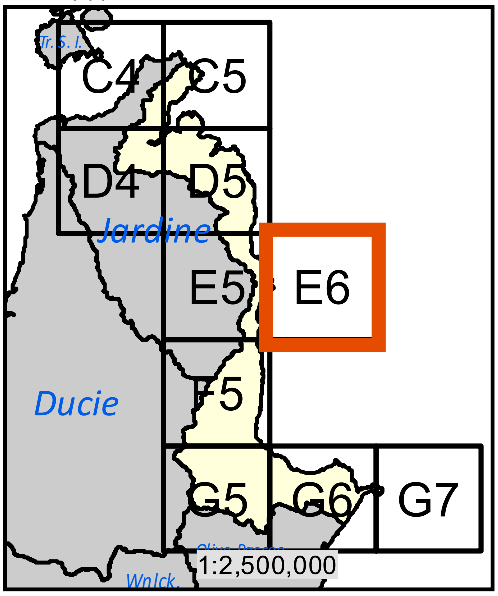


E6 Jacky Jacky Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

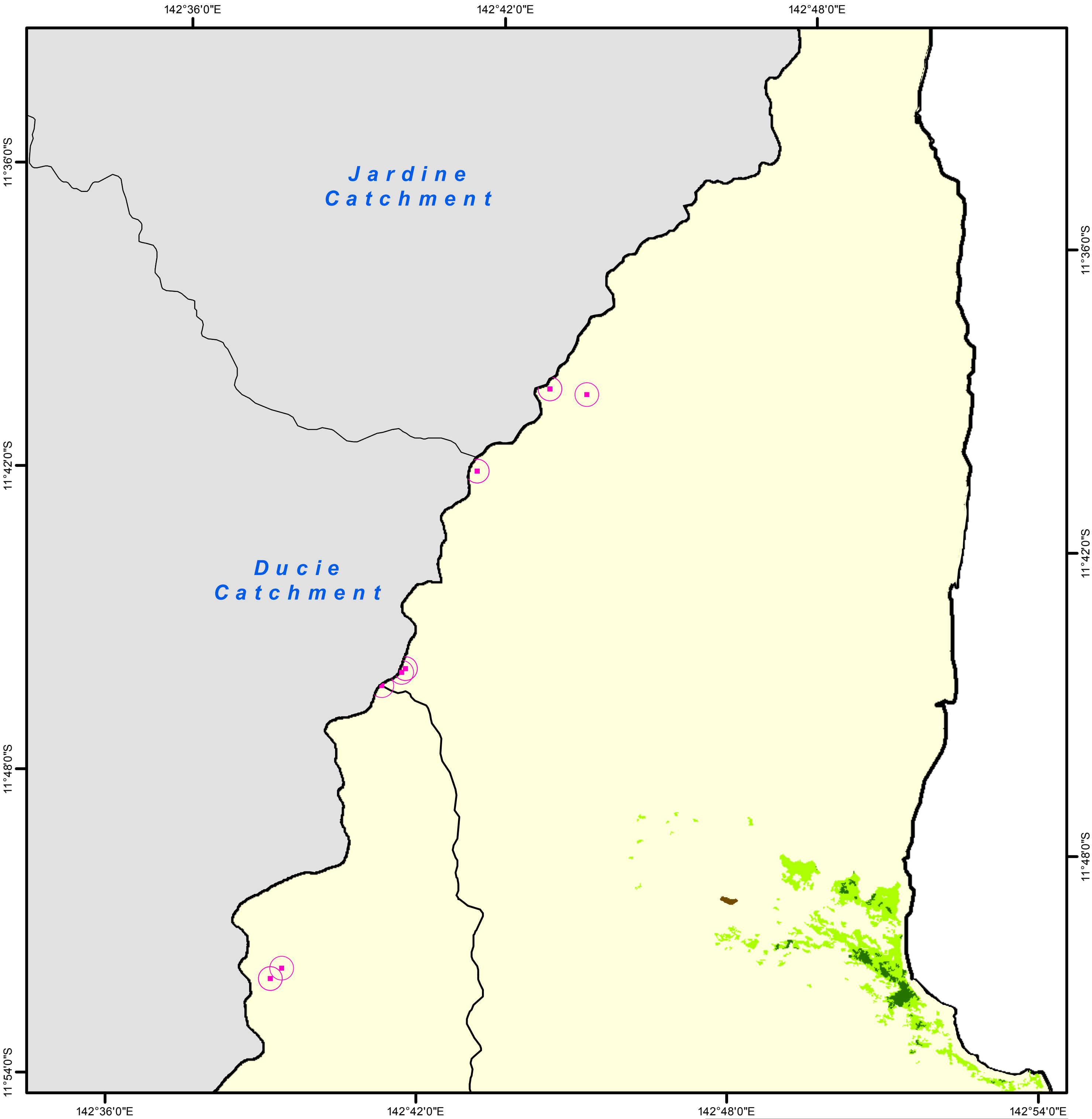
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



F5 Jacky Jacky Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

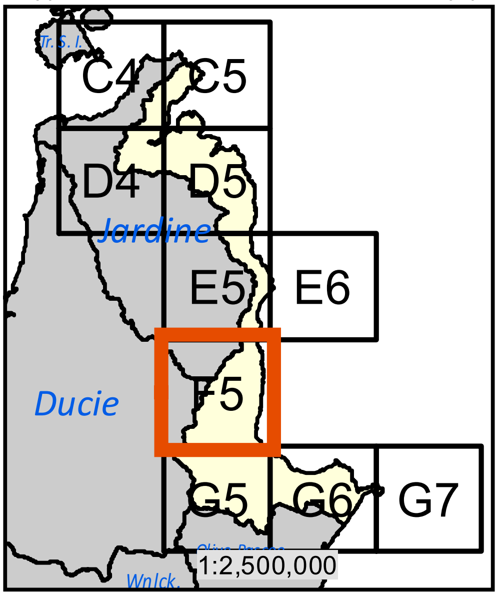
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

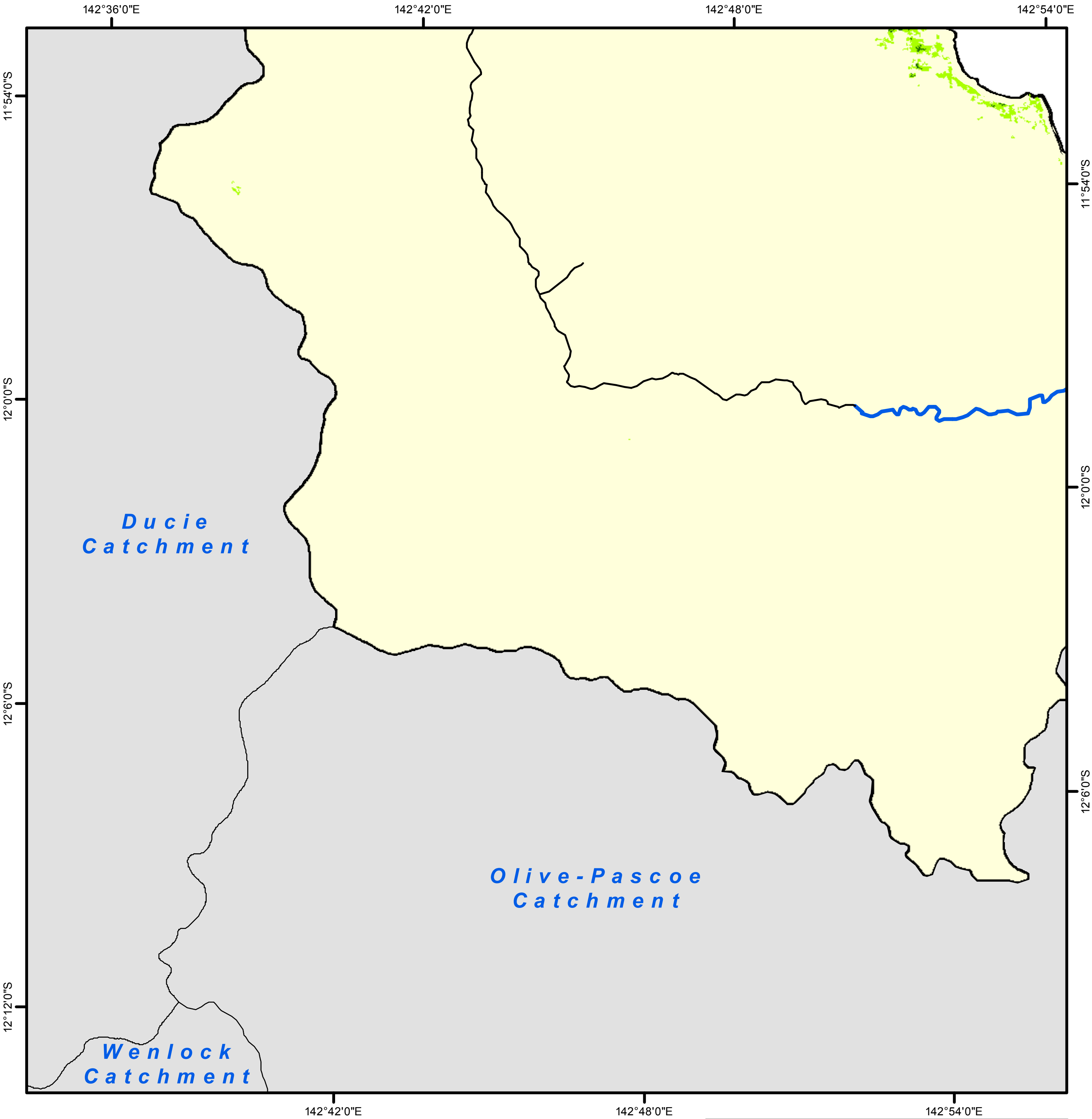
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





G5 Jacky Jacky Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

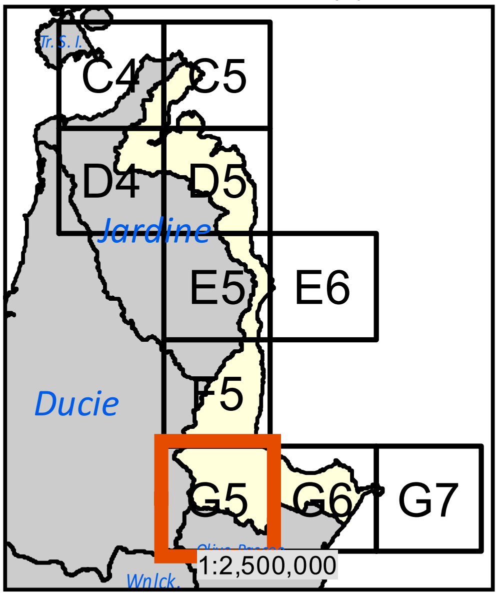
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

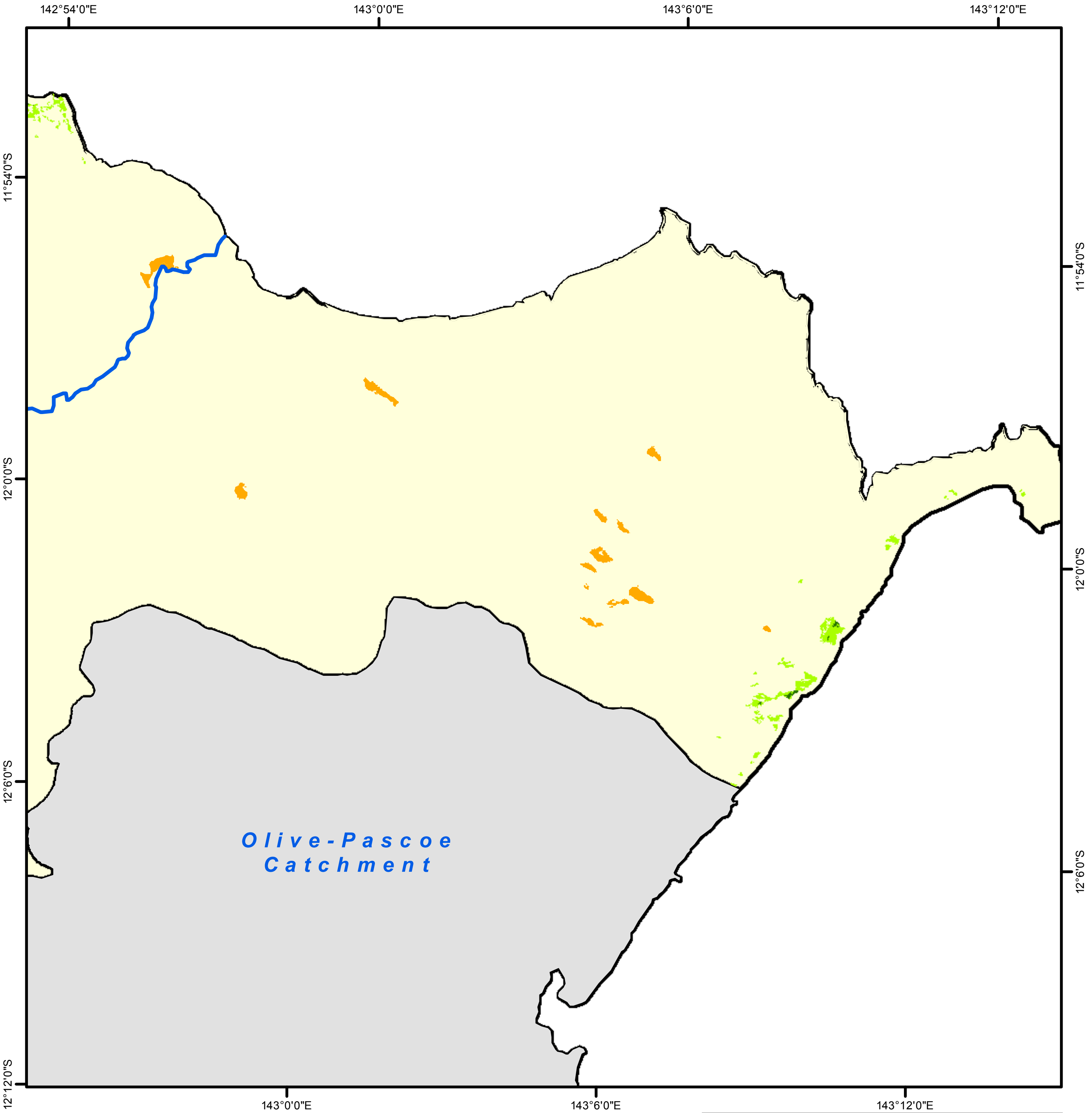
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely



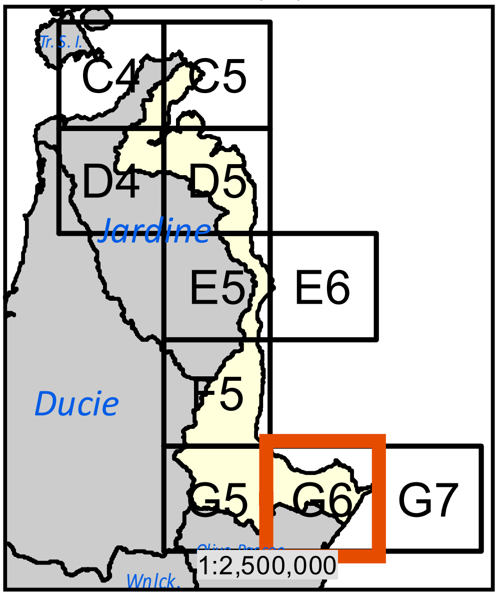


G6 Jacky Jacky Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

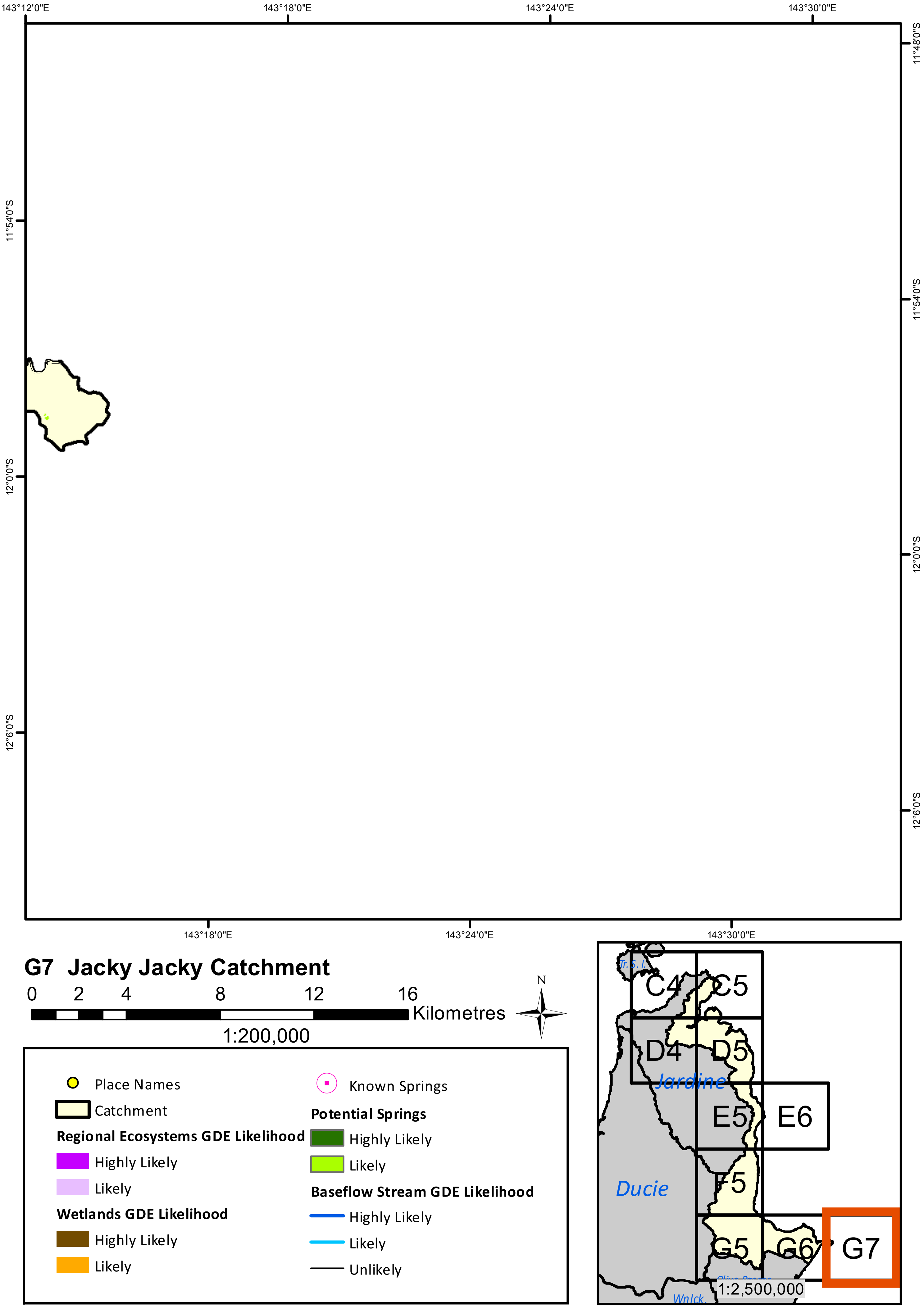
- Known Springs

Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely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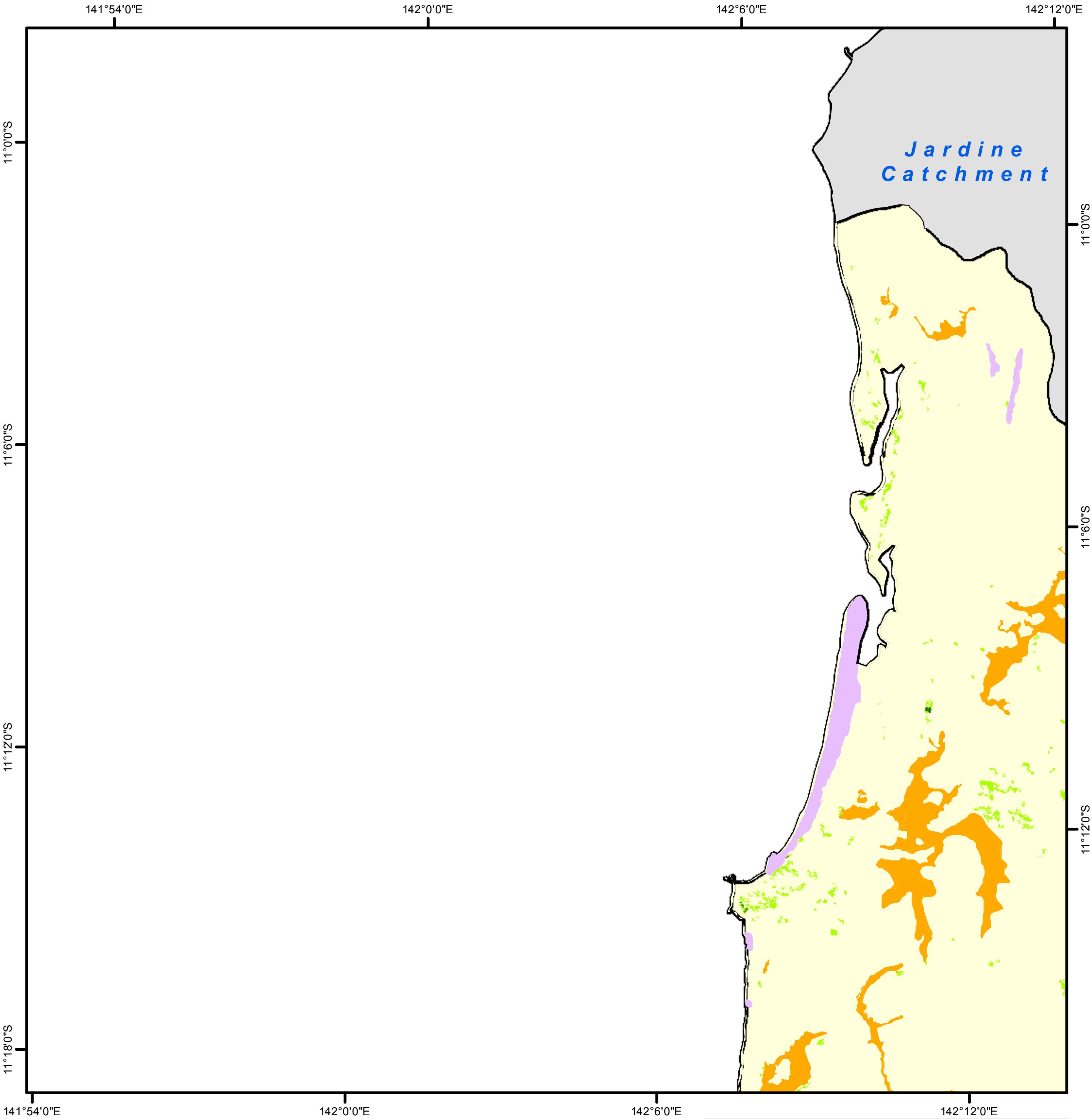
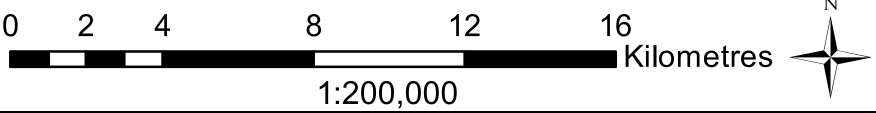
11°48'0"S
11°54'0"S
12°0'0"S
12°6'0"S
G7 Jacky Jacky Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
C4
C5
D4
D5
Jardine
E5
E6
F5
Ducie
G5
G6
G7
1:2,500,000



D3 Ducie Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

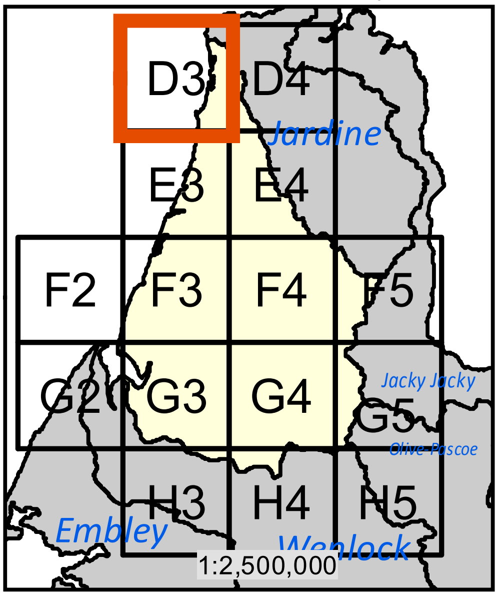
Likely

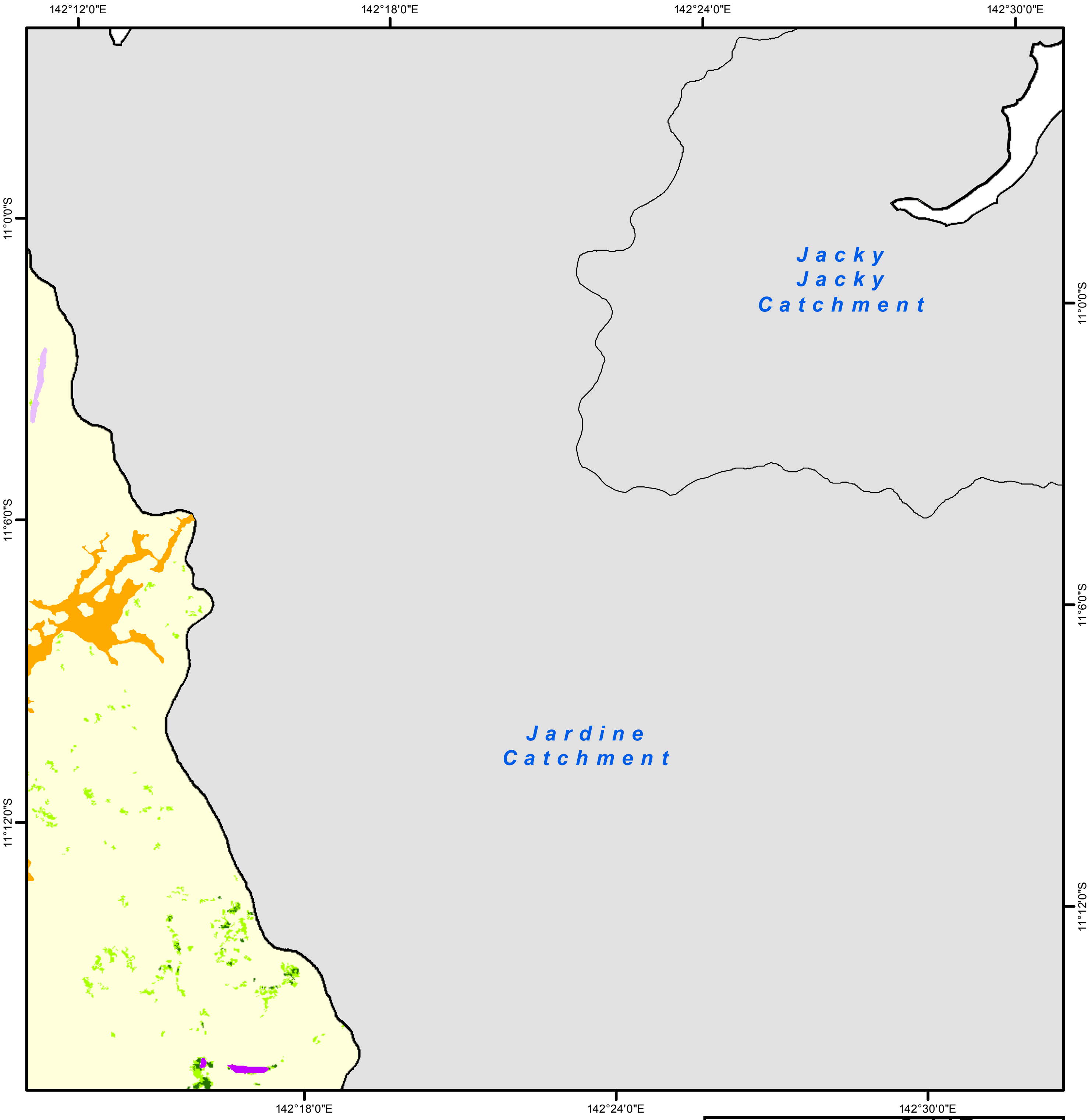
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





D4 Ducie Catchment

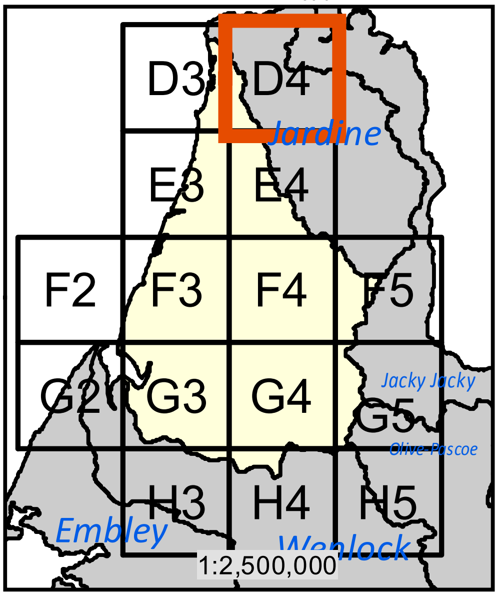
0 2 4 8 12 16 Kilometres

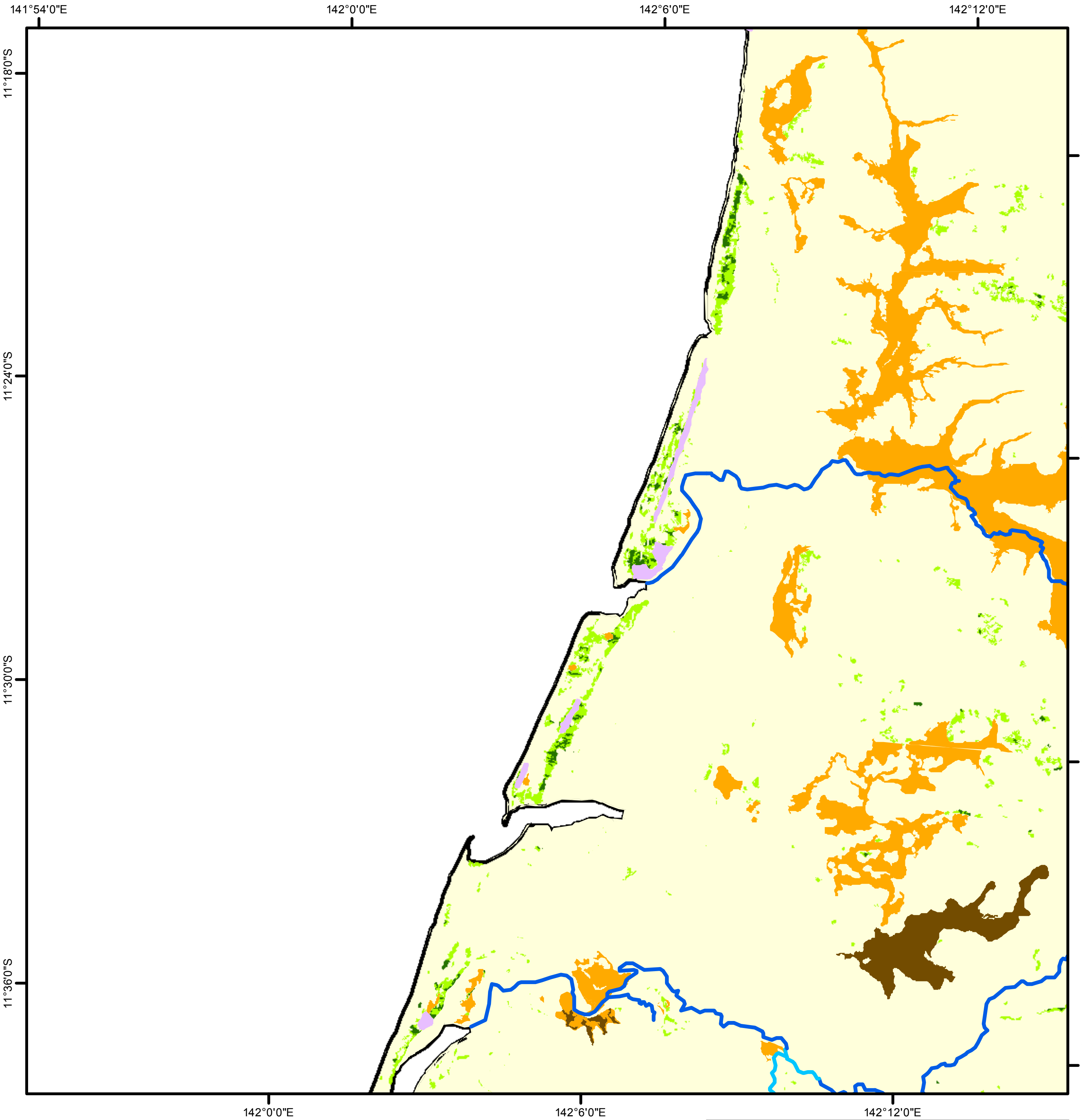
1:200,000

N

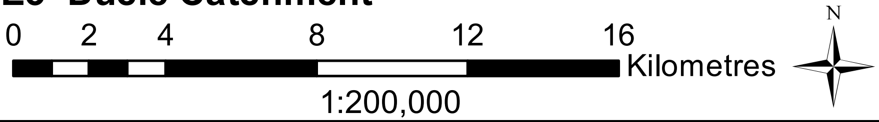
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





E3 Ducie Catchment



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

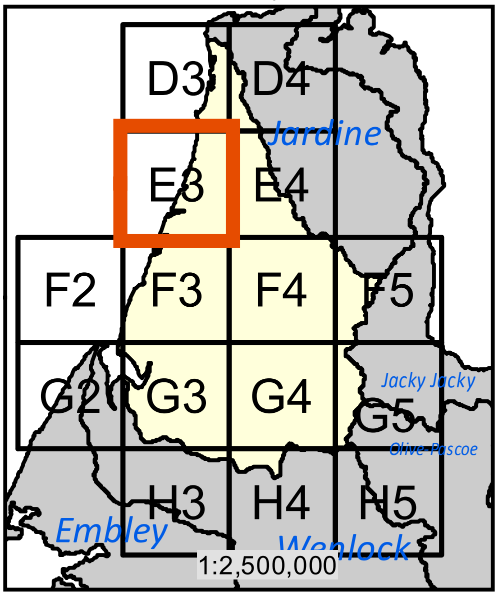
- Known Springs

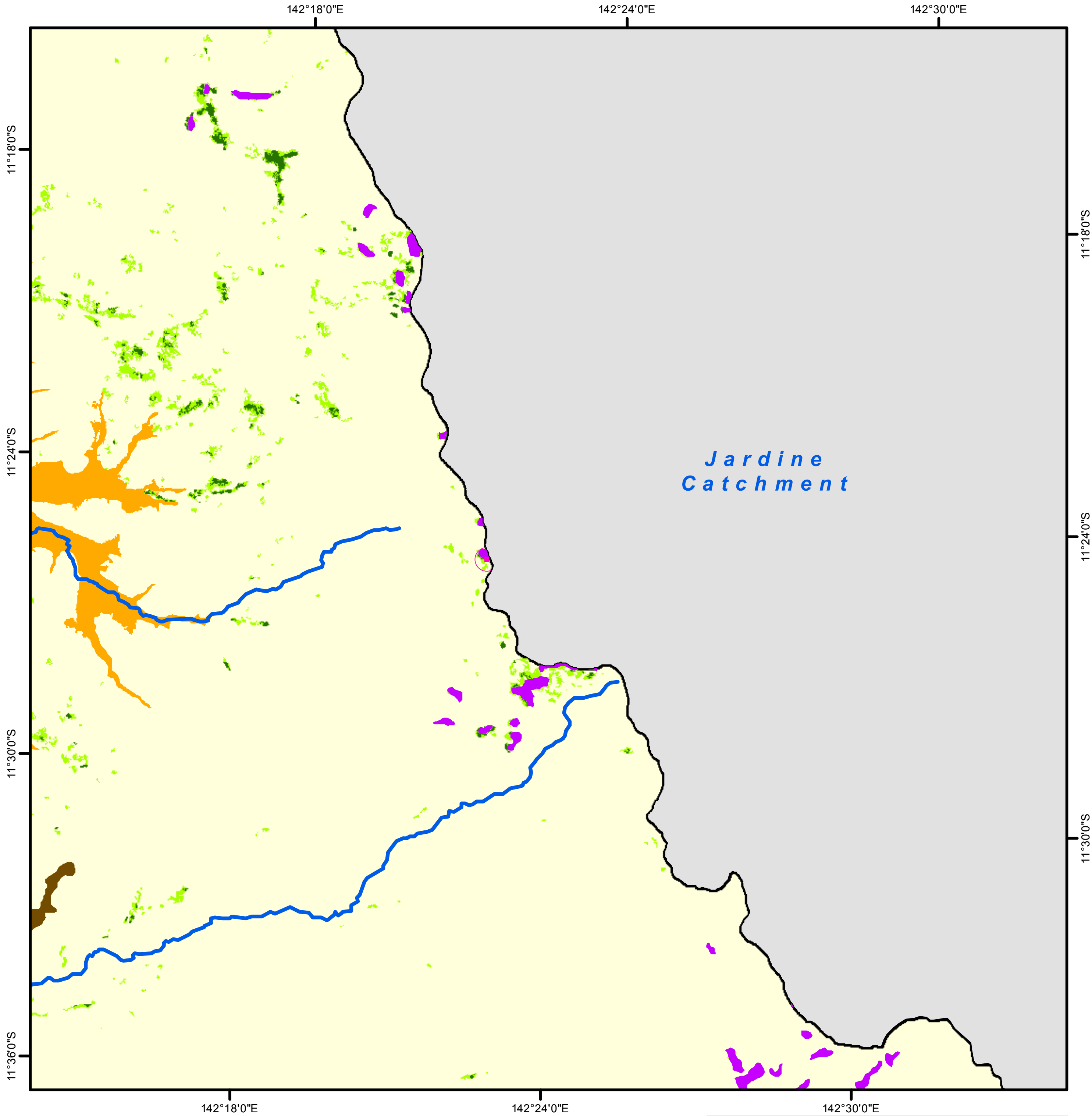
Potential Springs

- Highly Likely
- Likely

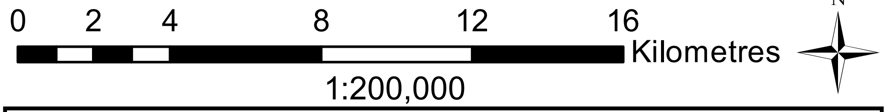
Baseflow Stream GDE Likelihood

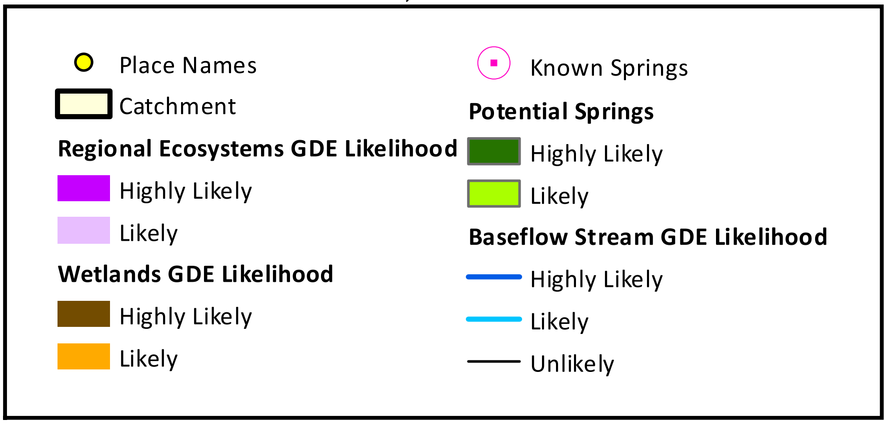
- Highly Likely
- Likely
- Unlikely

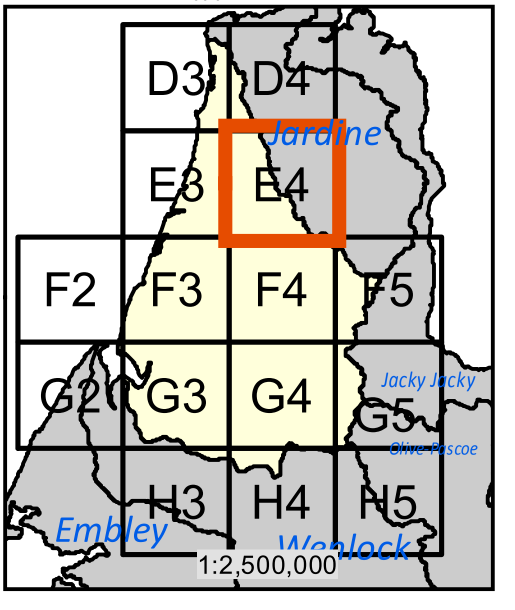


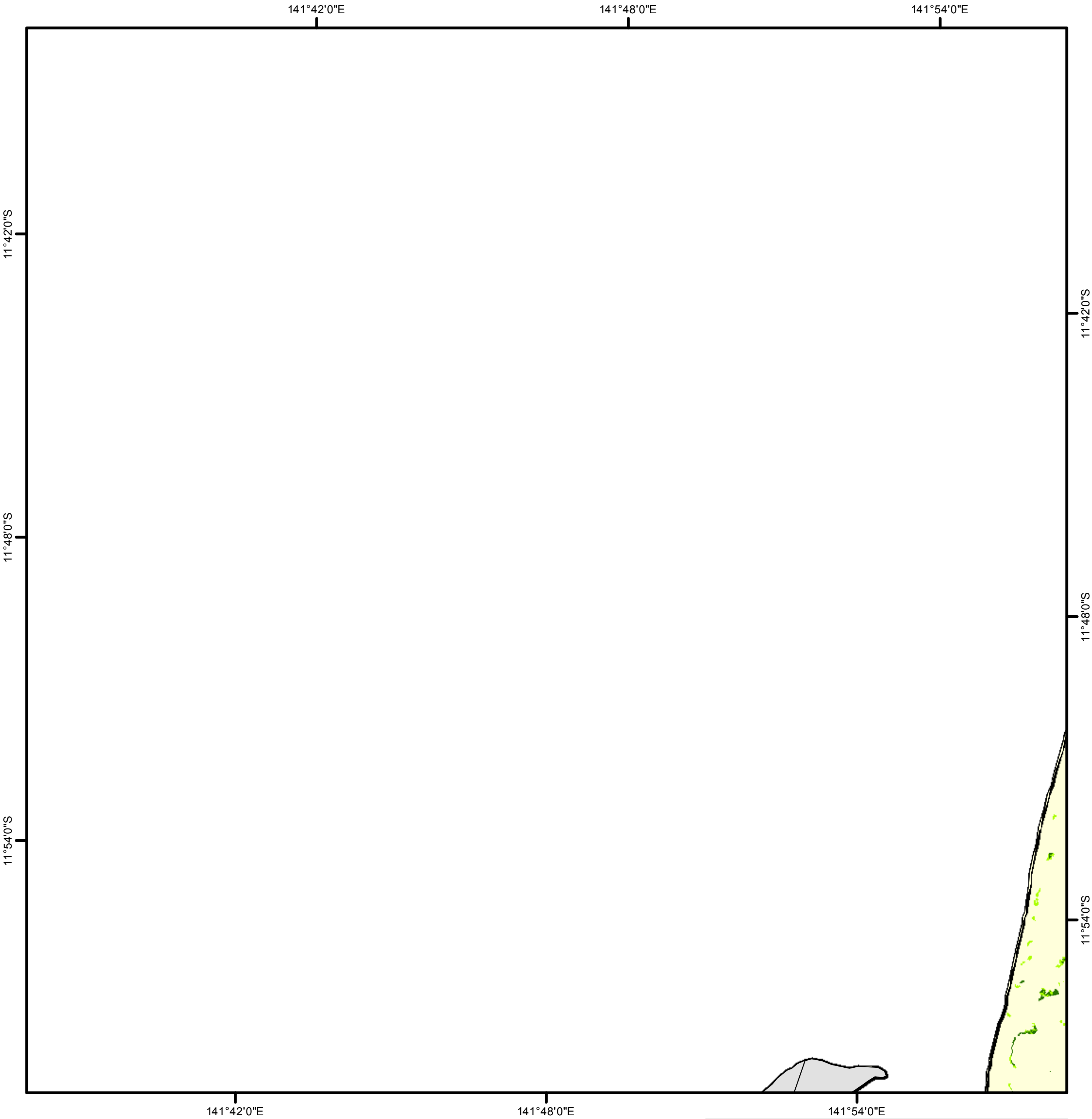


E4 Ducie Catchment

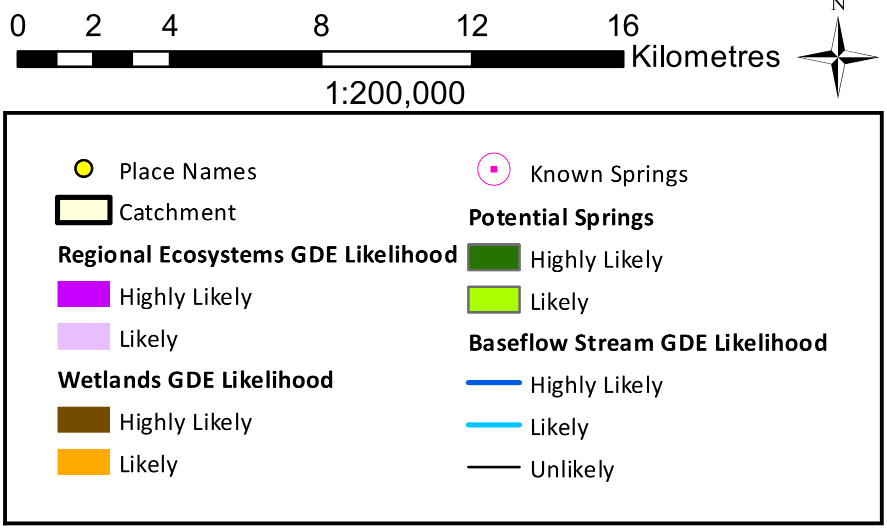


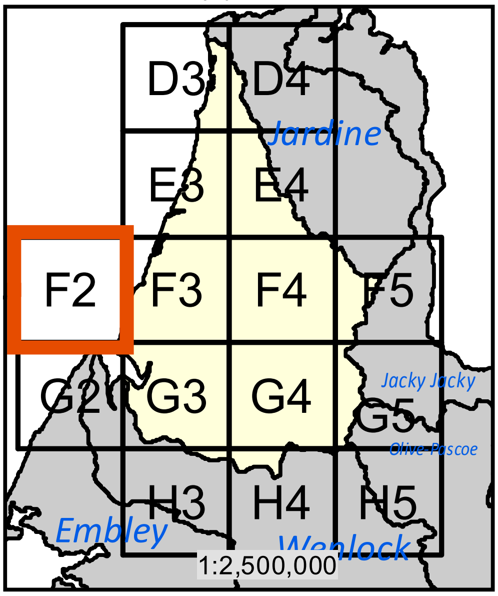


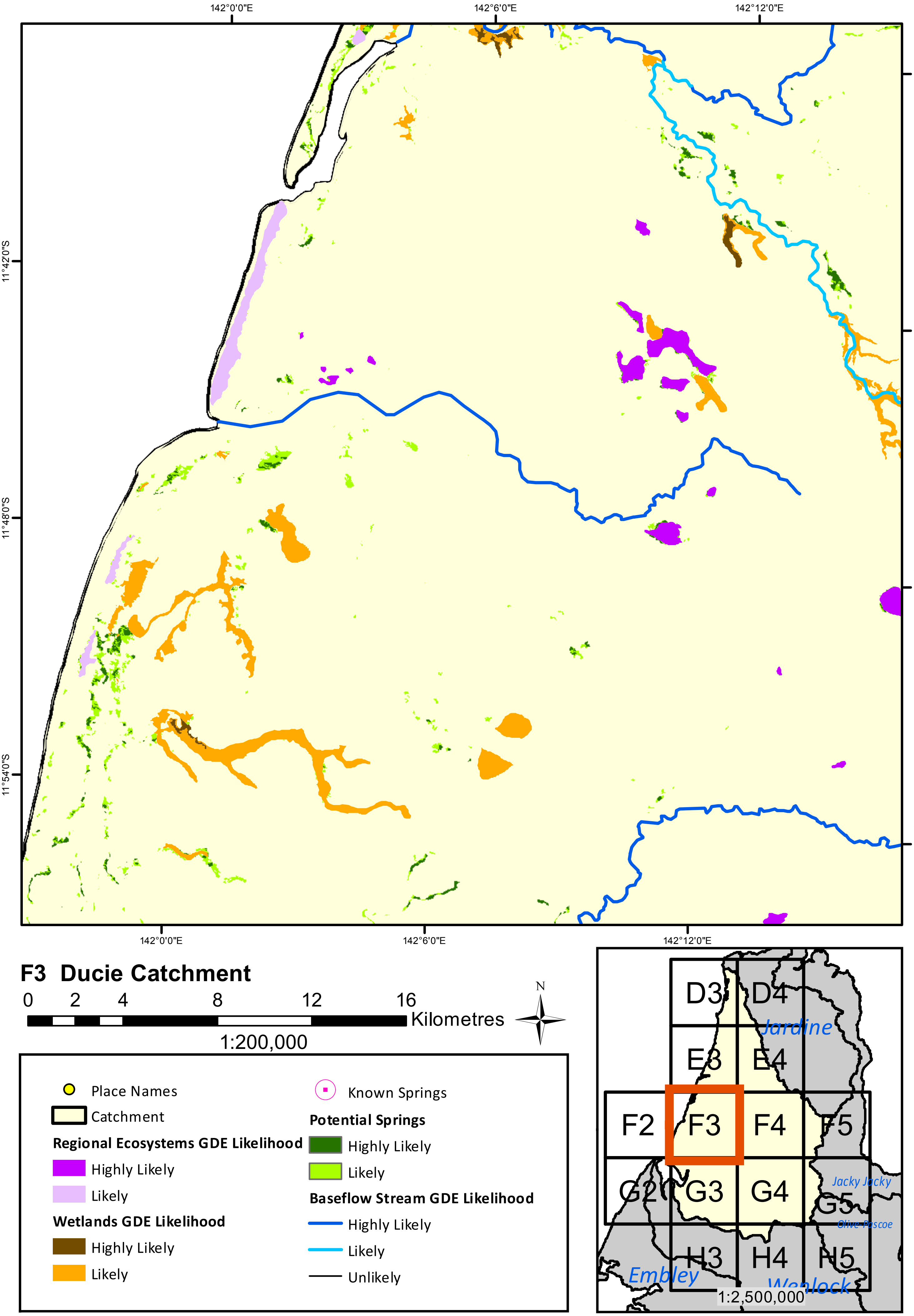




F2 Ducie Catchment







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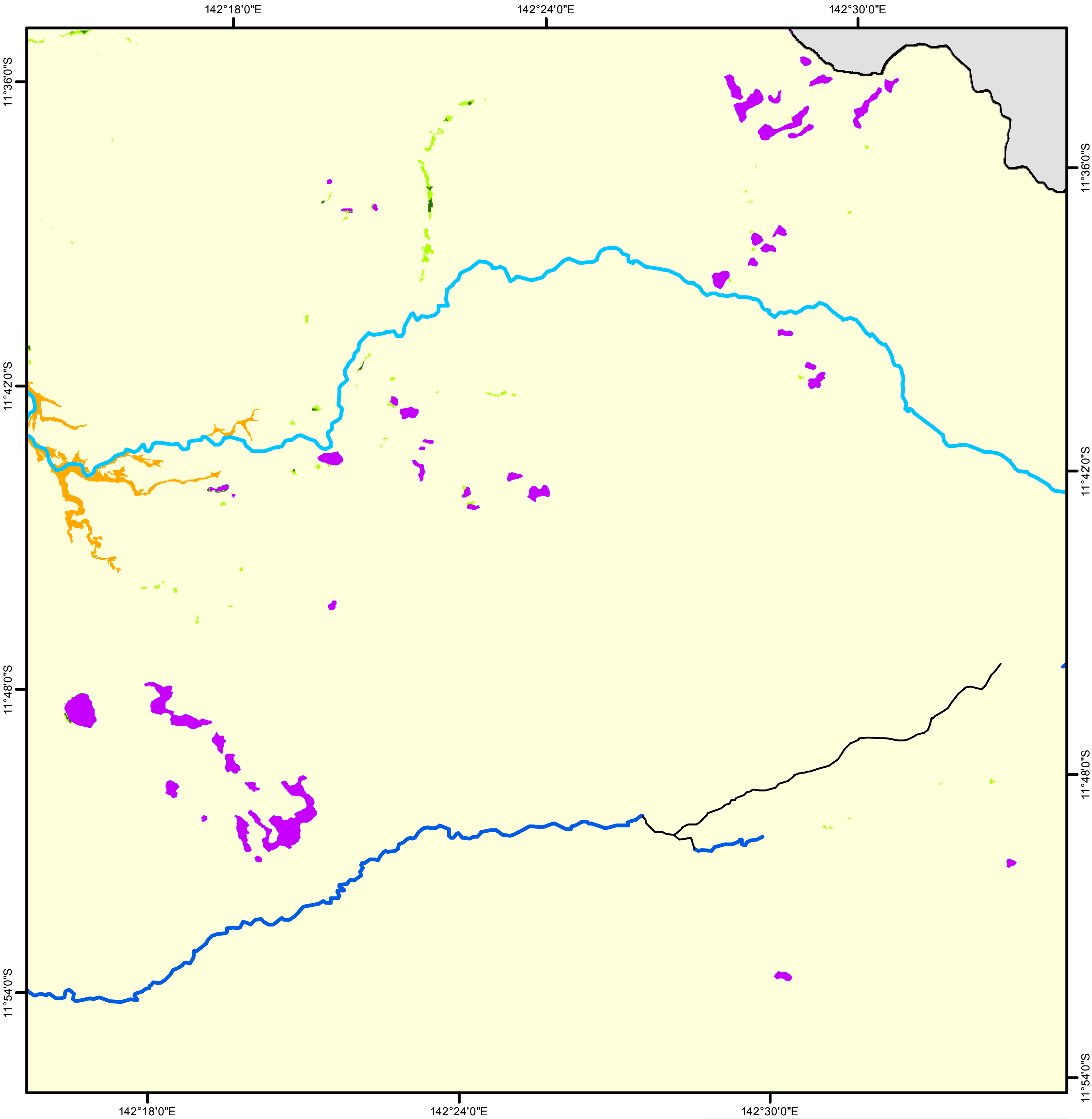
142°6'0"E
142°12'0"E
11°36'0"S
11°42'0"S
11°48'0"S
11°54'0"S
F3 Ducie Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
D3
D4
Jardine
E3
E4
F2
F3
F4
F5
G2
G3
G4
G5
Jacky Jacky
Olive-Pascoe
H3
H4
H5
Embley
Wenlock
1:2,500,000



F4 Ducie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

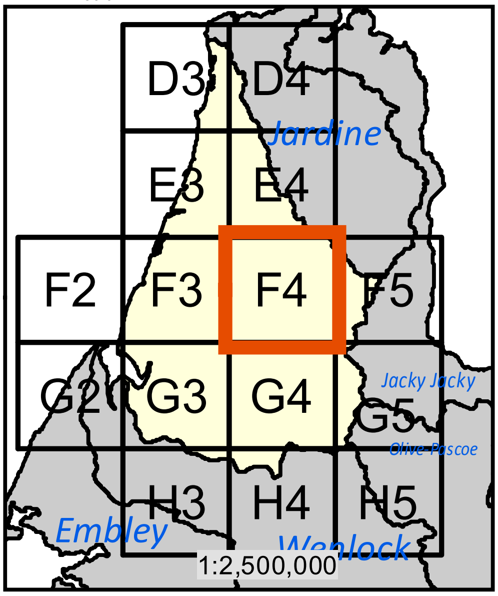
Likely

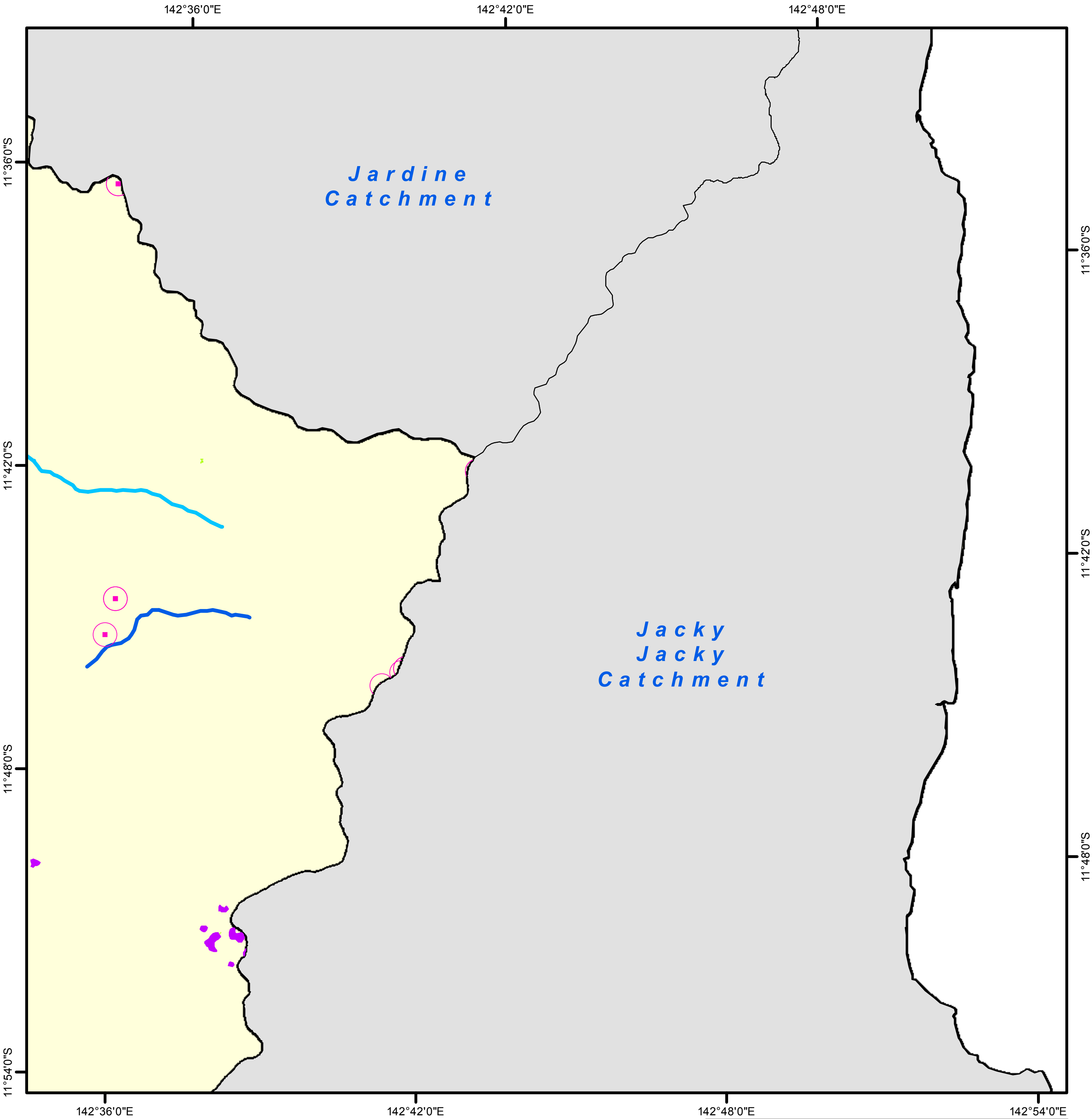
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





F5 Ducie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

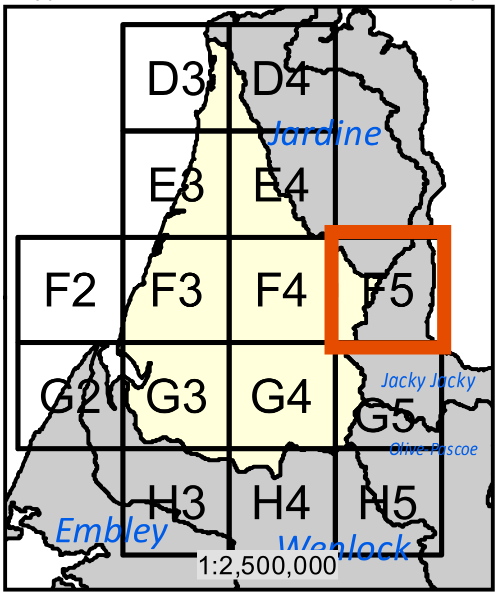
Likely

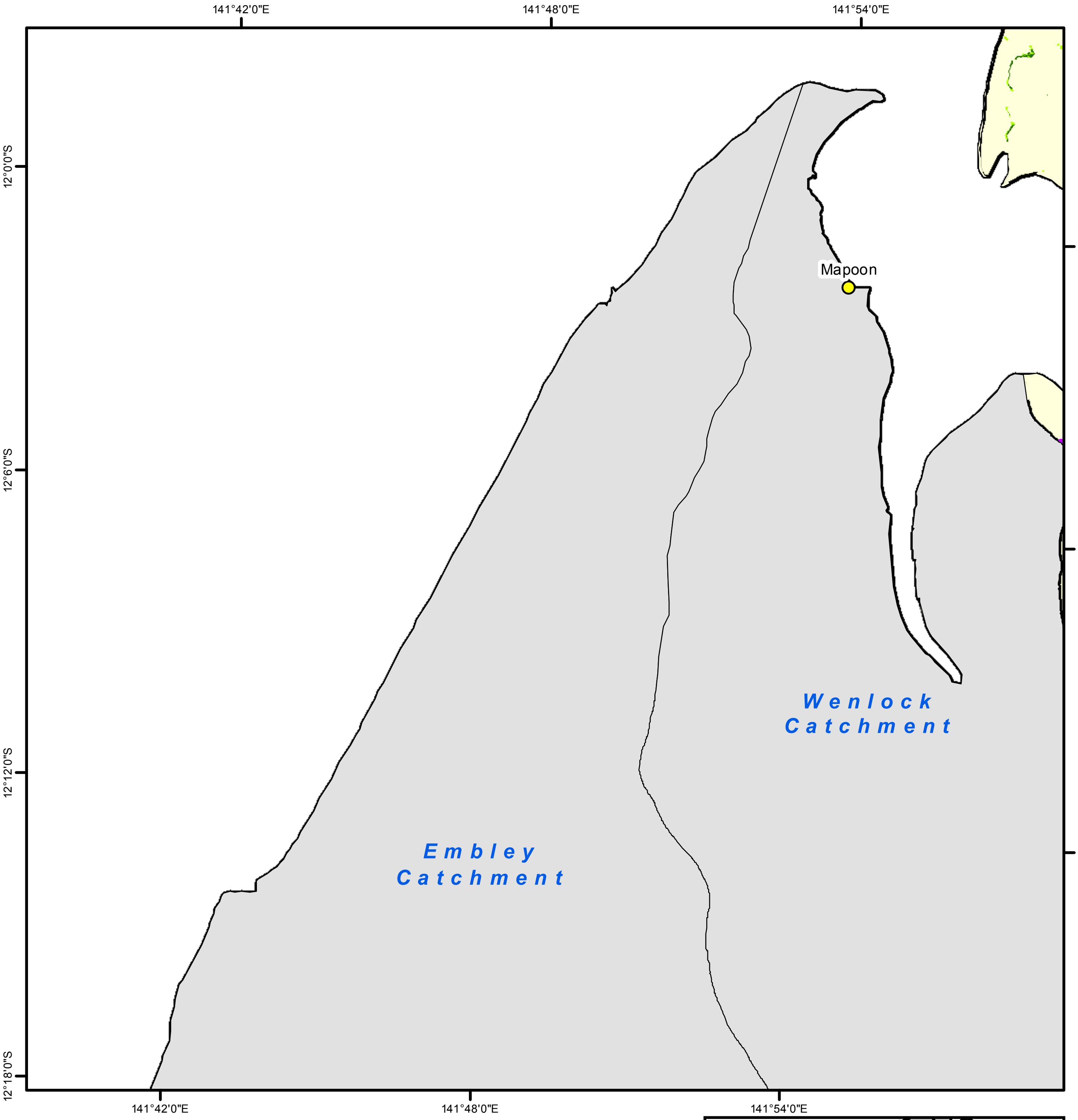
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





G2 Ducie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

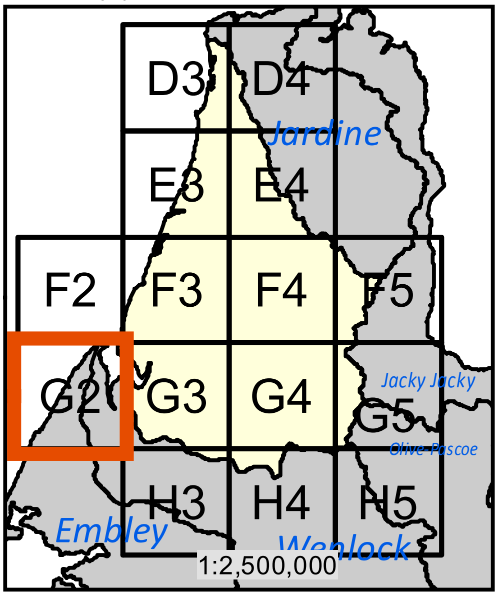
- Known Springs

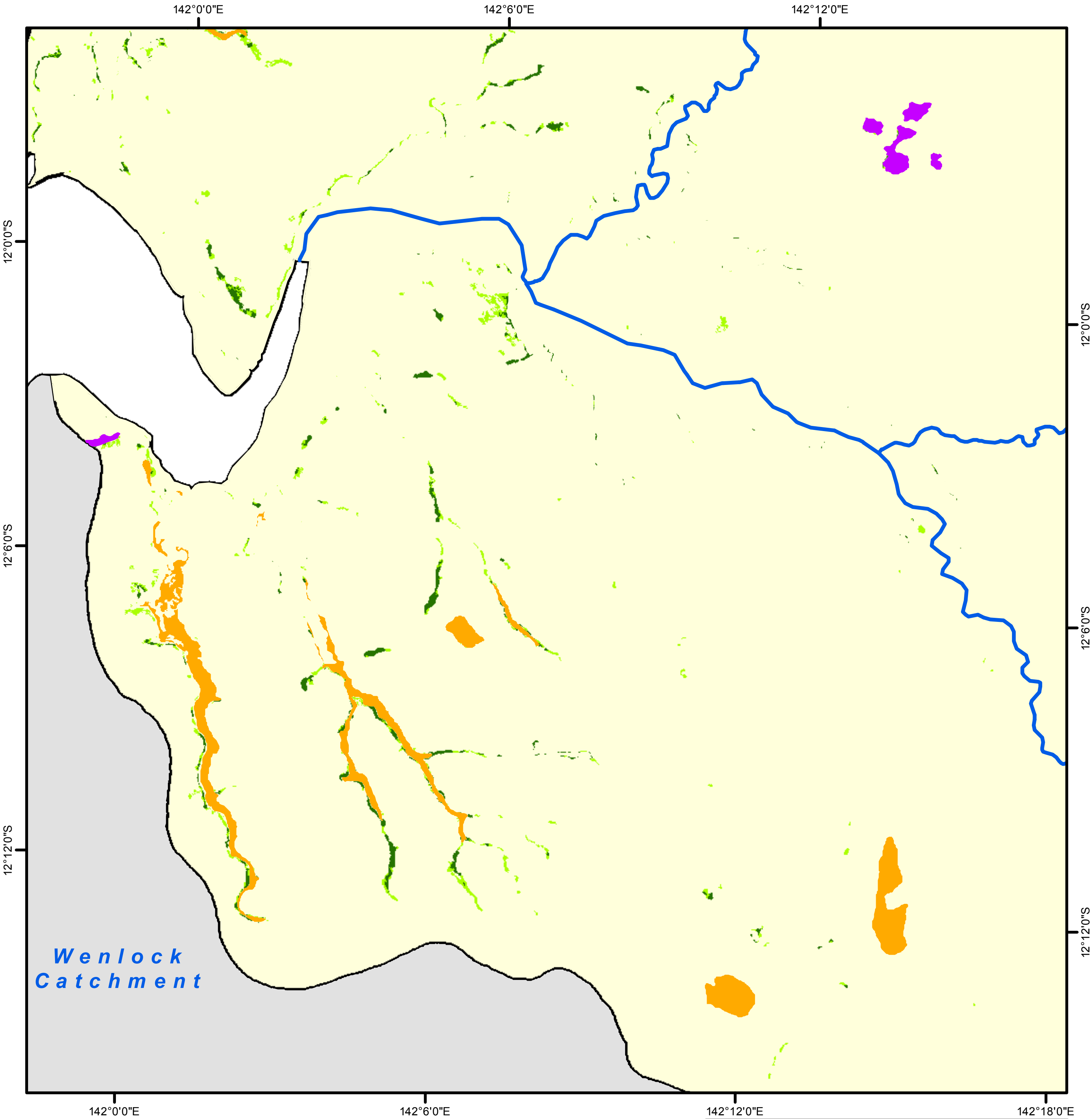
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





G3 Ducie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

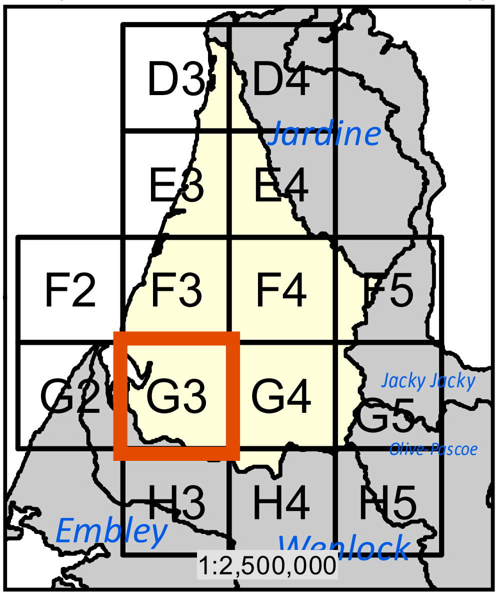
- Known Springs

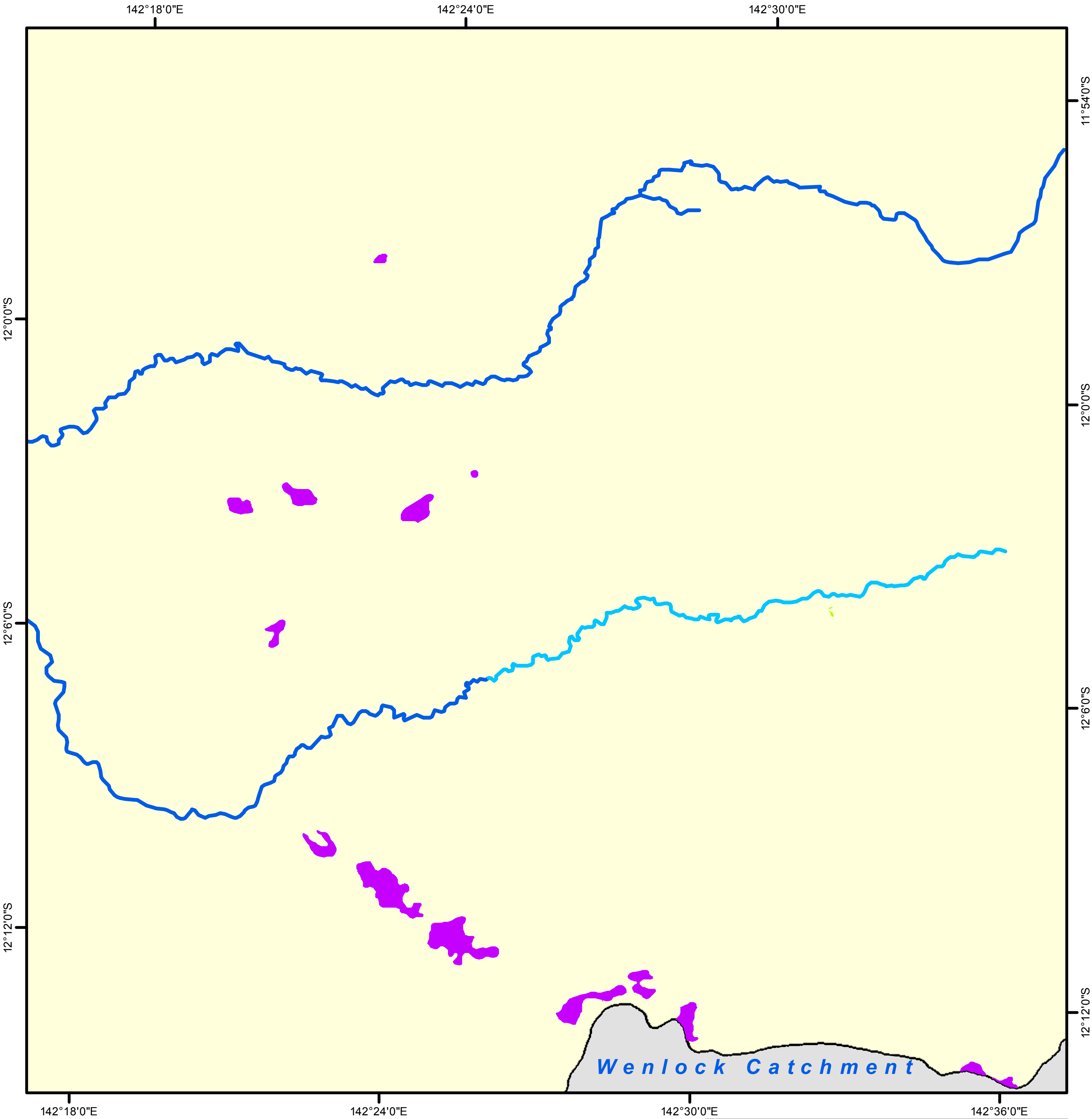
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





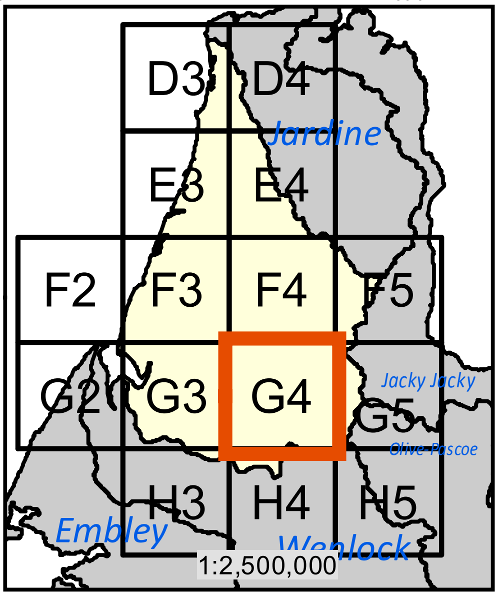
G4 Ducie Catchment

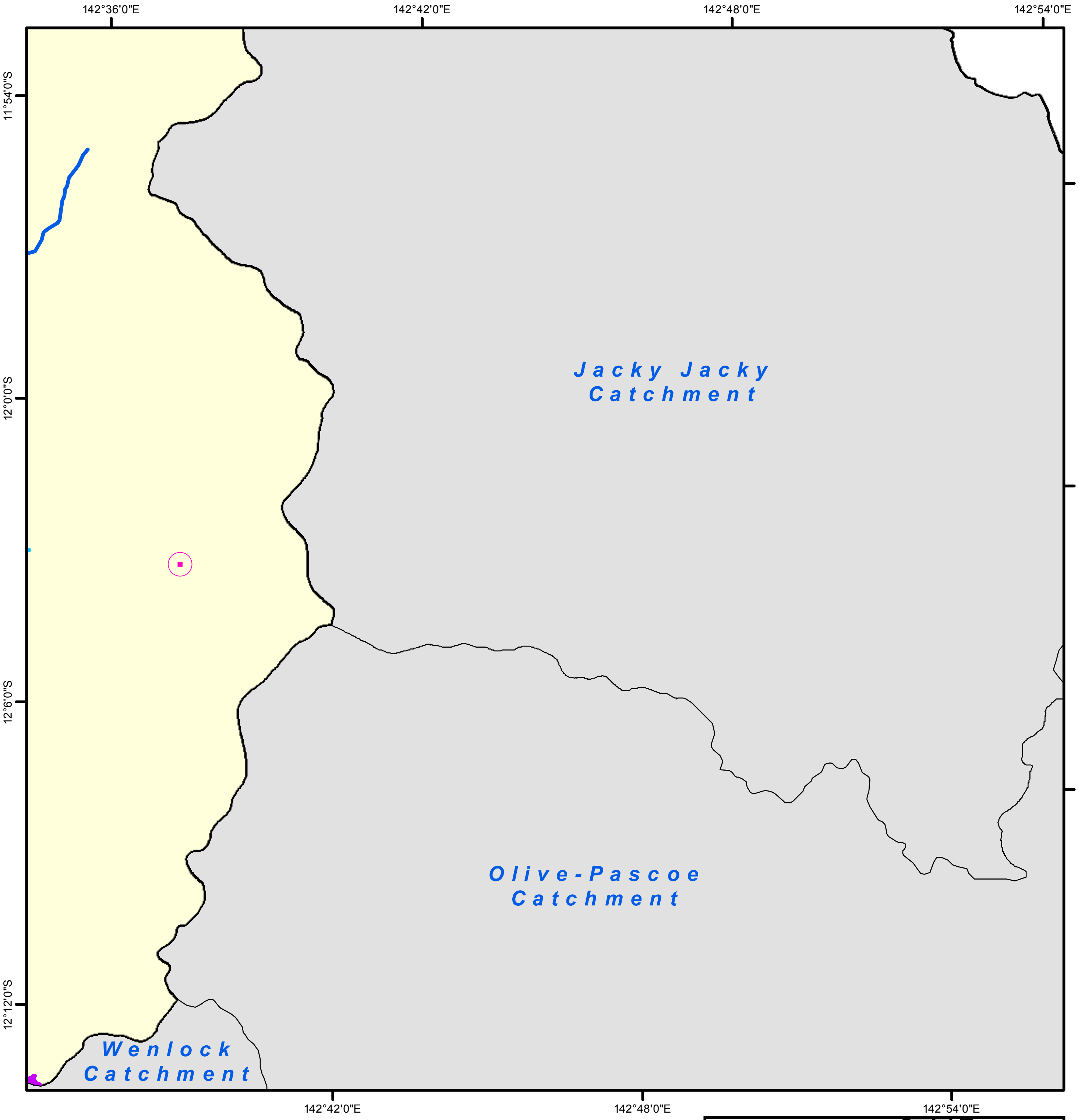
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





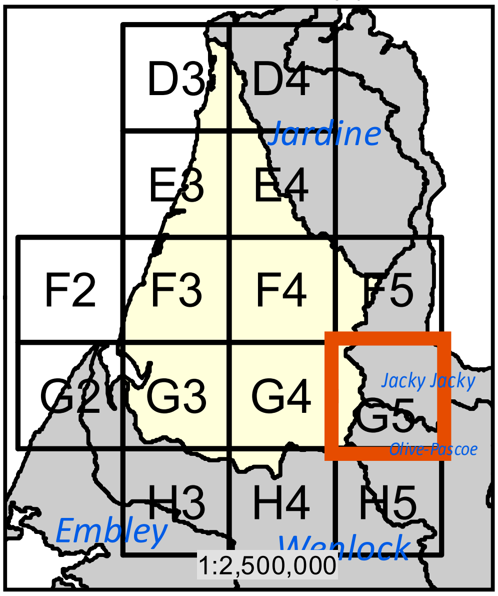
G5 Ducie Catchment

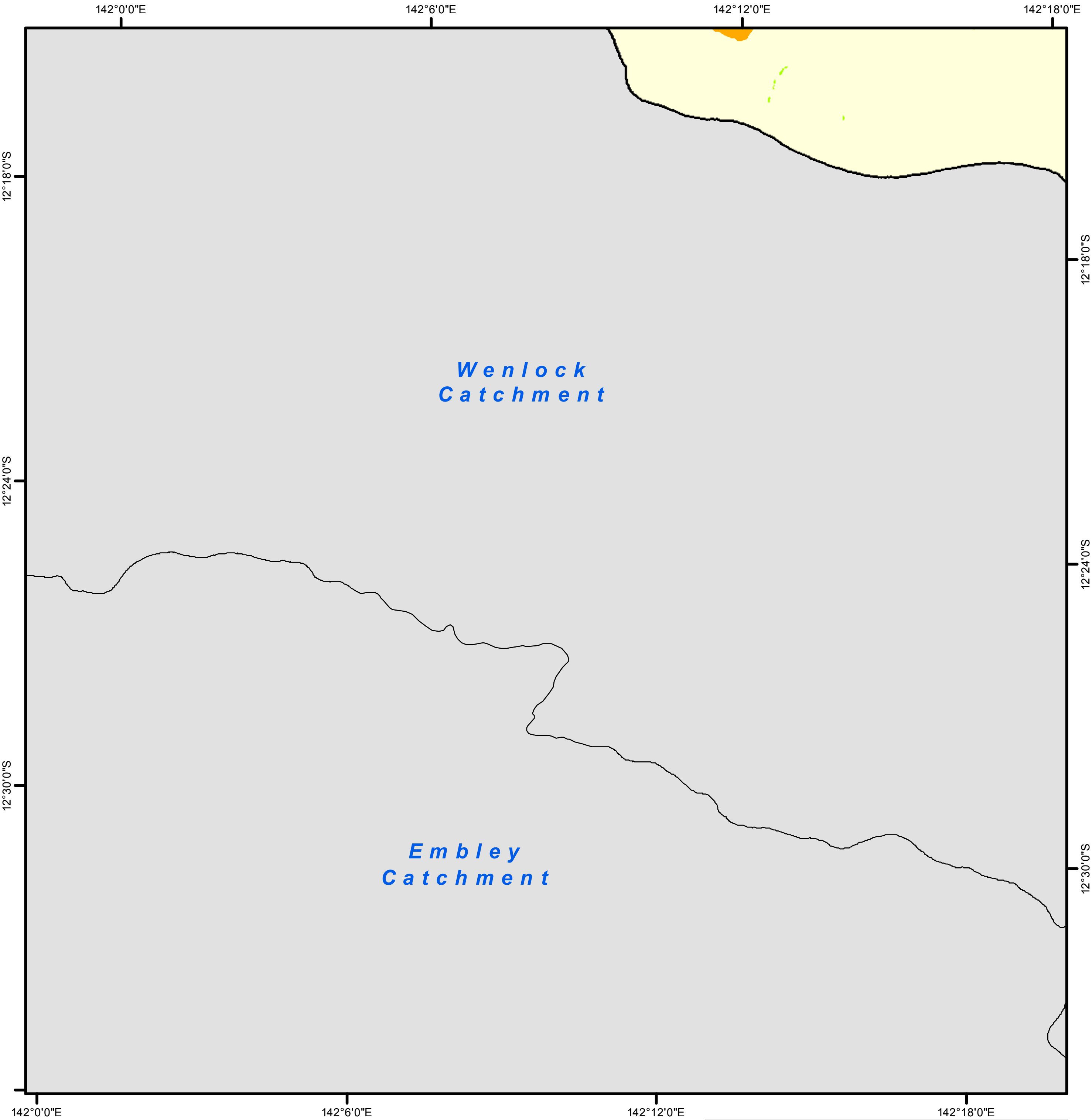
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





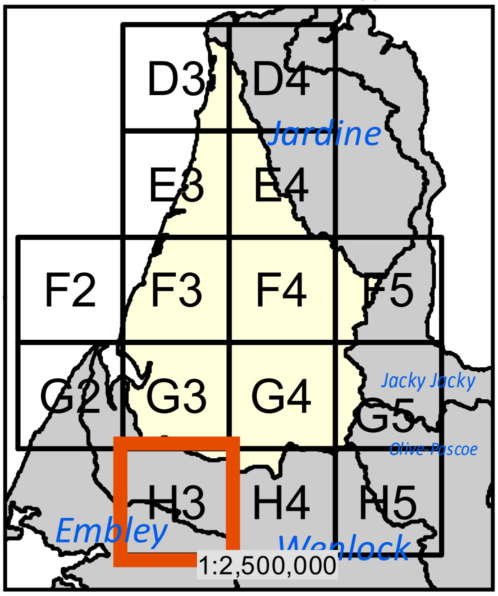
H3 Ducie Catchment

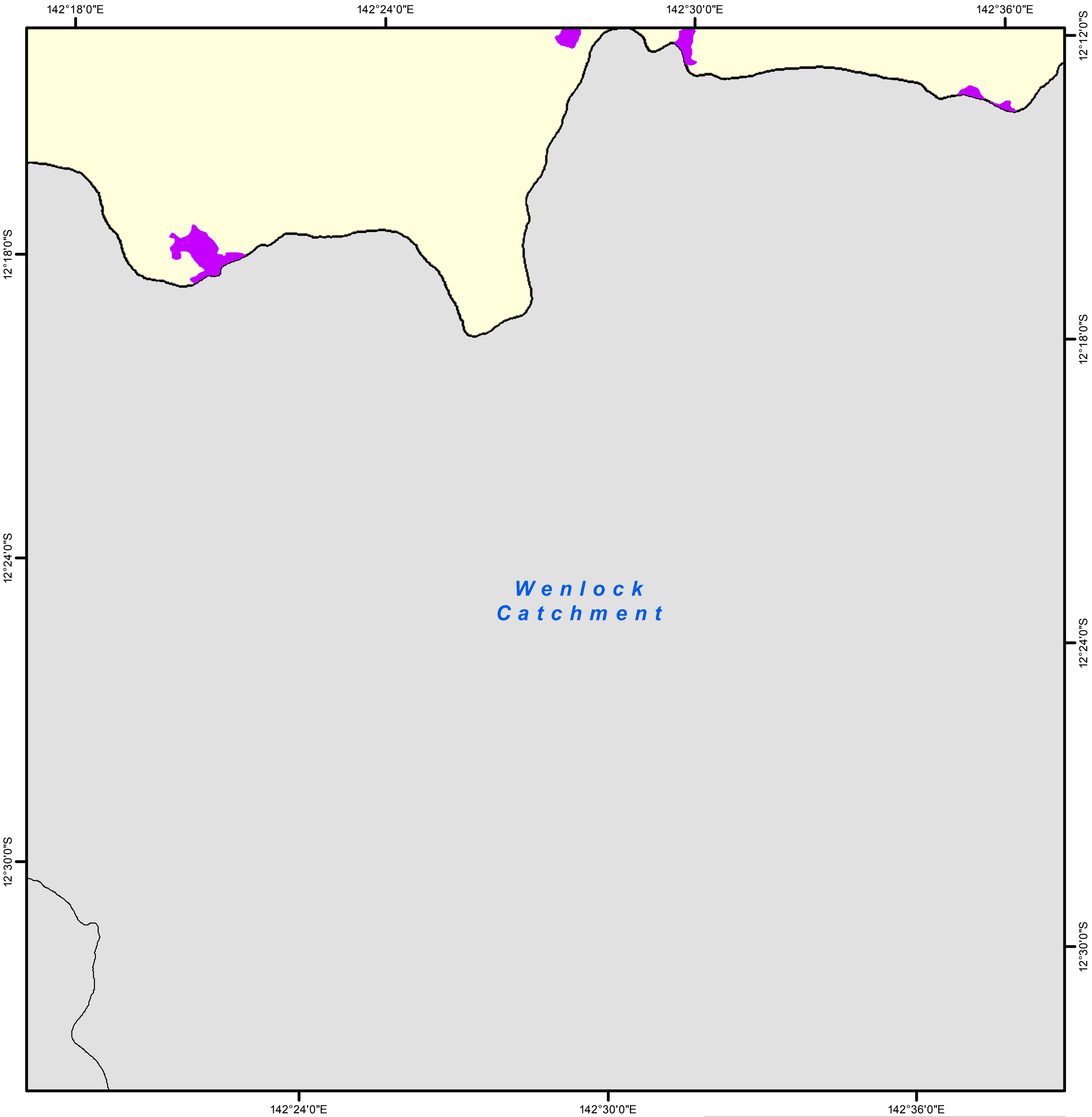
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





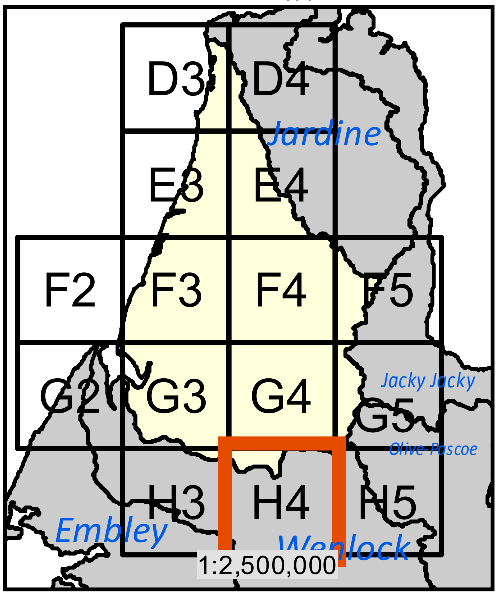
H4 Ducie Catchment

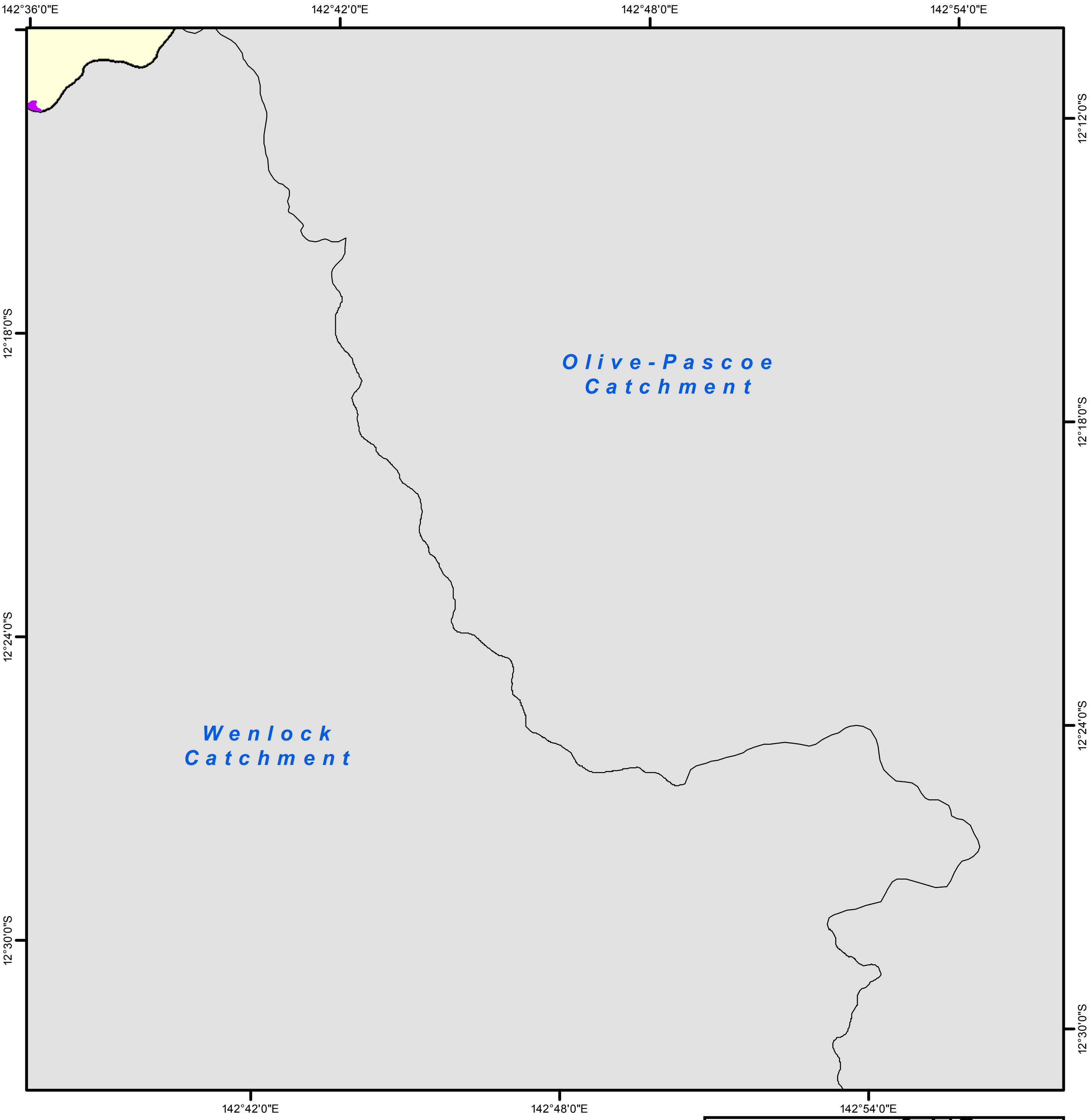
0 2 4 8 12 16 Kilometres

1:200,000

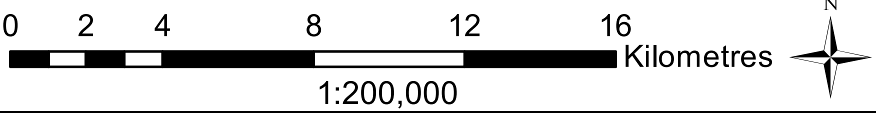
N

- Place Names
- Catchment
- **Regional Ecosystems GDE Likelihood**
  - Highly Likely
  - Likely
- **Wetlands GDE Likelihood**
  - Highly Likely
  - Likely
- Known Springs
- **Potential Springs**
  - Highly Likely
  - Likely
- **Baseflow Stream GDE Likelihood**
  - Highly Likely
  - Likely
  - Unlikely

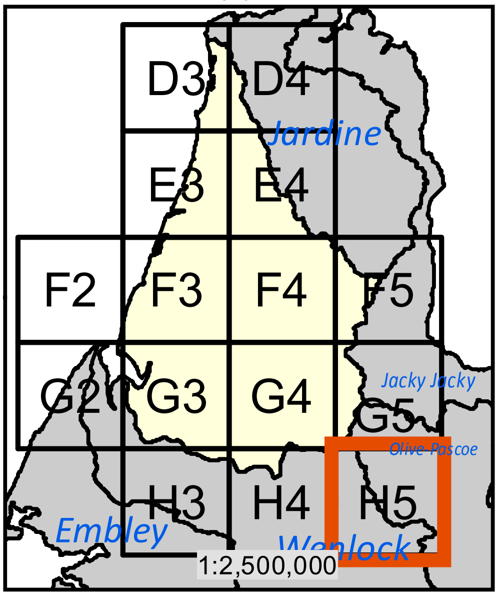


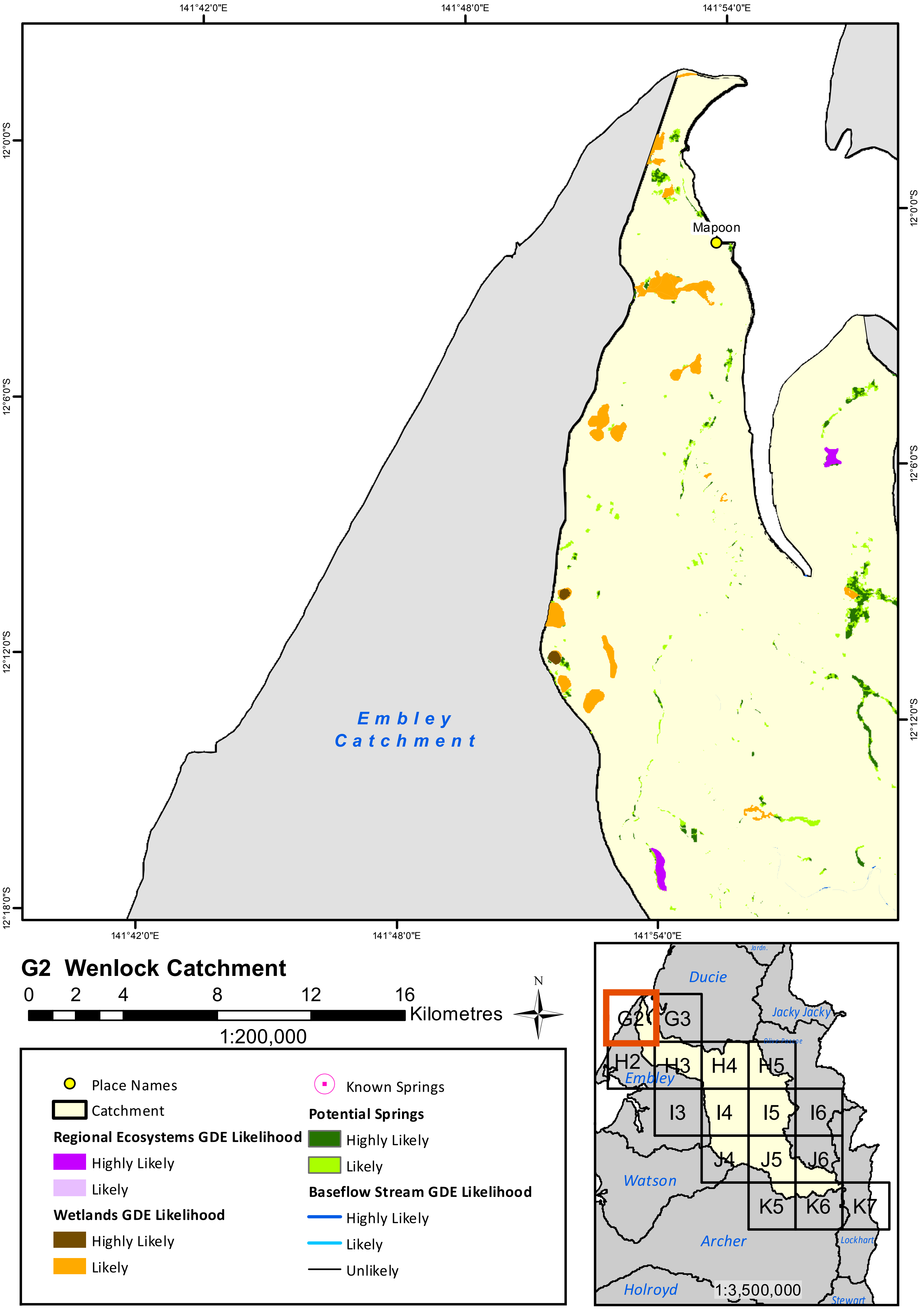


H5 Ducie Catchment



Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely

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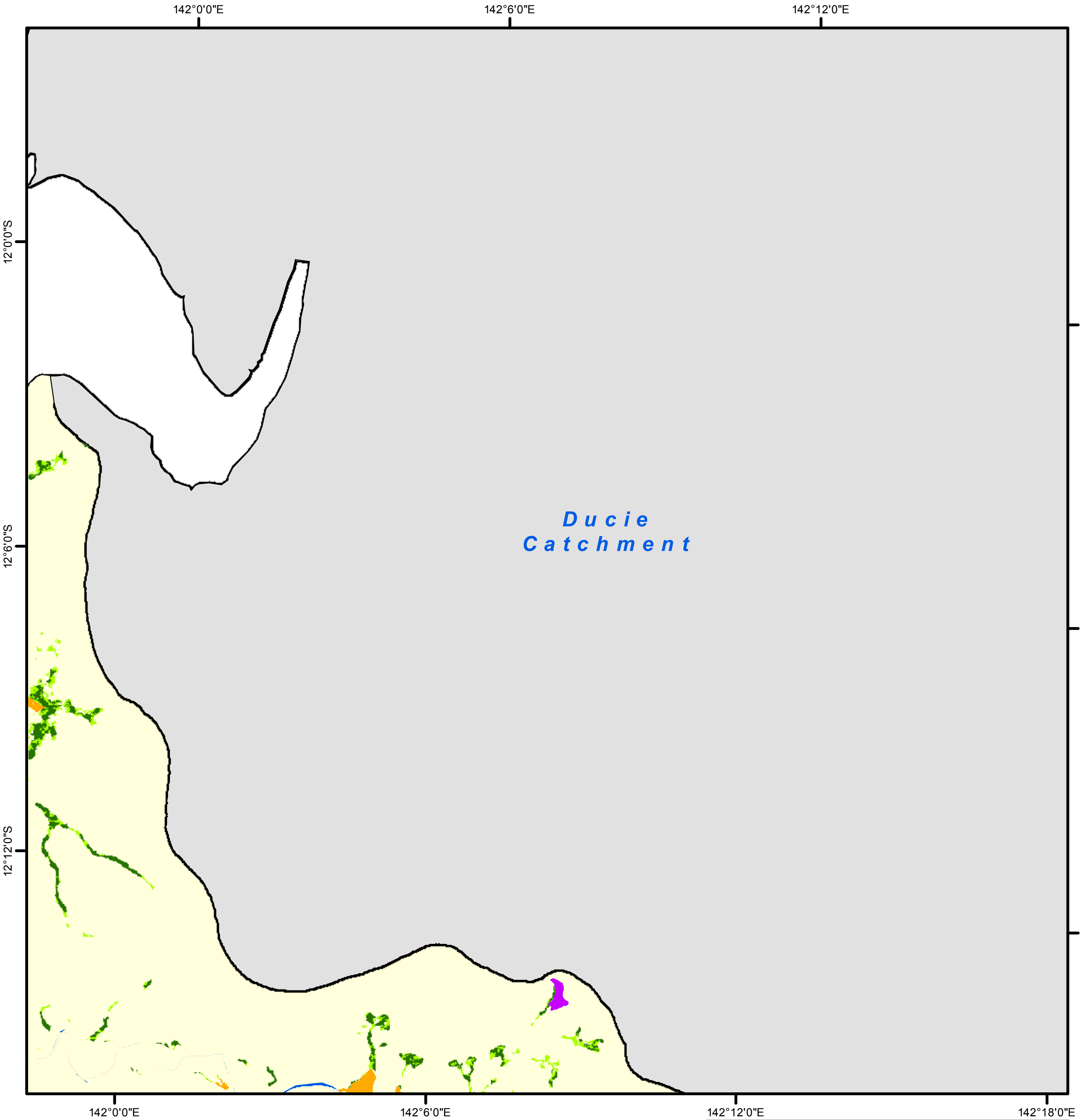
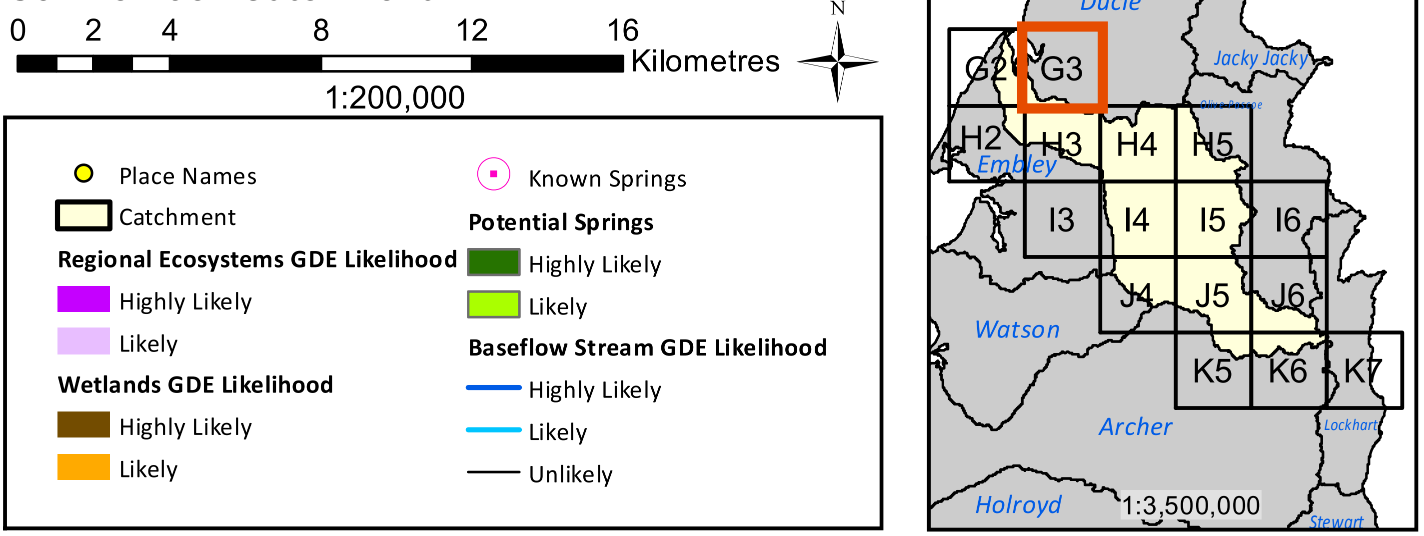
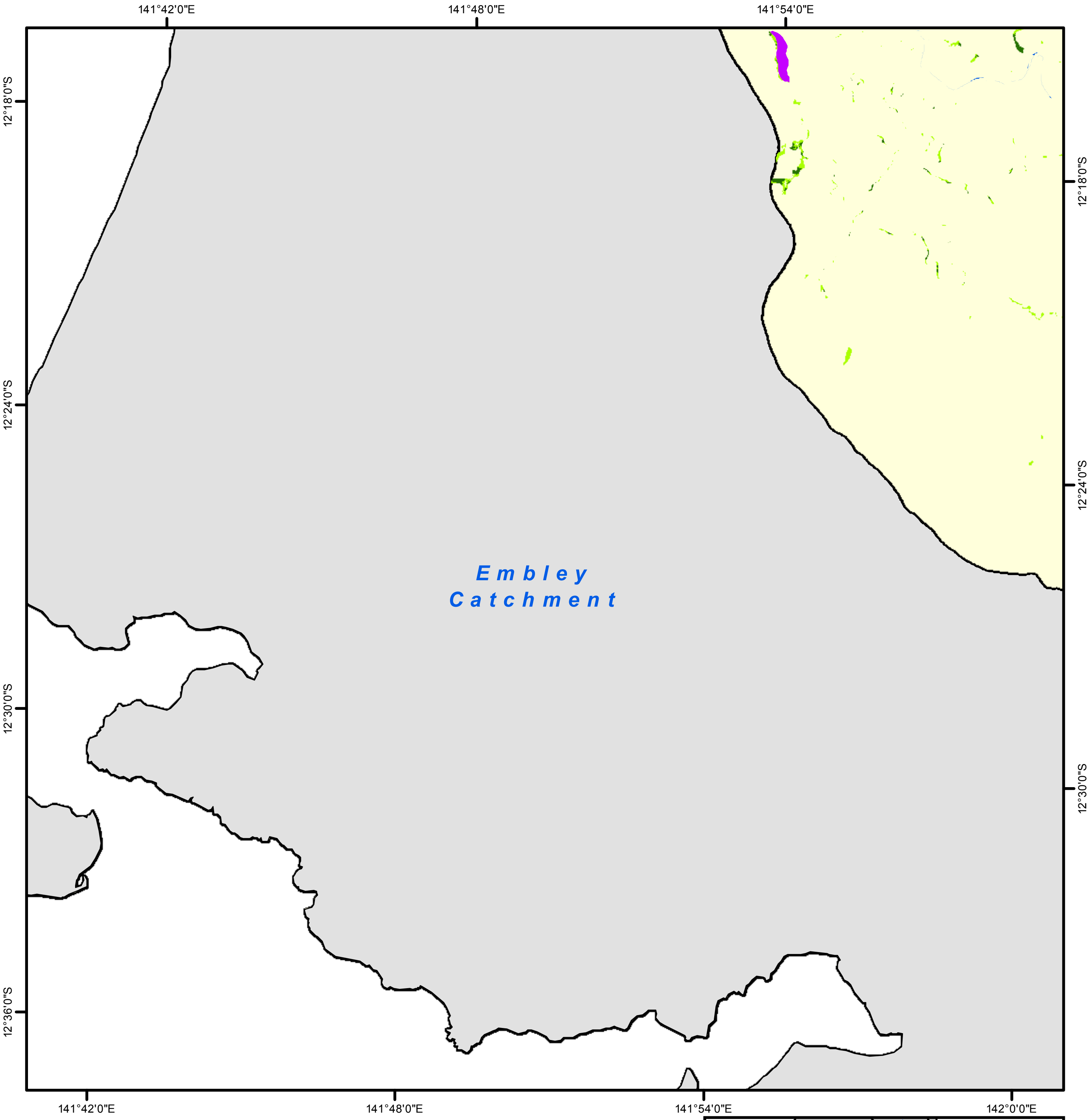
141°48'0"E
141°54'0"E
12°0'0"S
12°6'0"S
12°12'0"S
12°18'0"S
Mapoon
Embley Catchment
G2 Wenlock Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Ducie
Jacky Jacky
G2
G3
H2
H3
H4
H5
Embley
I3
I4
I5
I6
J4
J5
J6
Watson
K5
K6
K7
Archer
Lockhart
Holroyd
1:3,500,000
Stewart



G3 Wenlock Catchment



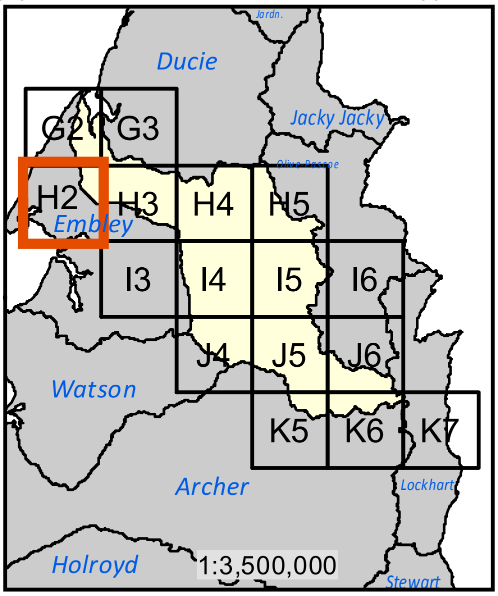


H2 Wenlock Catchment

0 2 4 8 12 16 Kilometres

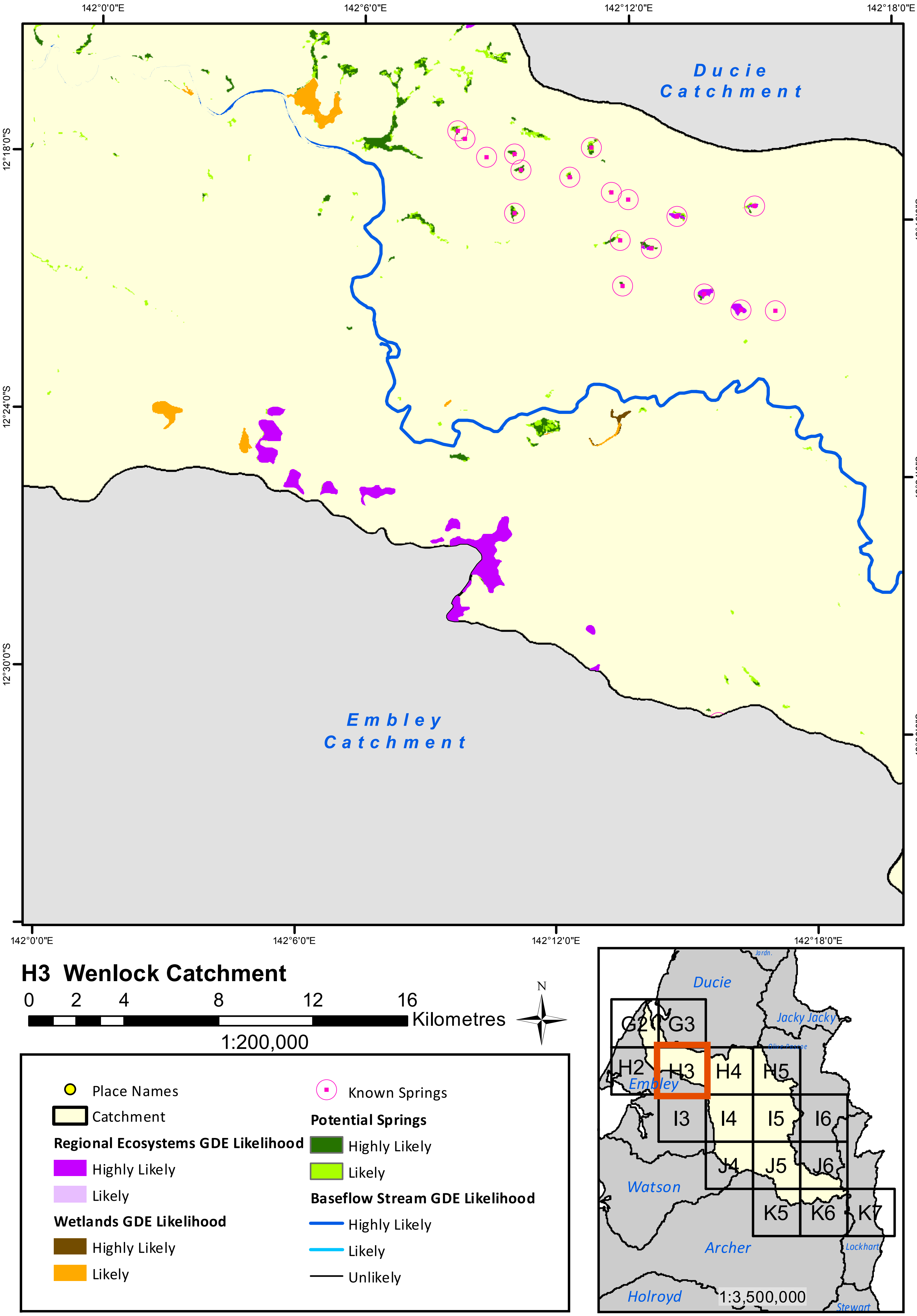
1:200,000

N

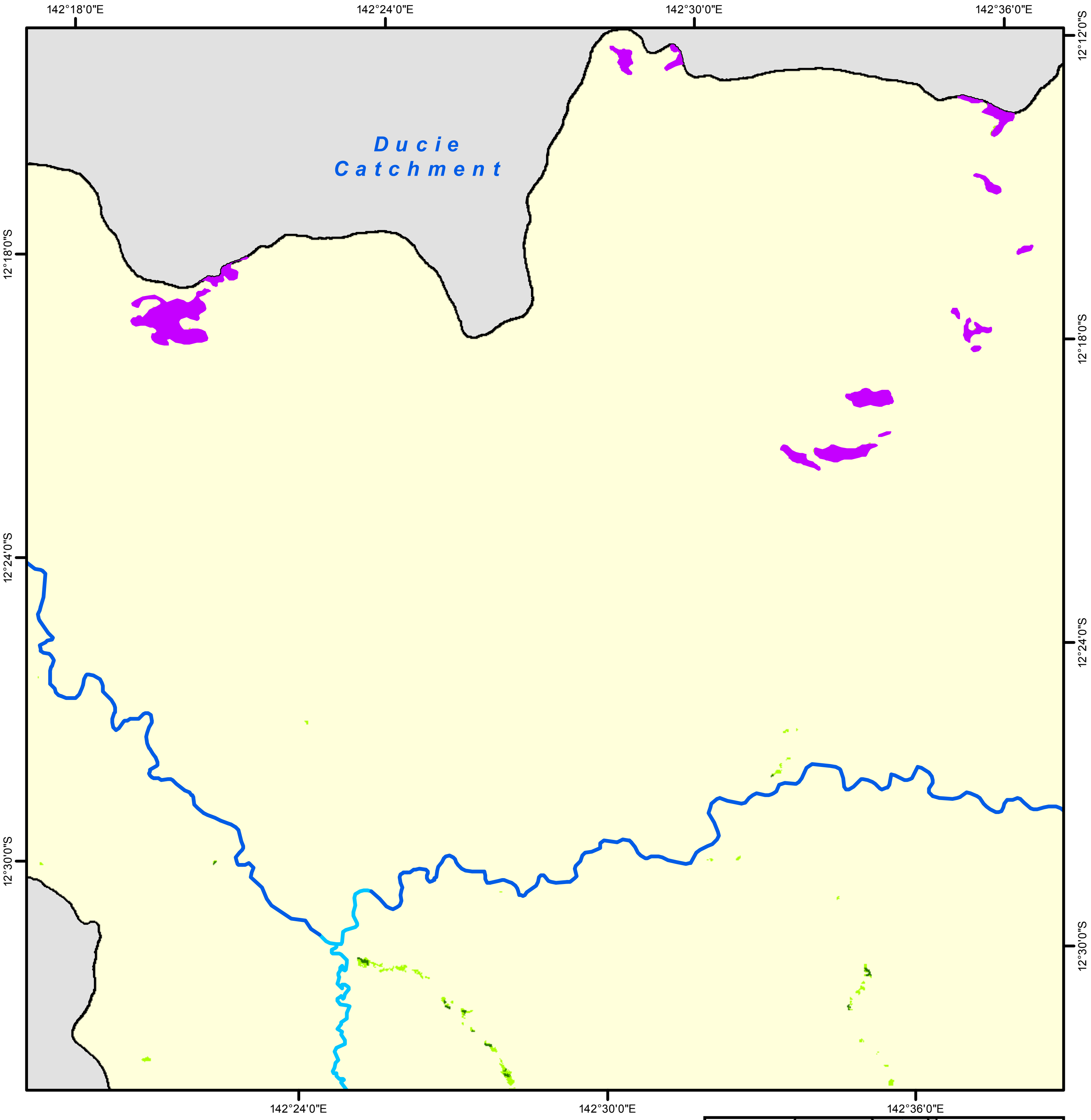


Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



142°0'0"E
142°6'0"E
142°12'0"E
142°18'0"E
12°18'0"S
12°24'0"S
12°30'0"S
Ducie Catchment
Embley Catchment
H3 Wenlock Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Ducie
Jacky Jacky
G2
G3
H2
H3
H4
H5
Embley
I3
I4
I5
I6
J4
J5
J6
Watson
K5
K6
K7
Archer
Lockhart
Holroyd
1:3,500,000
Stewart



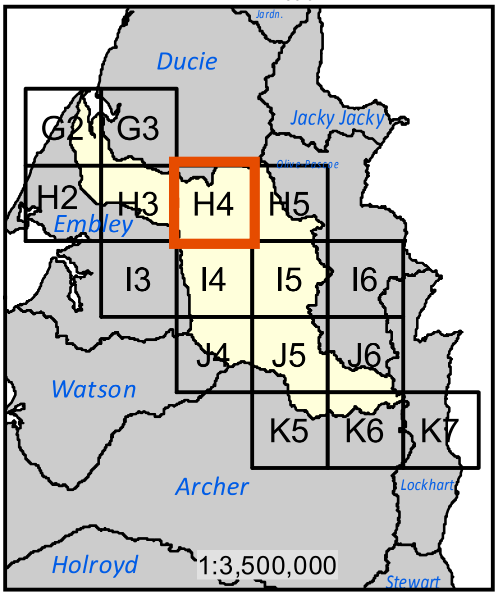
H4 Wenlock Catchment

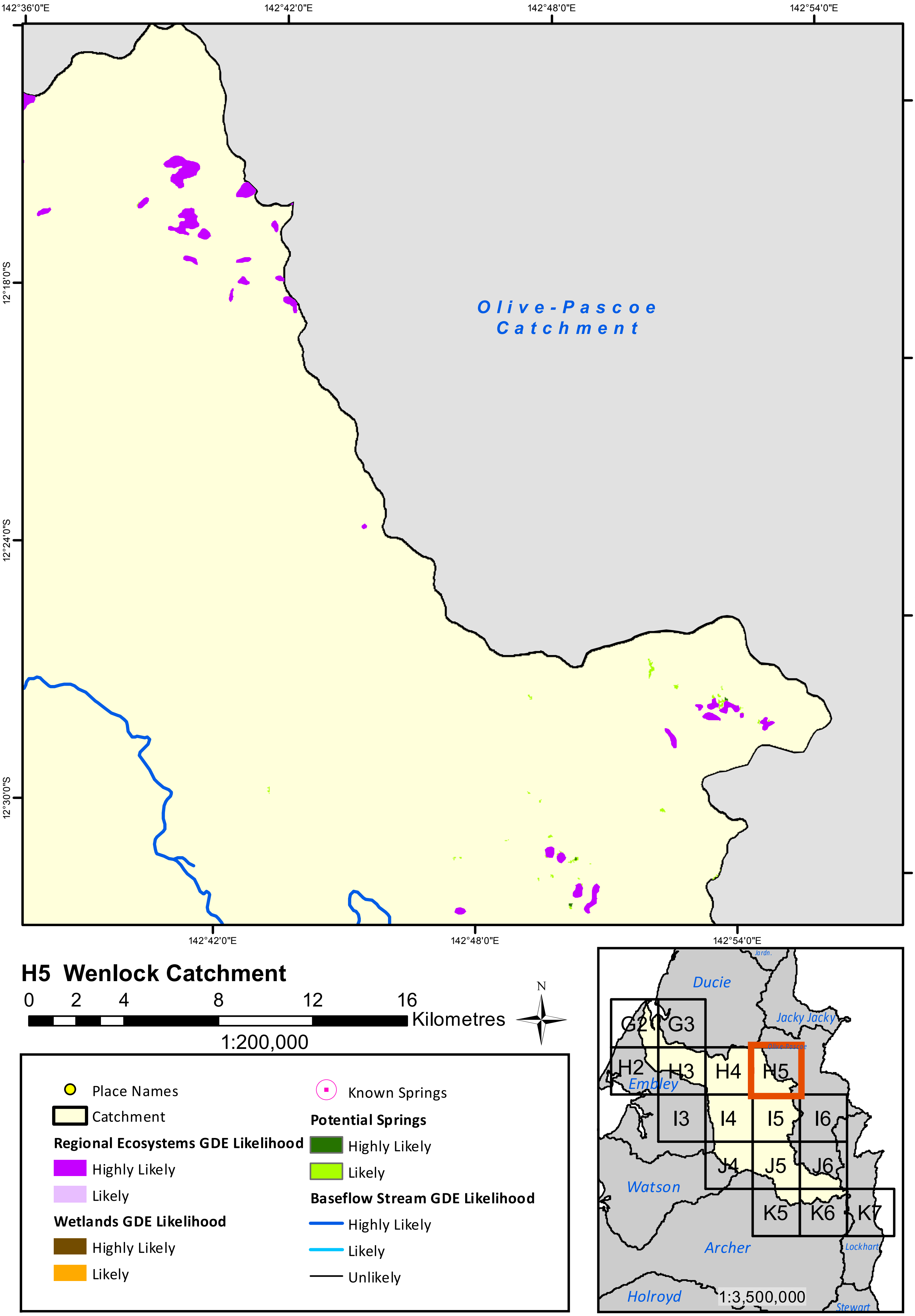
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely

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12°12'0"S
12°18'0"S
12°24'0"S
12°30'0"S
Olive-Pascoe
Catchment
H5 Wenlock Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Ducie
Jacky Jacky
G2
G3
H2
H3
H4
H5
Embley
I3
I4
I5
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J4
J5
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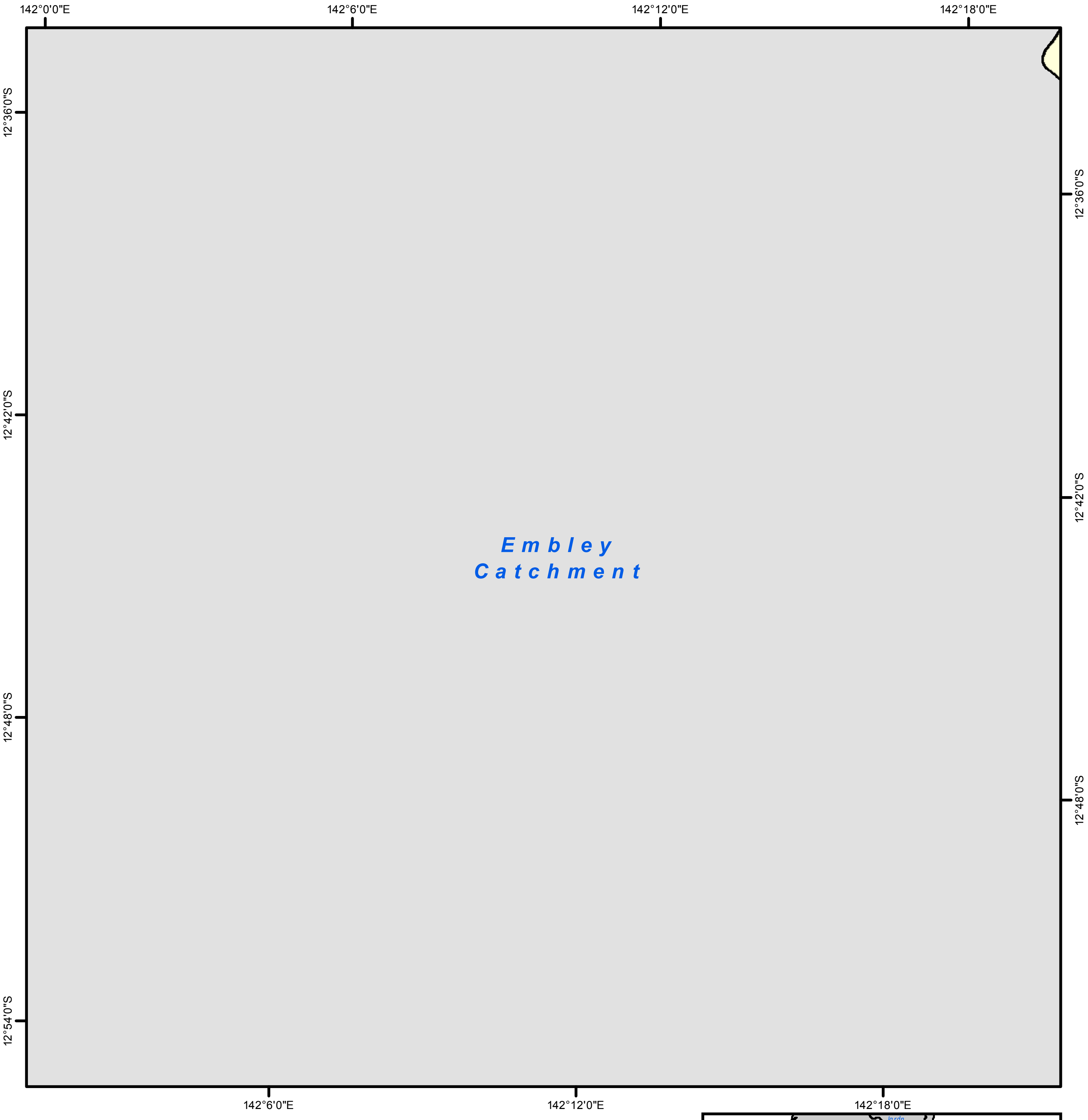
Watson
K5
K6
K7
Archer
Lockhart
Holroyd
1:3,500,000
Stewart



I3 Wenlock Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

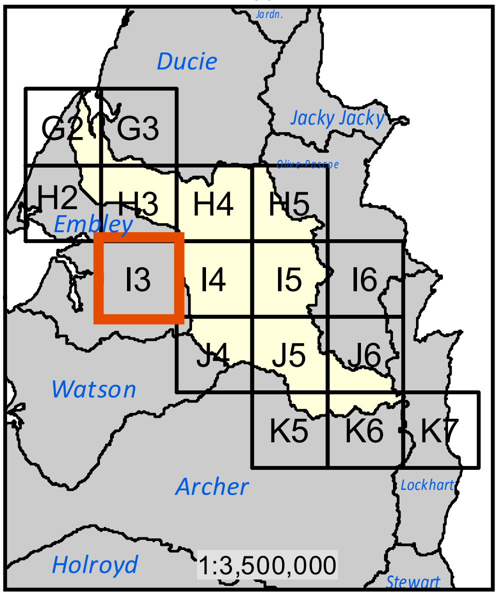
- Known Springs

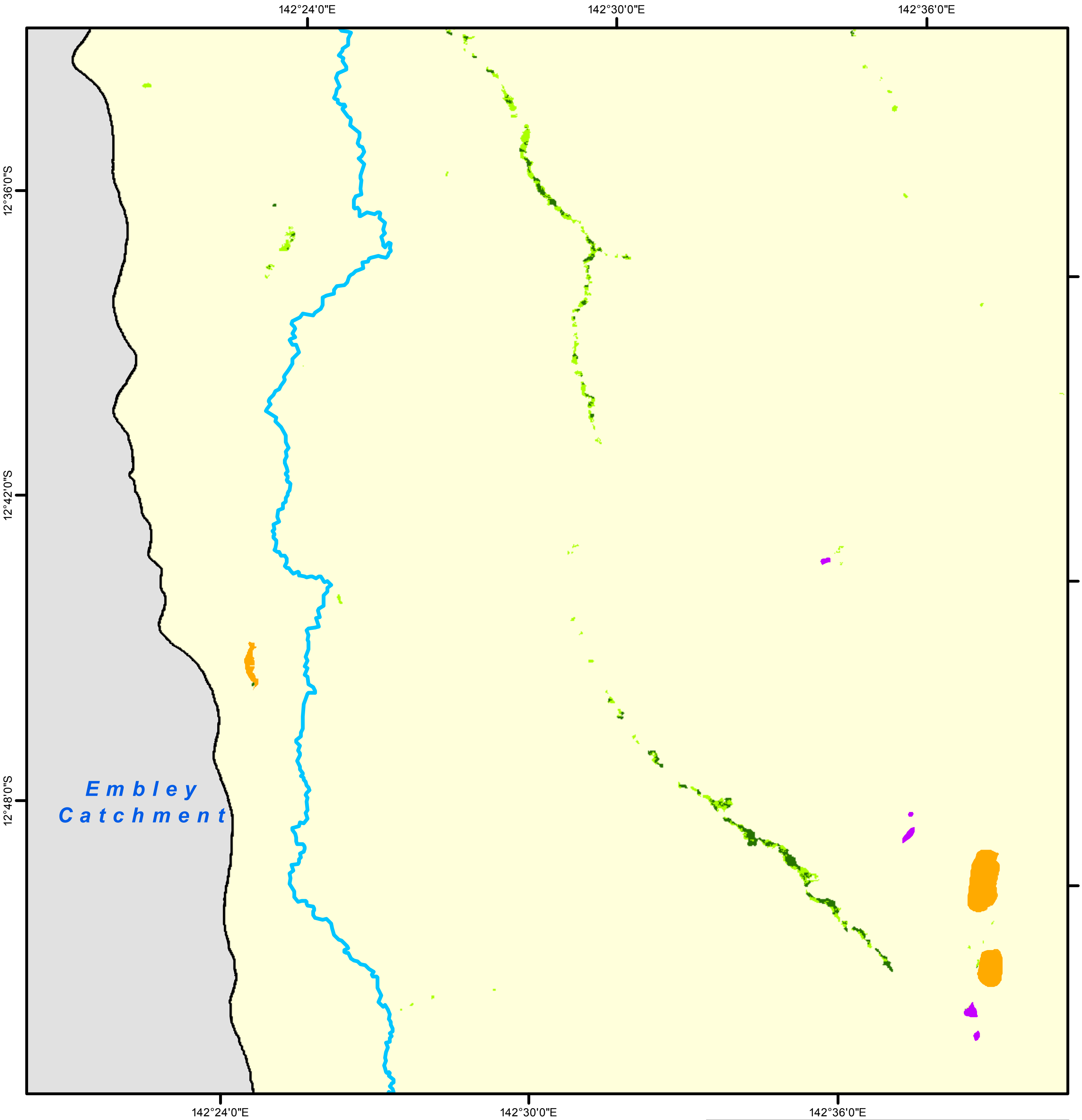
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely



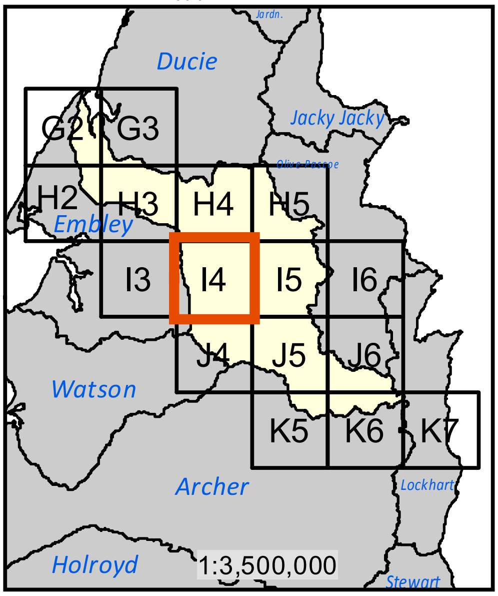


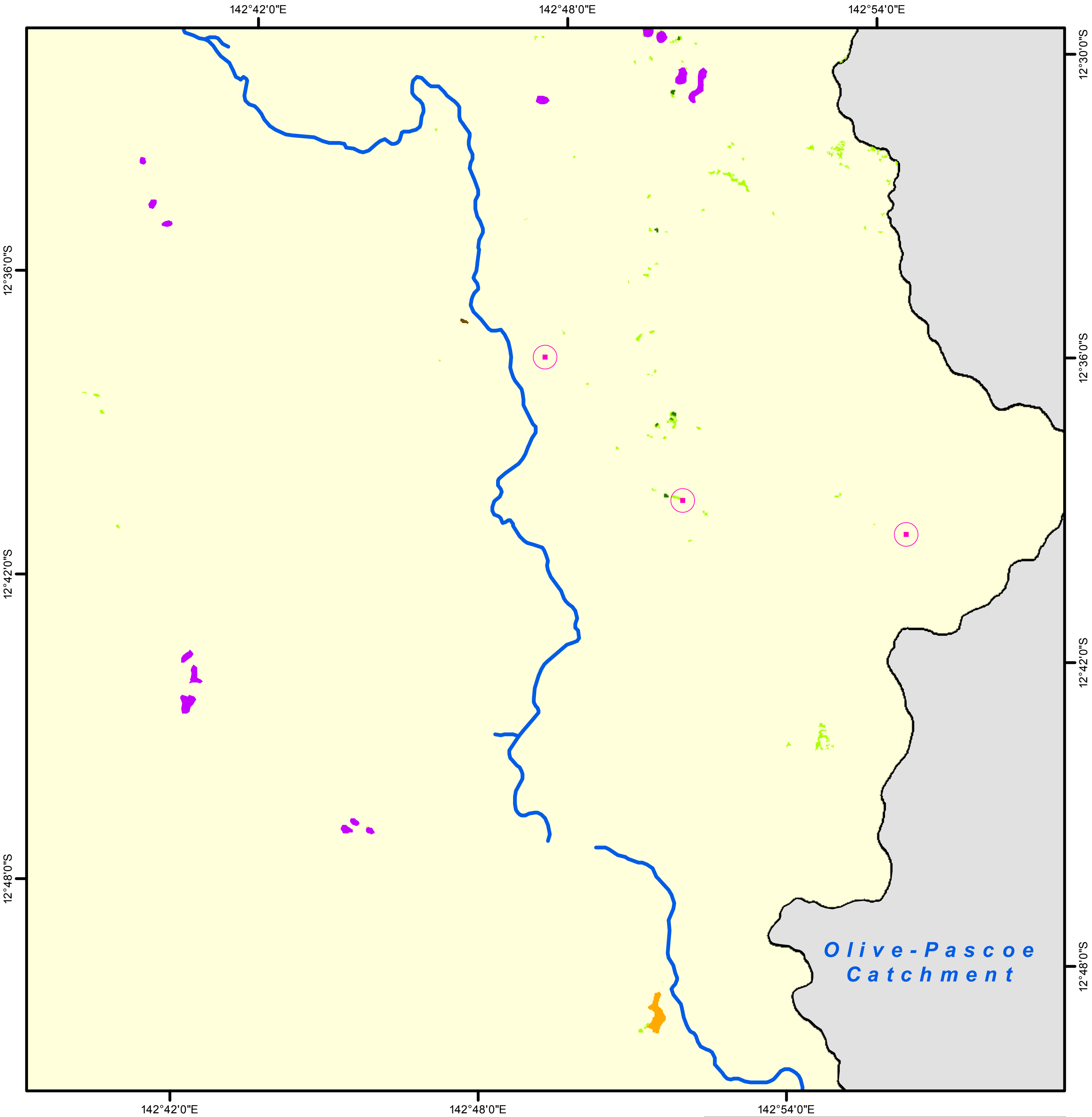
I4 Wenlock Catchment

0 2 4 8 12 16
Kilometres
1:200,000

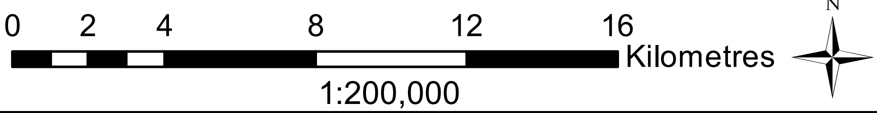
N

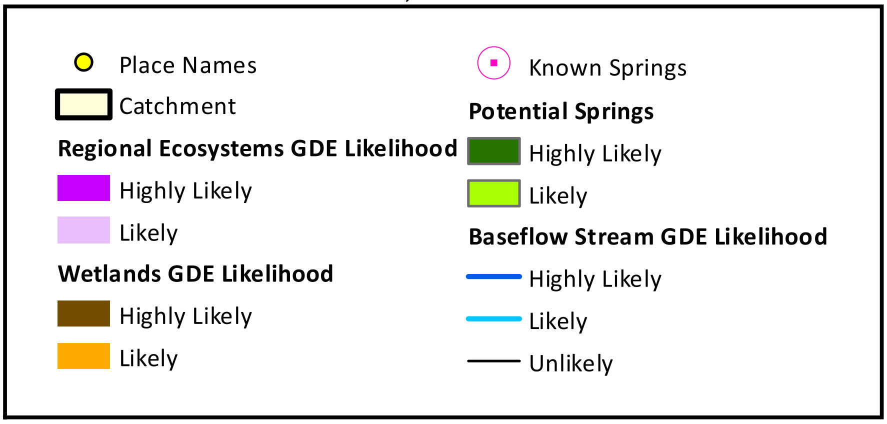
Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely

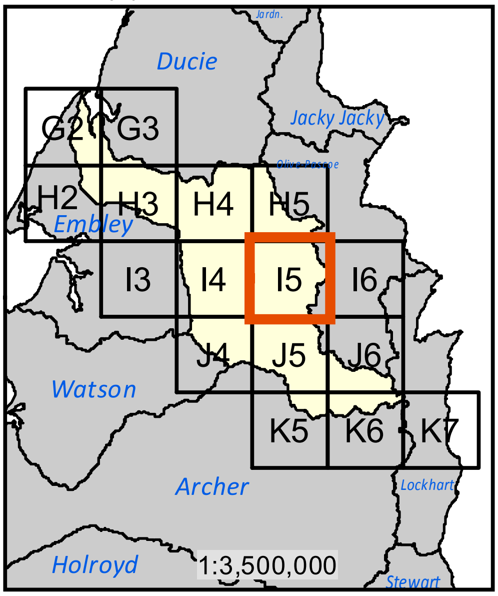


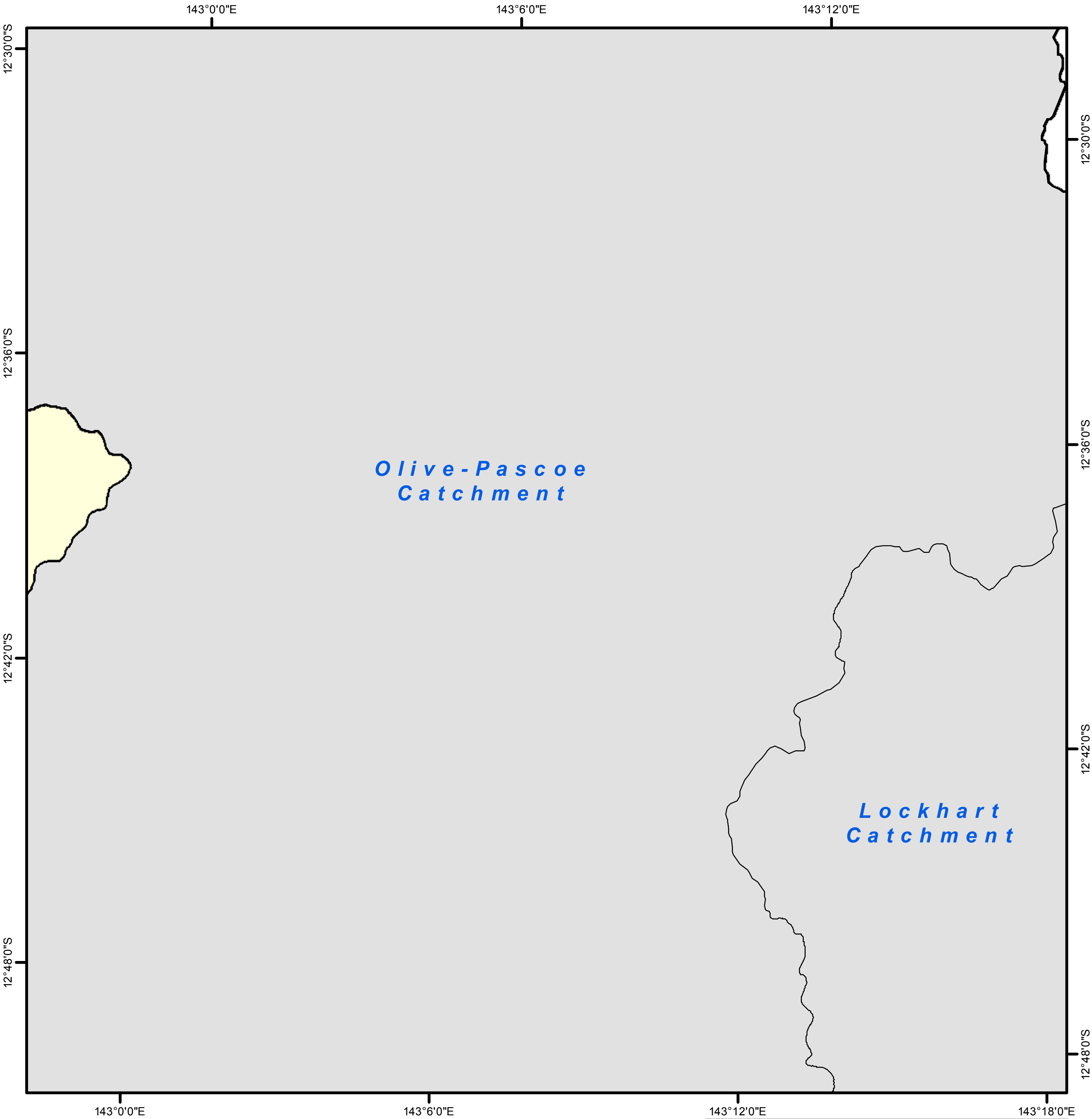


I5 Wenlock Catchment

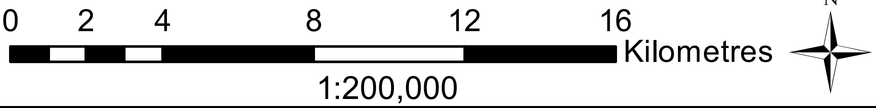








I6 Wenlock Catchment



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

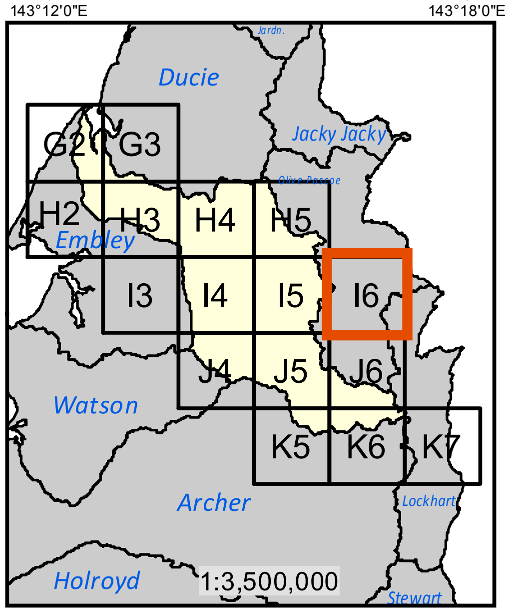
- Known Springs

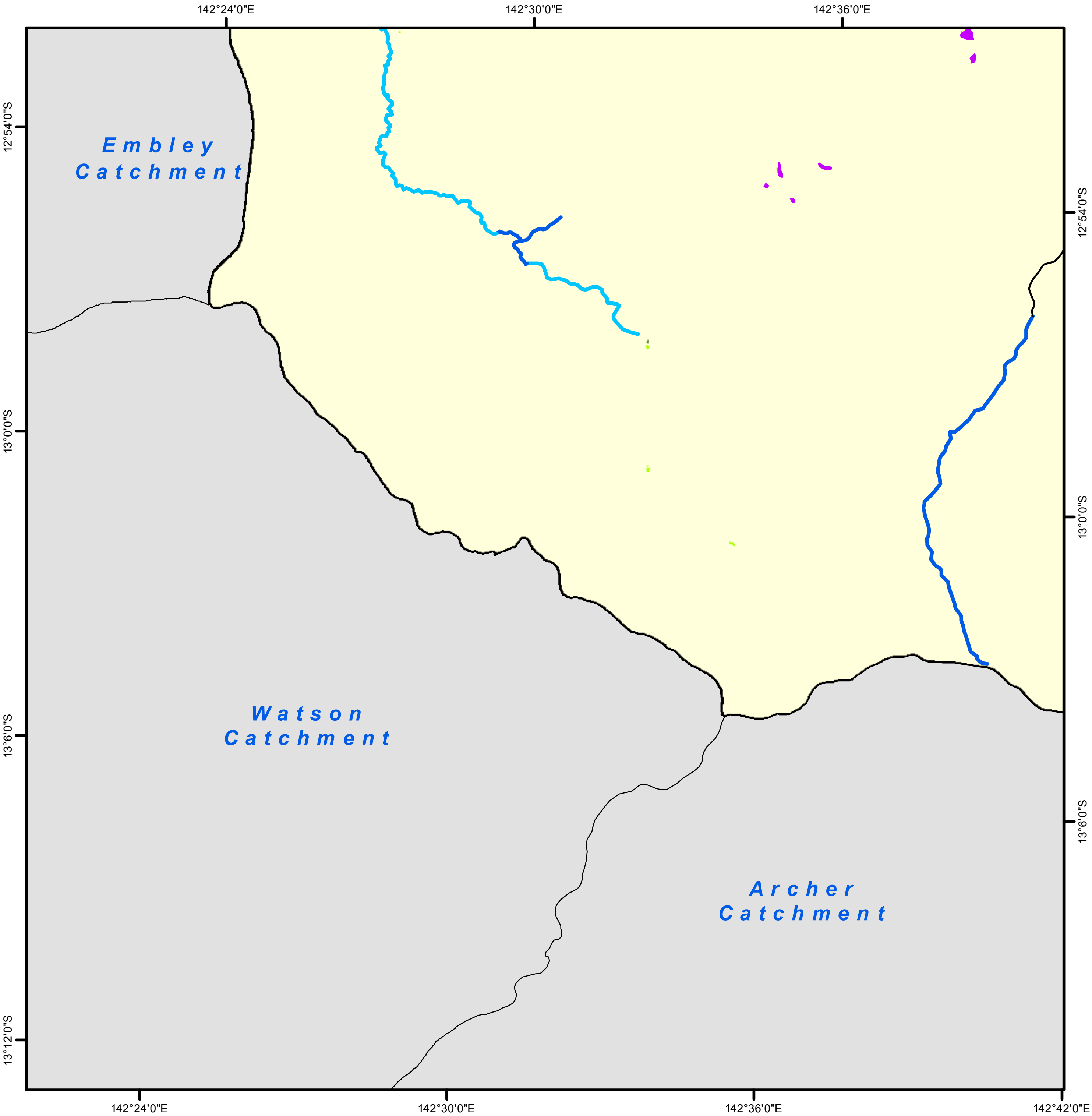
Potential Springs

- Highly Likely
- Likely

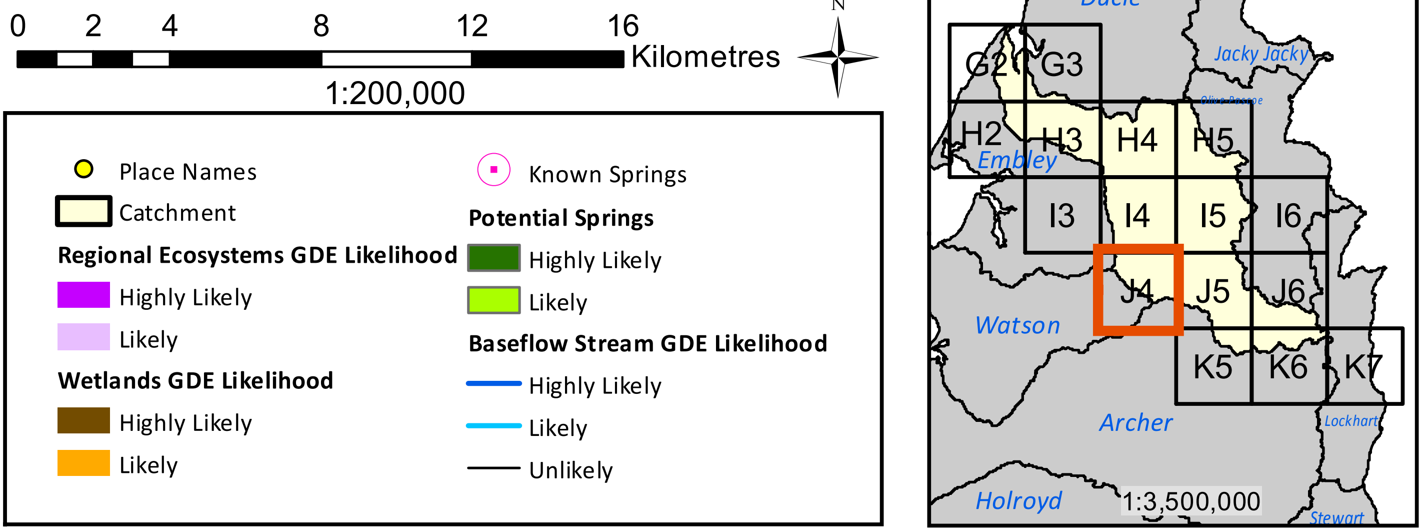
Baseflow Stream GDE Likelihood

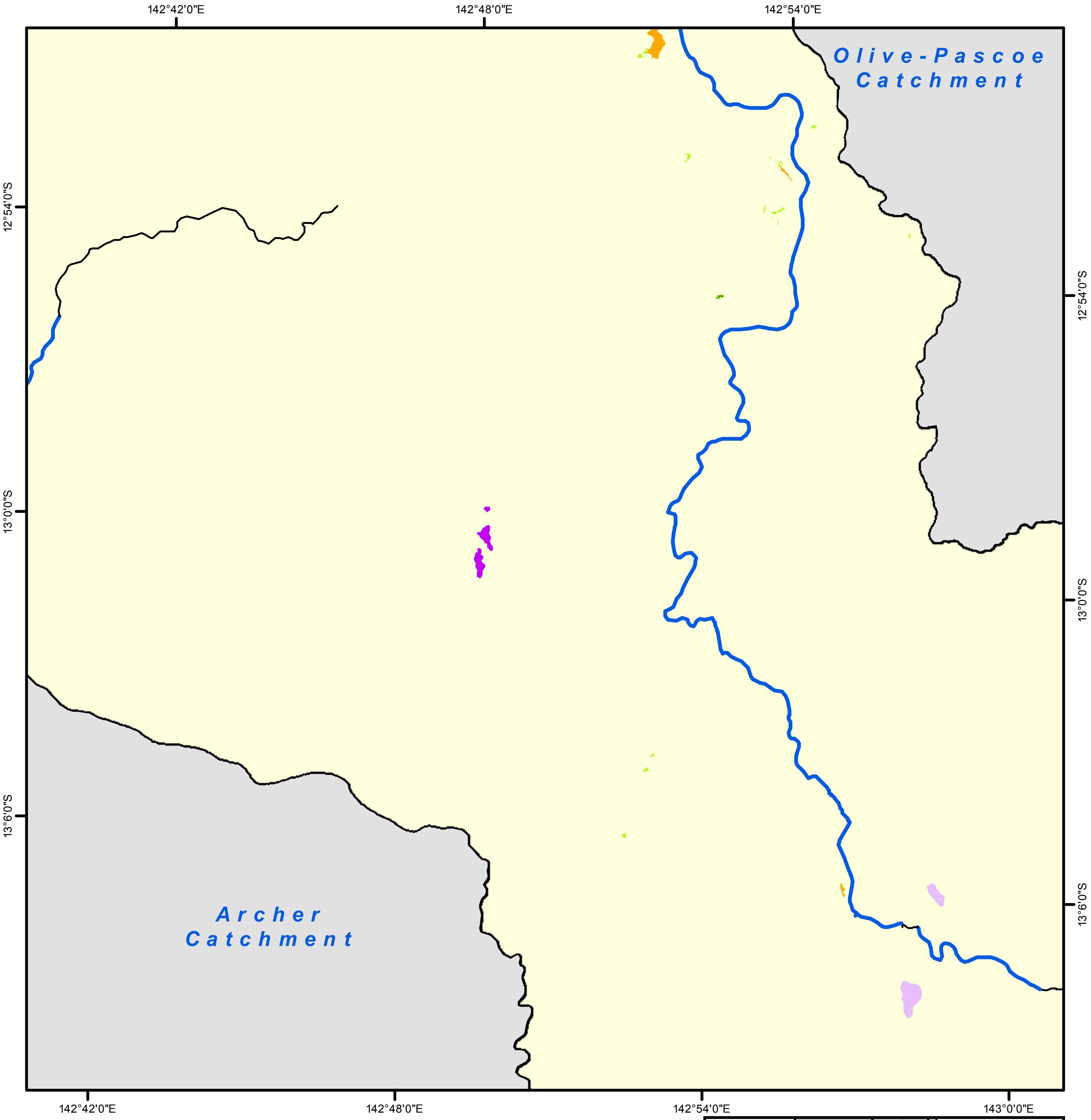
- Highly Likely
- Likely
- Unlikely



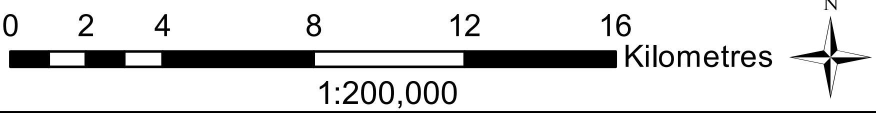


J4 Wenlock Catchment





J5 Wenlock Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

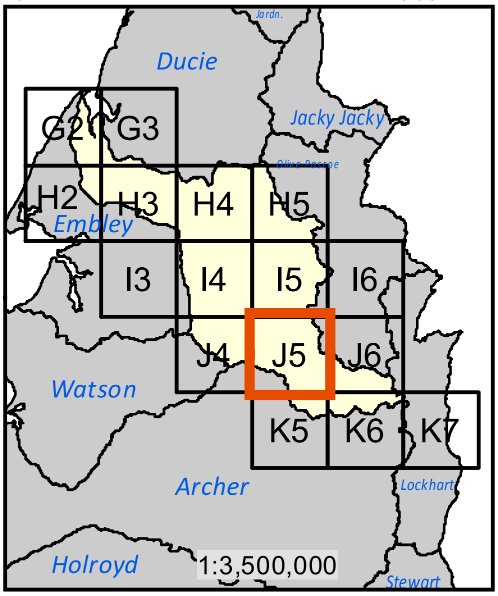
Likely

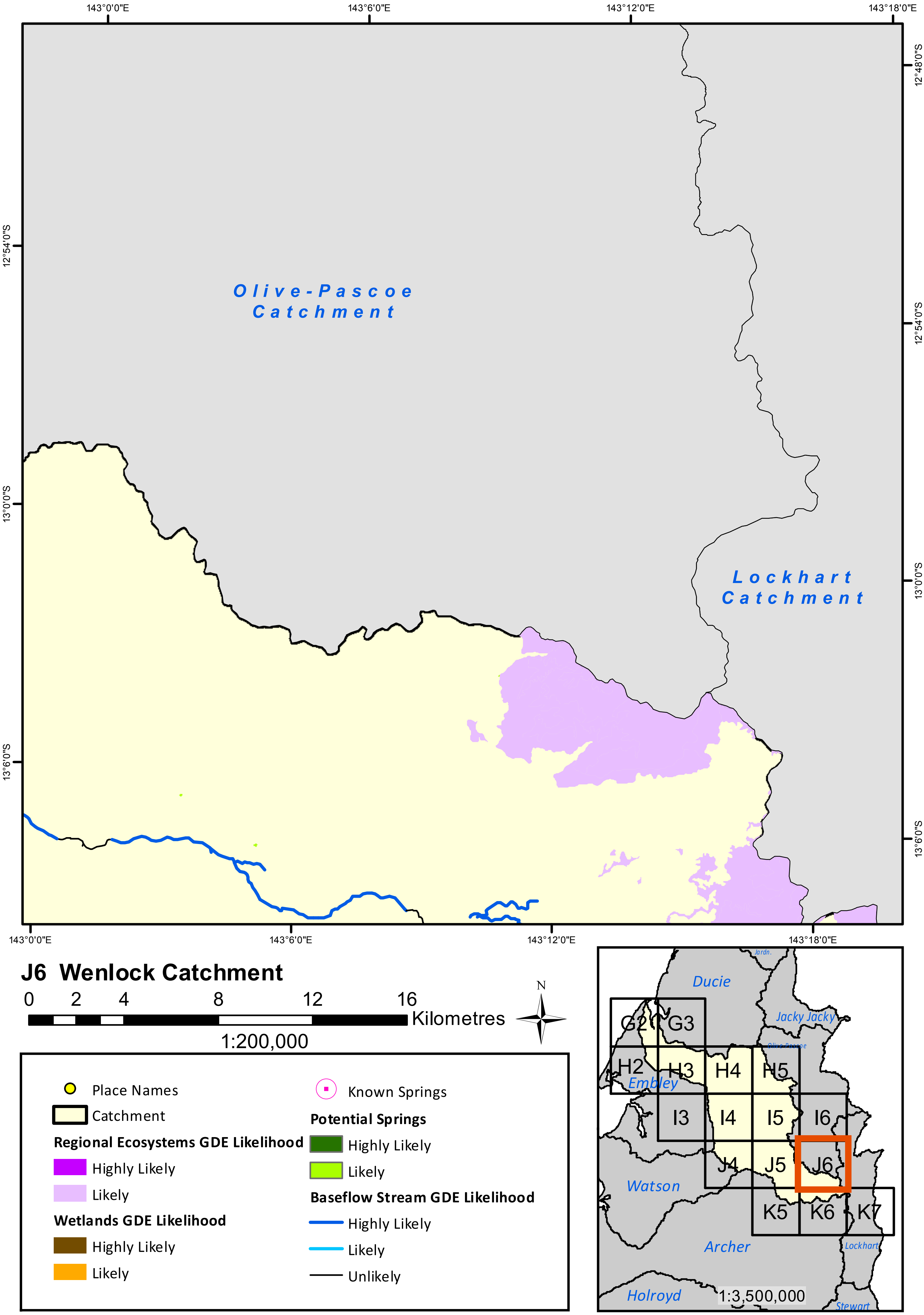
Baseflow Stream GDE Likelihood

Highly Likely

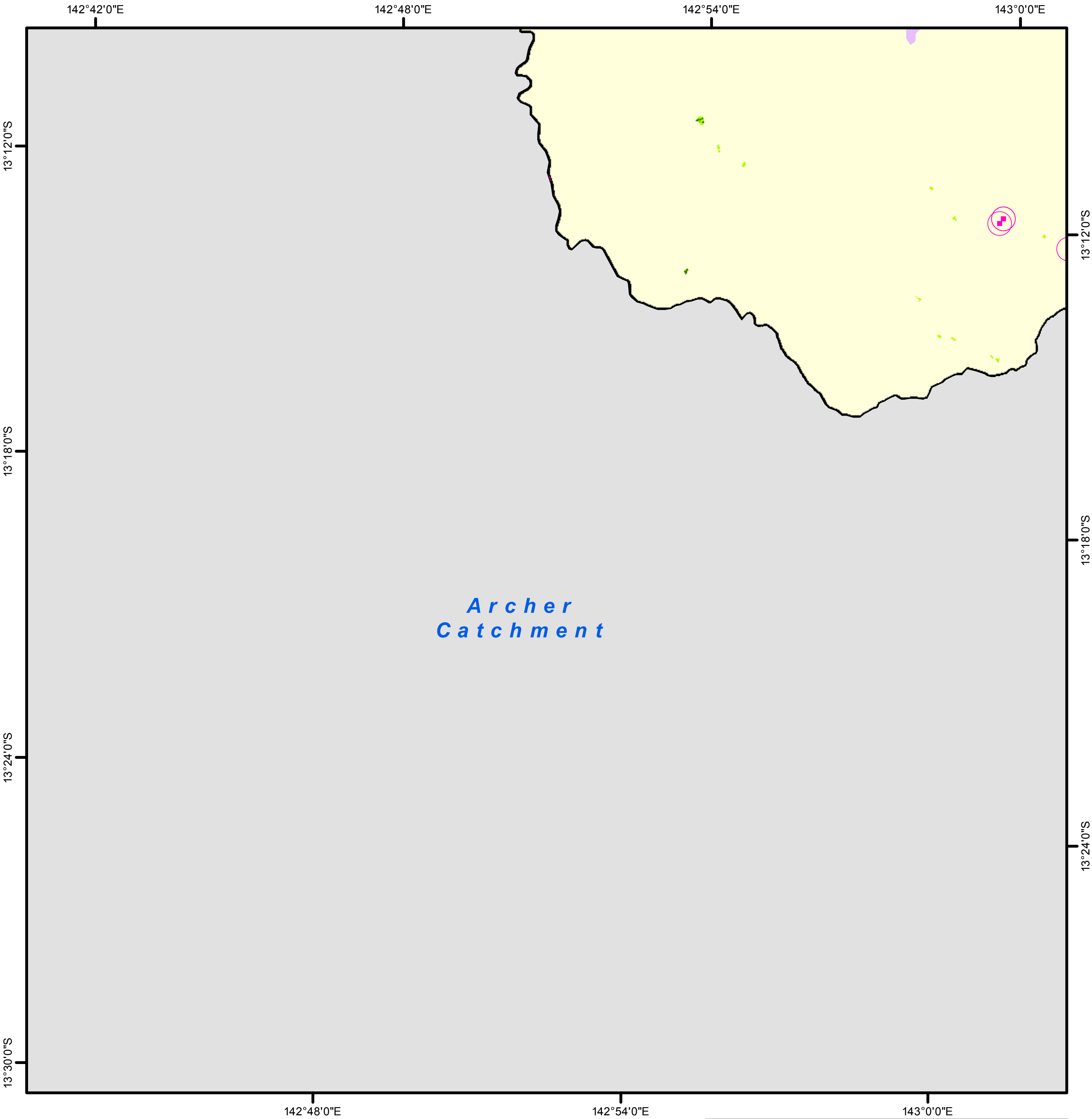
Likely

Unlikely





143°0'0"E
143°6'0"E
143°12'0"E
143°18'0"E
12°48'0"S
12°54'0"S
13°0'0"S
13°6'0"S
Olive-Pascoe Catchment
Lockhart Catchment
J6 Wenlock Catchment
0 2 4 8 12 16 Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Ducie
Jacky Jacky
Embley
Watson
Archer
Holroyd
Lockhart
Stewart
G2
G3
H2
H3
H4
H5
I3
I4
I5
I6
J4
J5
J6
K5
K6
K7
1:3,500,000



K5 Wenlock Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

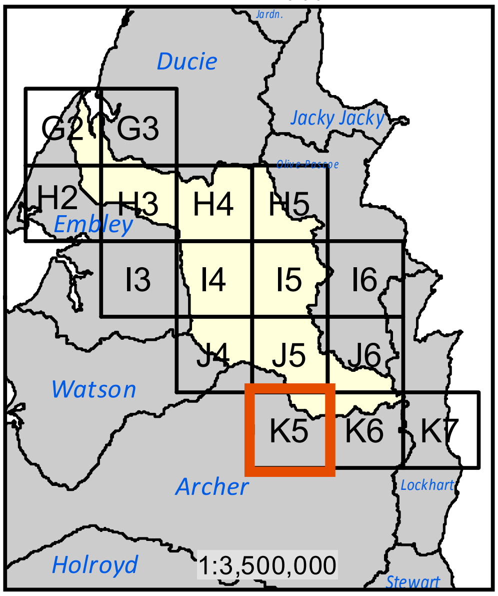
- Known Springs

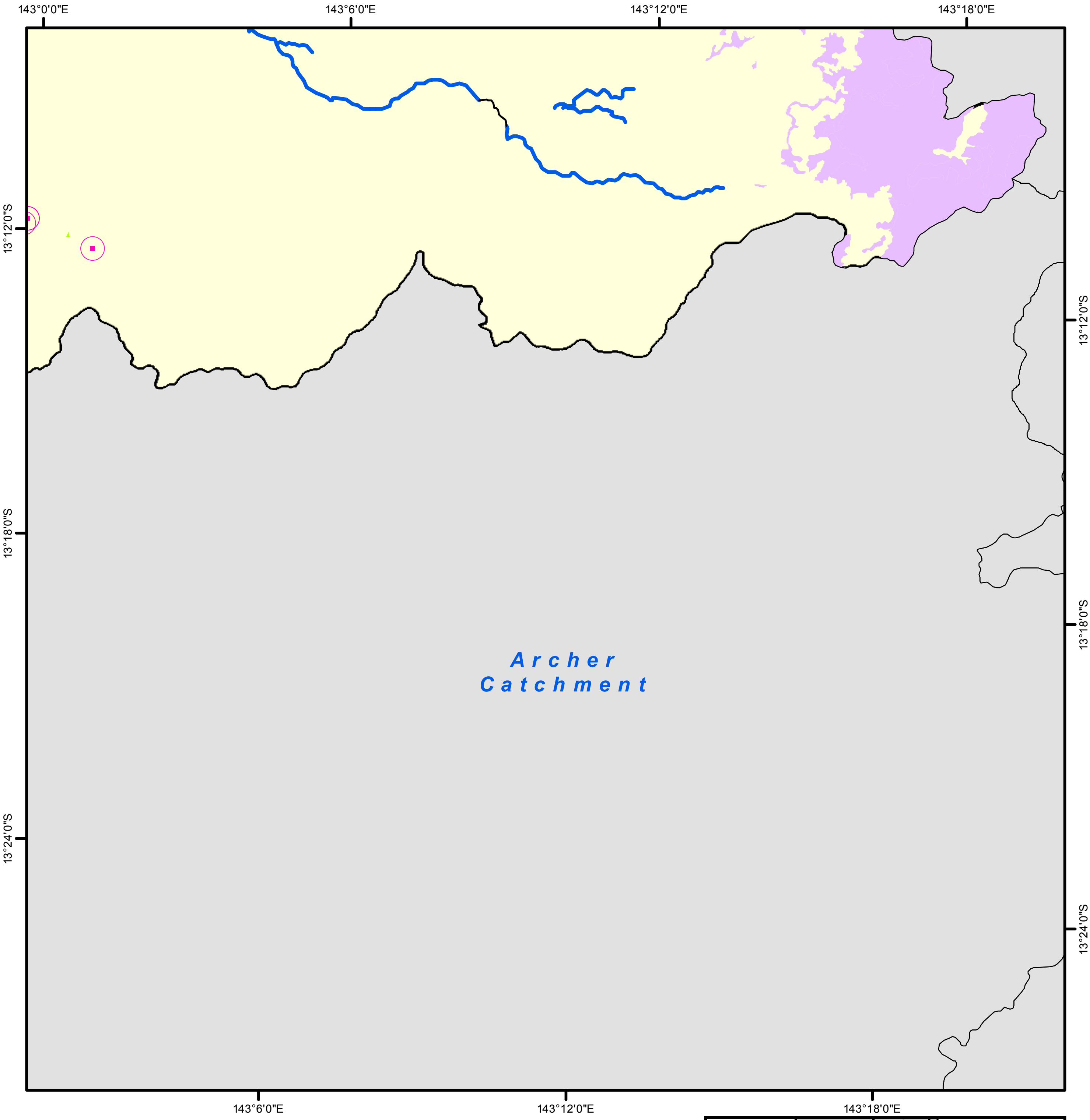
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





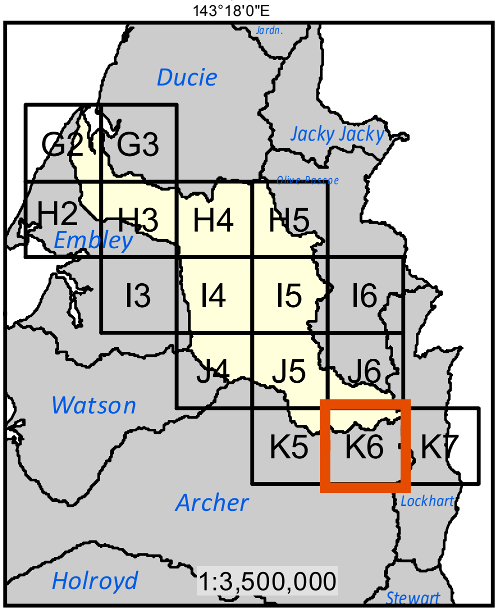
K6 Wenlock Catchment

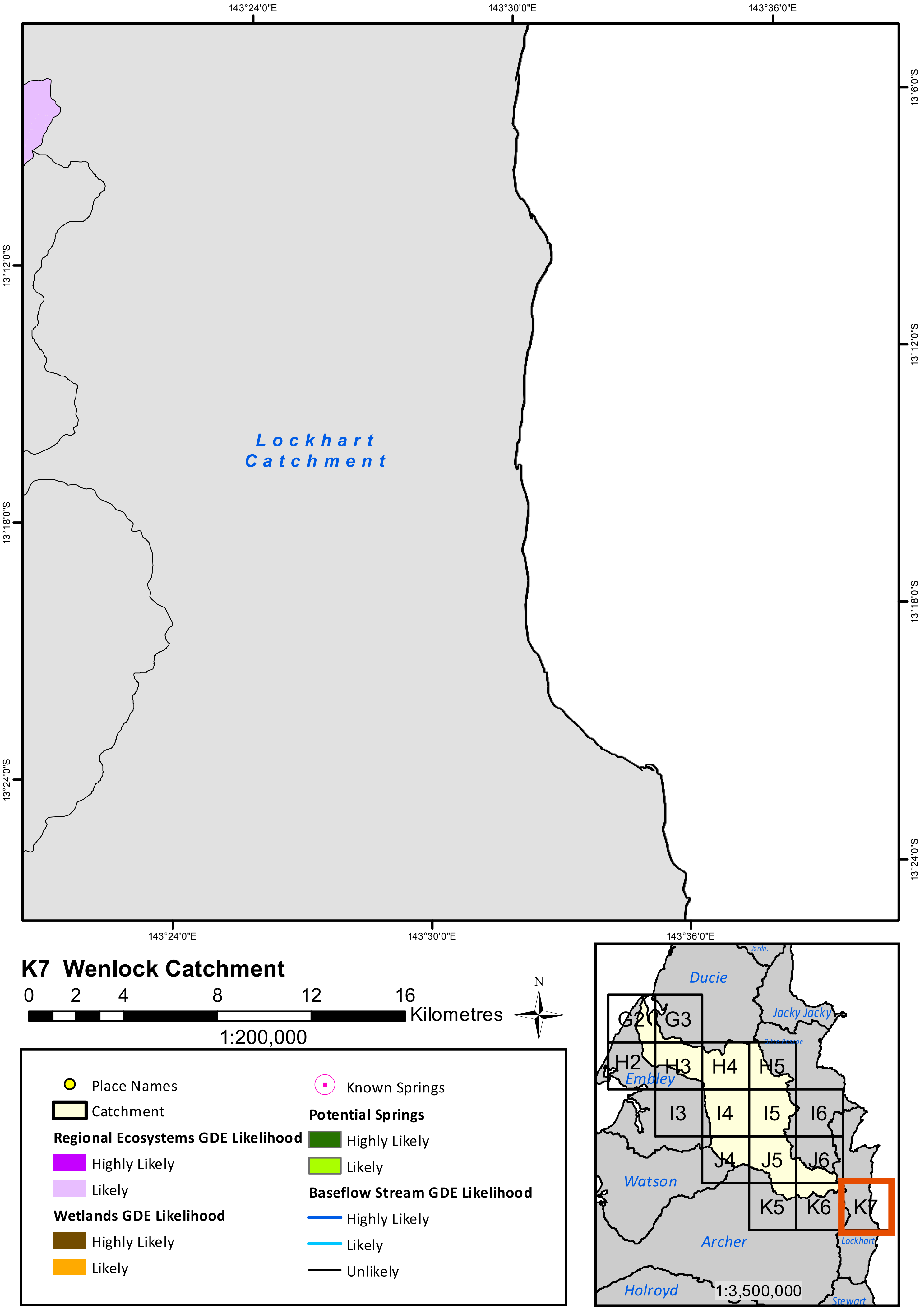
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely

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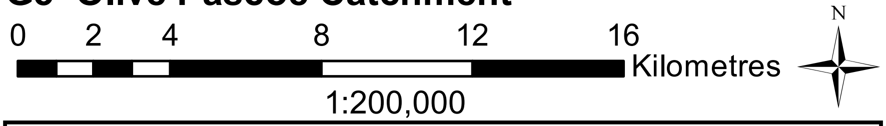
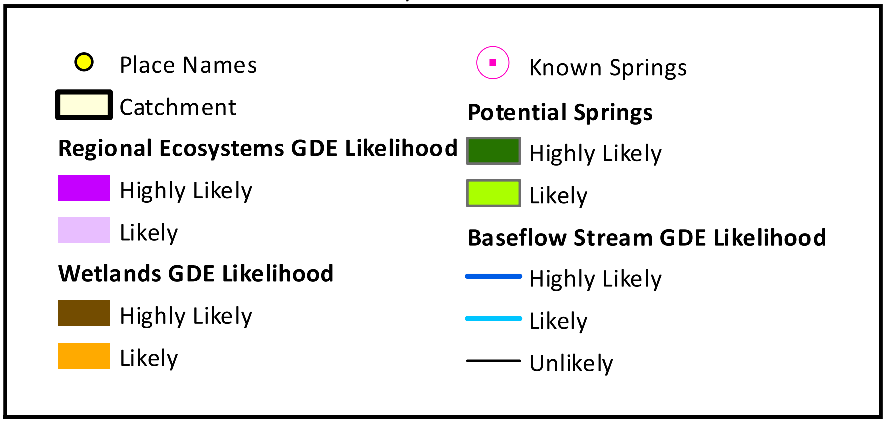
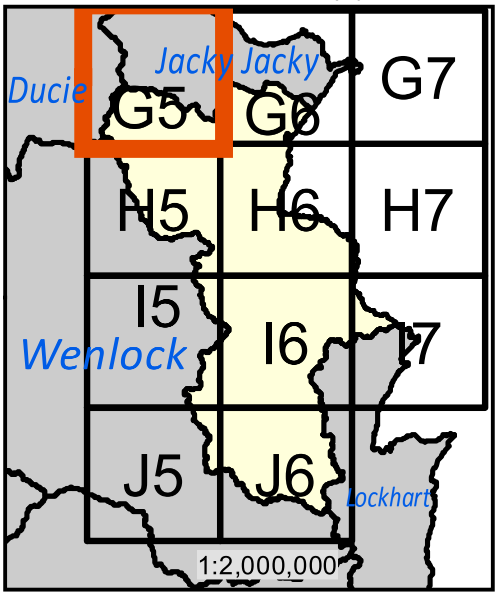
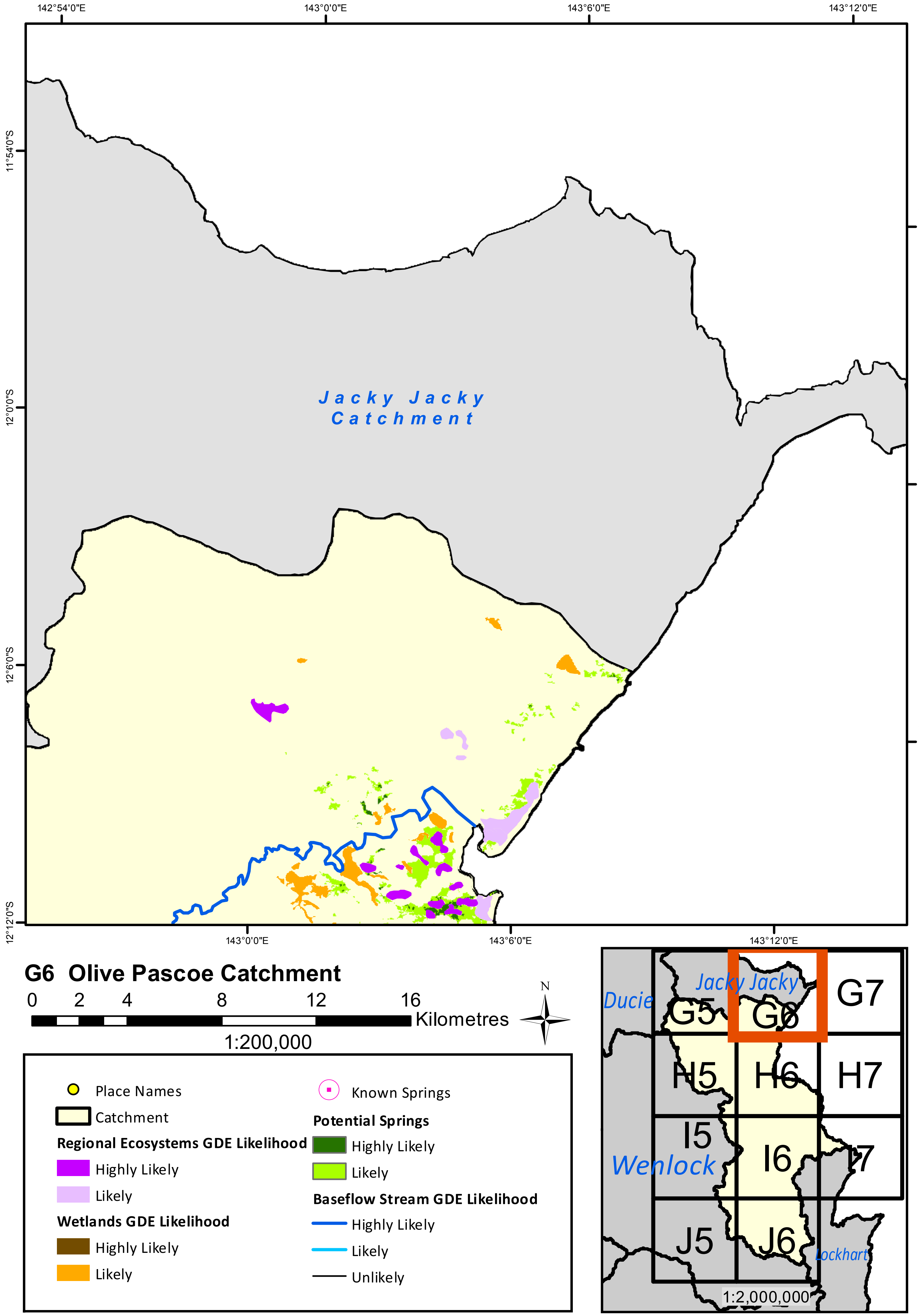
143°30'0"E
143°36'0"E
13°6'0"S
13°12'0"S
13°18'0"S
13°24'0"S
Lockhart Catchment
K7 Wenlock Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Ducie
Jacky Jacky
Embley
Watson
Archer
Holroyd
Lockhart
Stewart
G2
G3
H2
H3
H4
H5
I3
I4
I5
I6
J4
J5
J6
K5
K6
K7
1:3,500,000

G5 Olive Pascoe Catchment









G6 Olive Pascoe Catchment

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

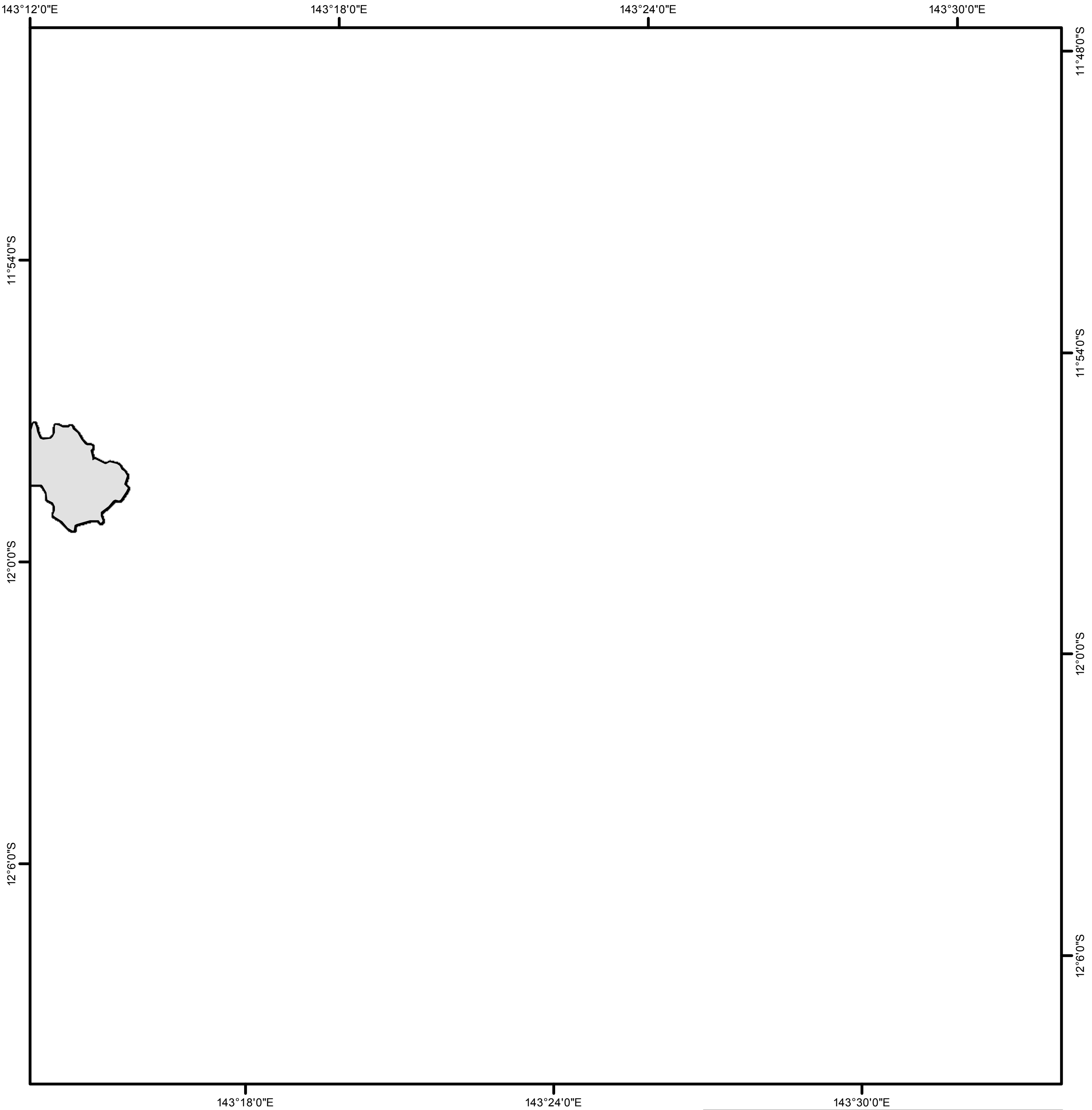
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely

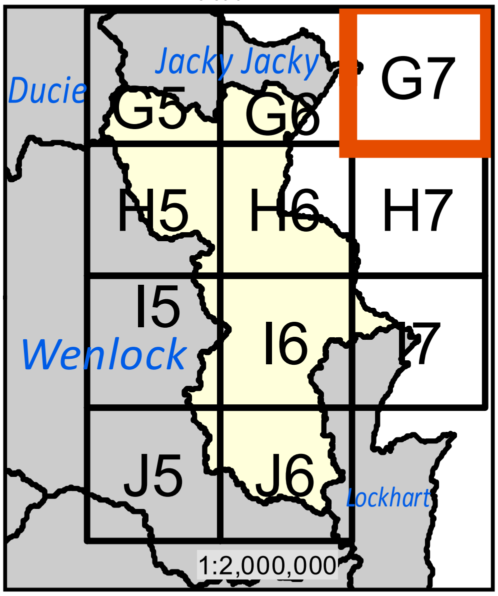


G7 Olive Pascoe Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

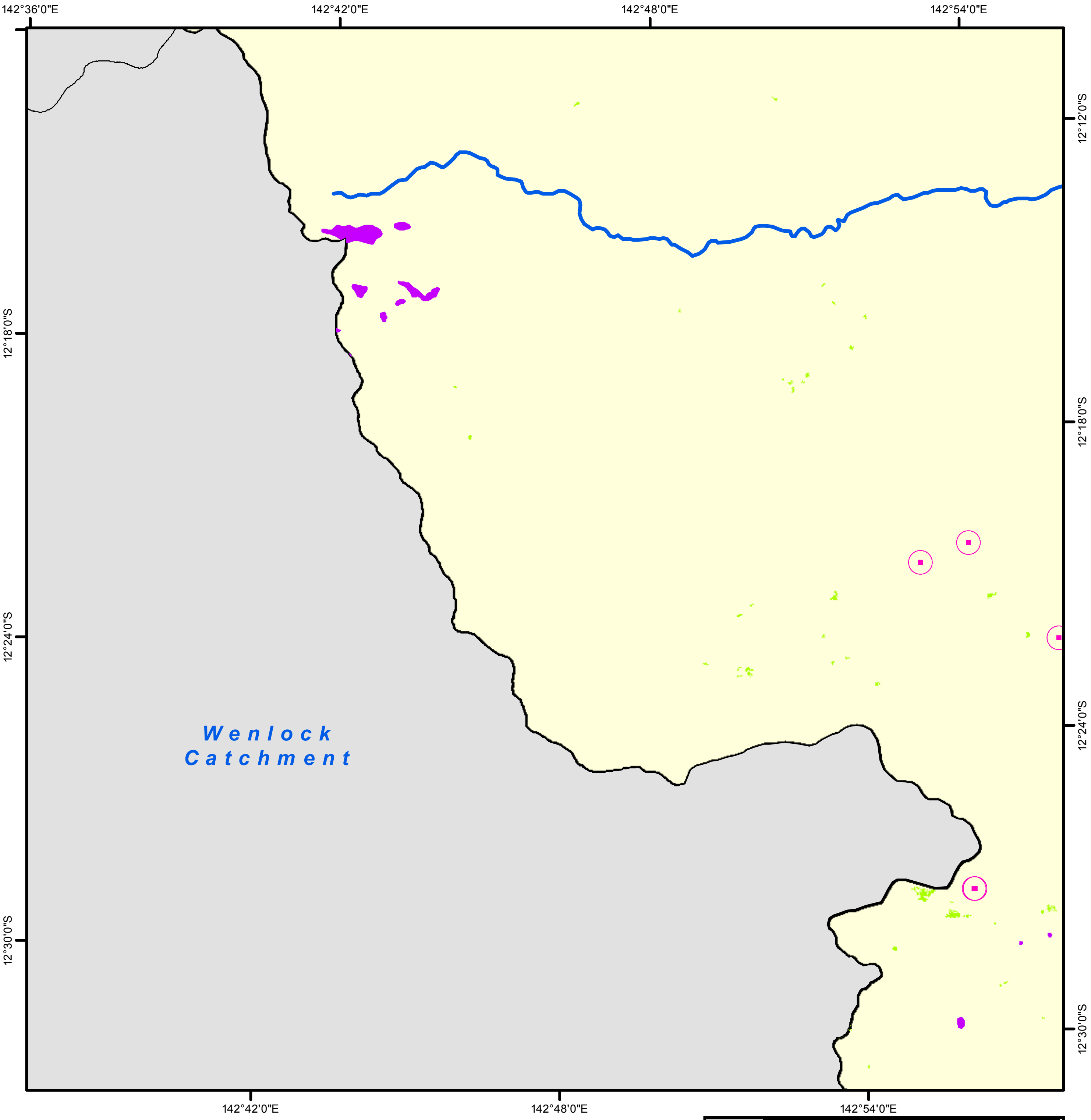
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



H5 Olive Pascoe Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

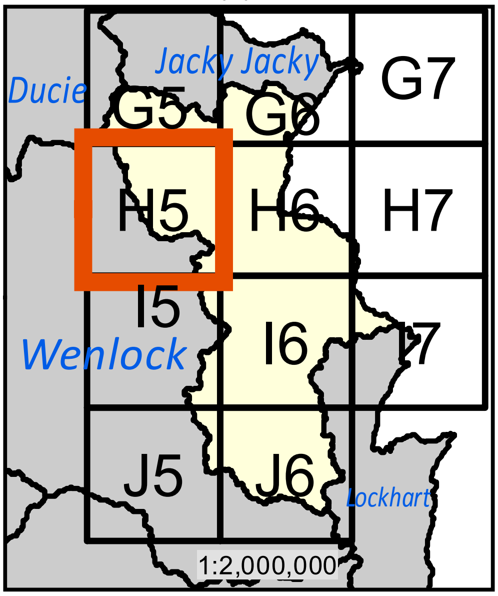
- Known Springs

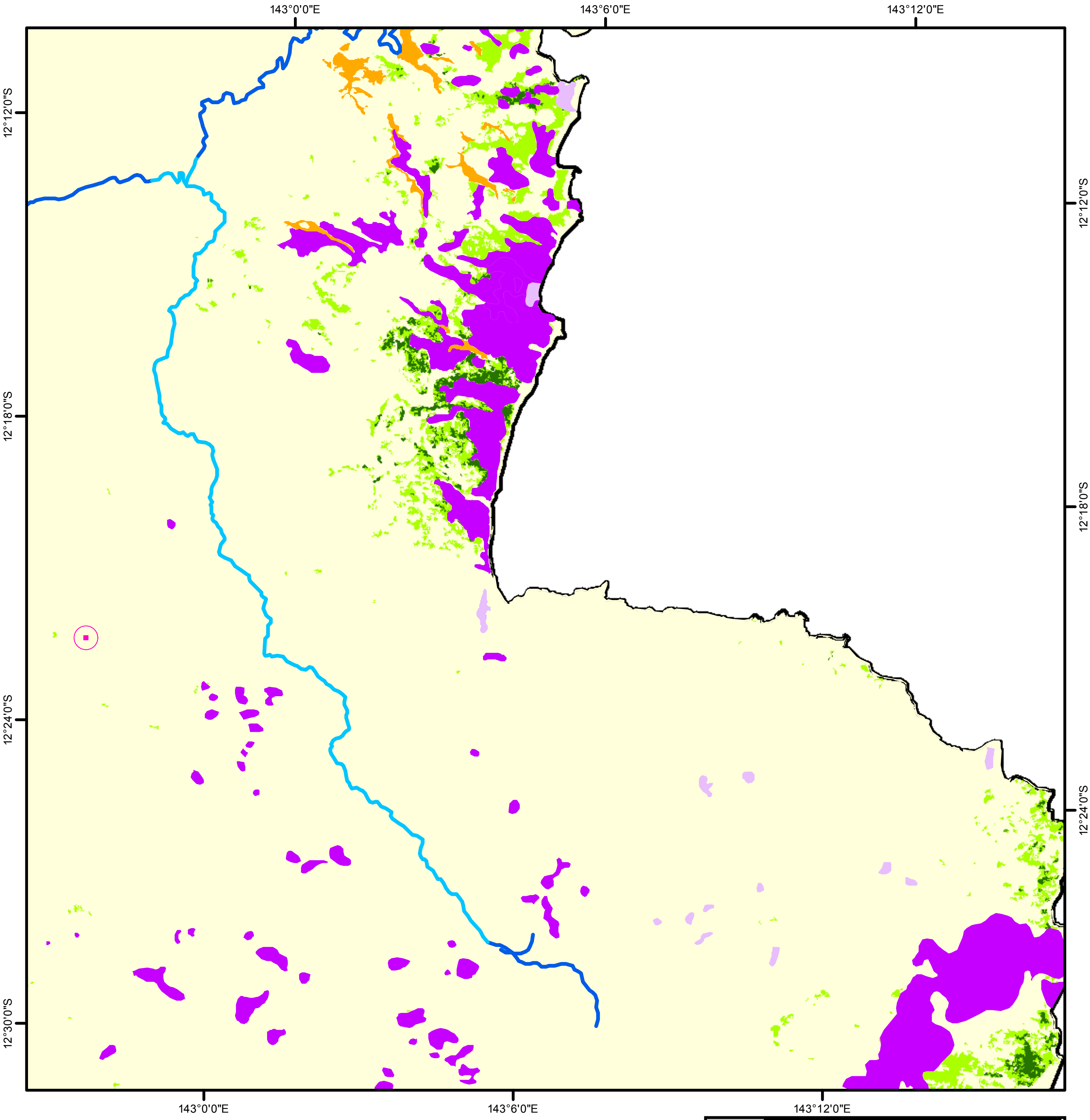
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





H6 Olive Pascoe Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

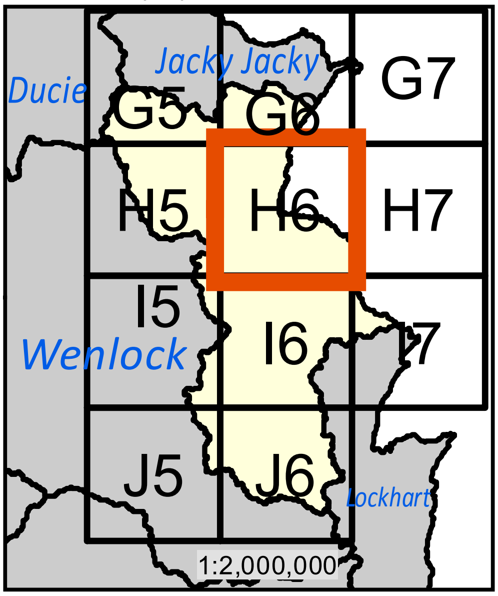
- Known Springs

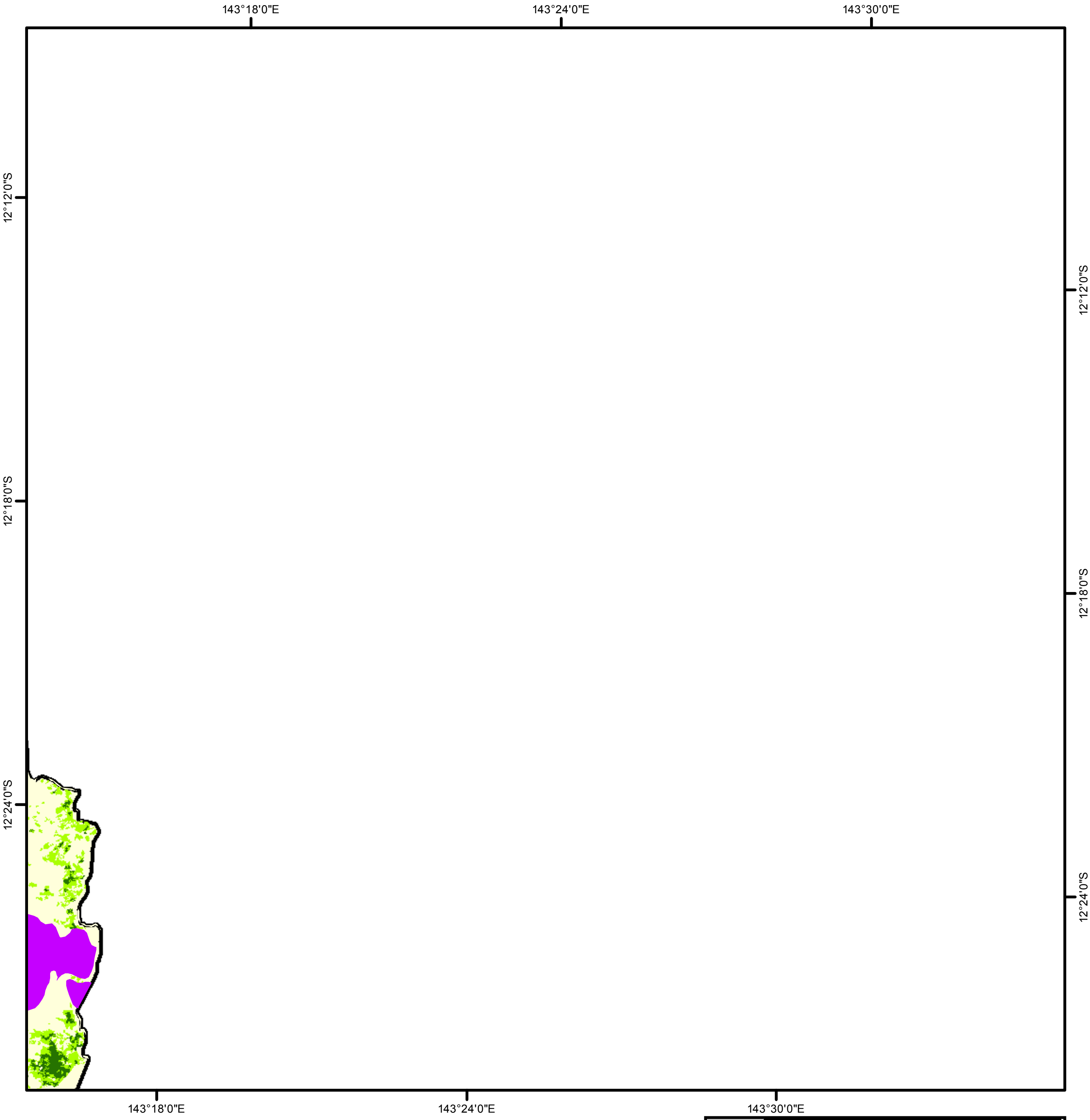
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





H7 Olive Pascoe Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

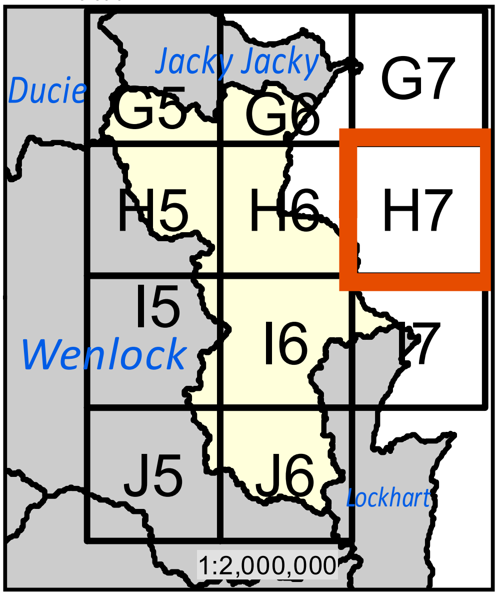
Likely

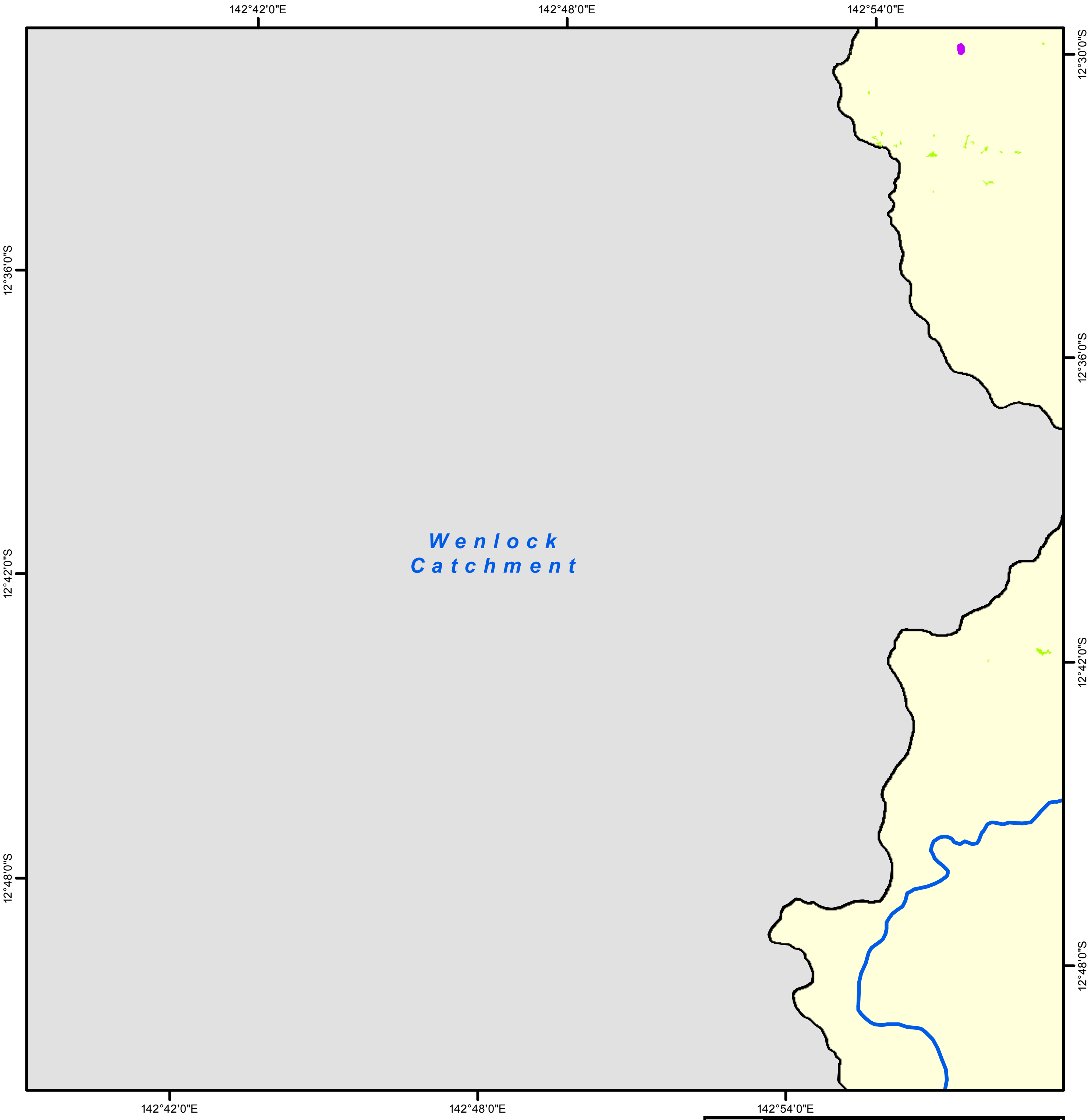
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





I5 Olive Pascoe Catchment

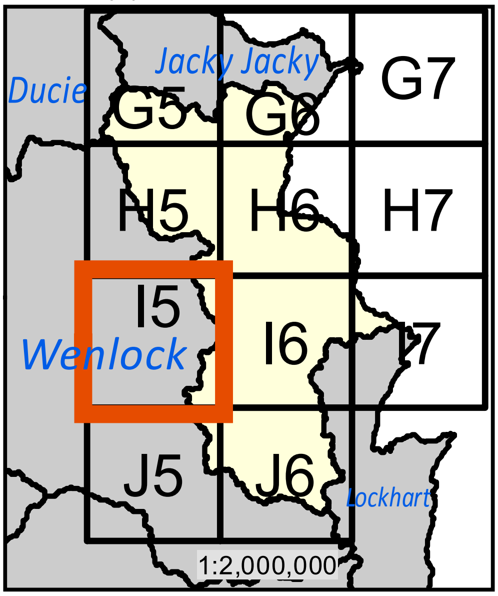
0 2 4 8 12 16 Kilometres

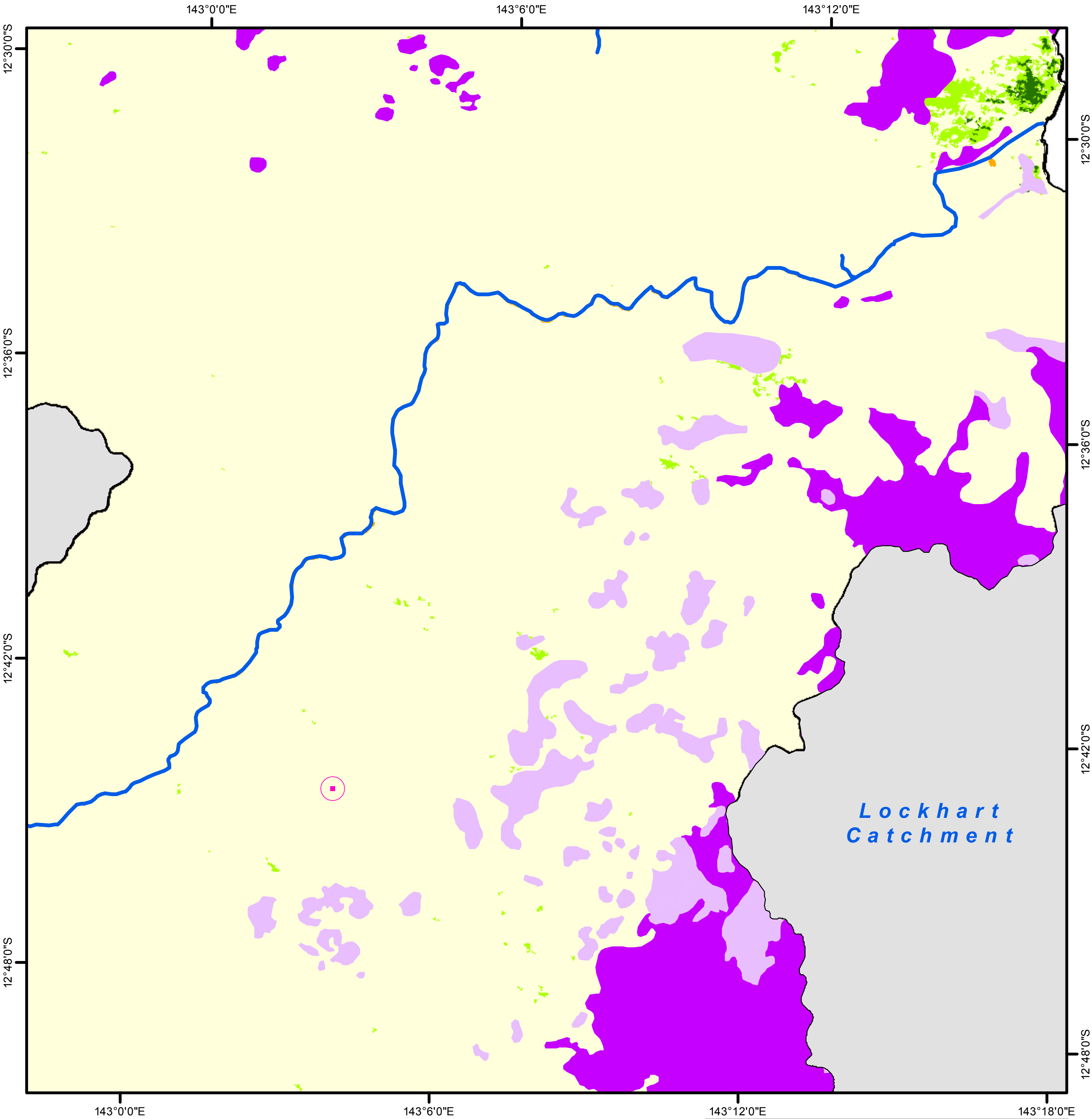
1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





I6 Olive Pascoe Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

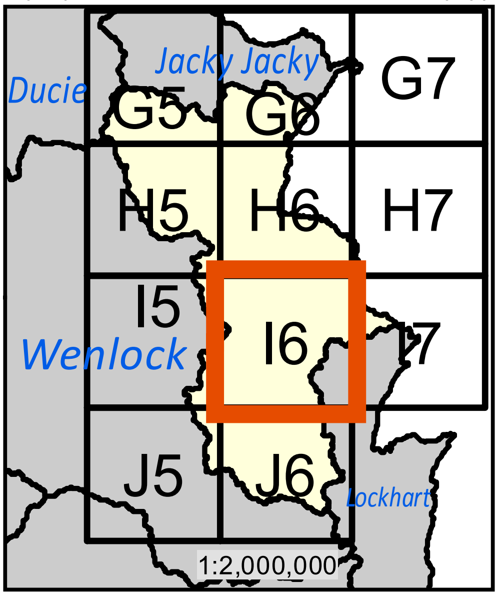
Likely

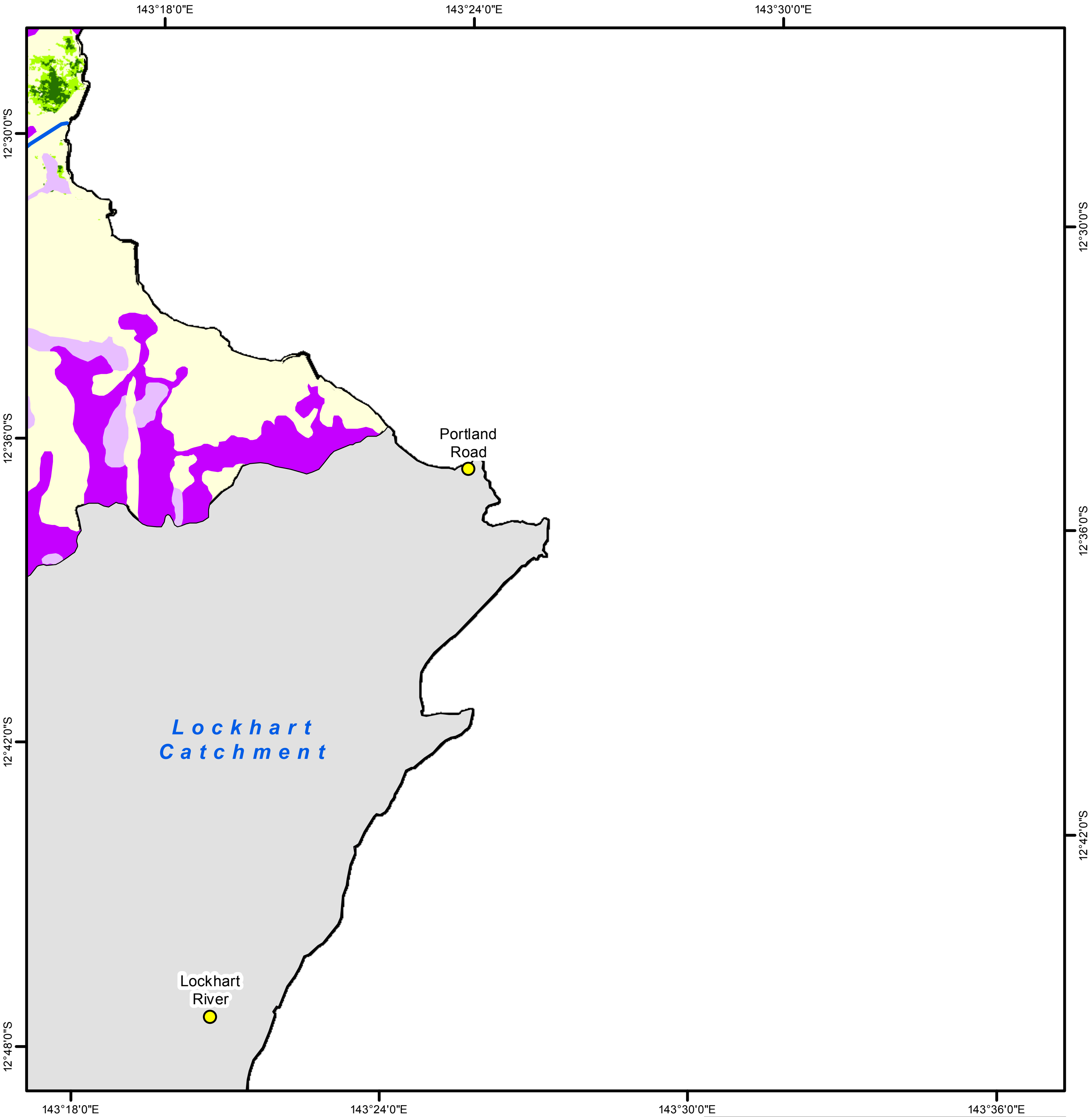
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





I7 Olive Pascoe Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

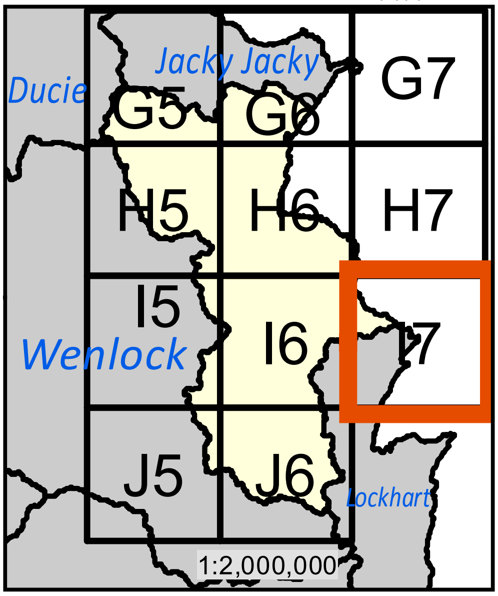
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

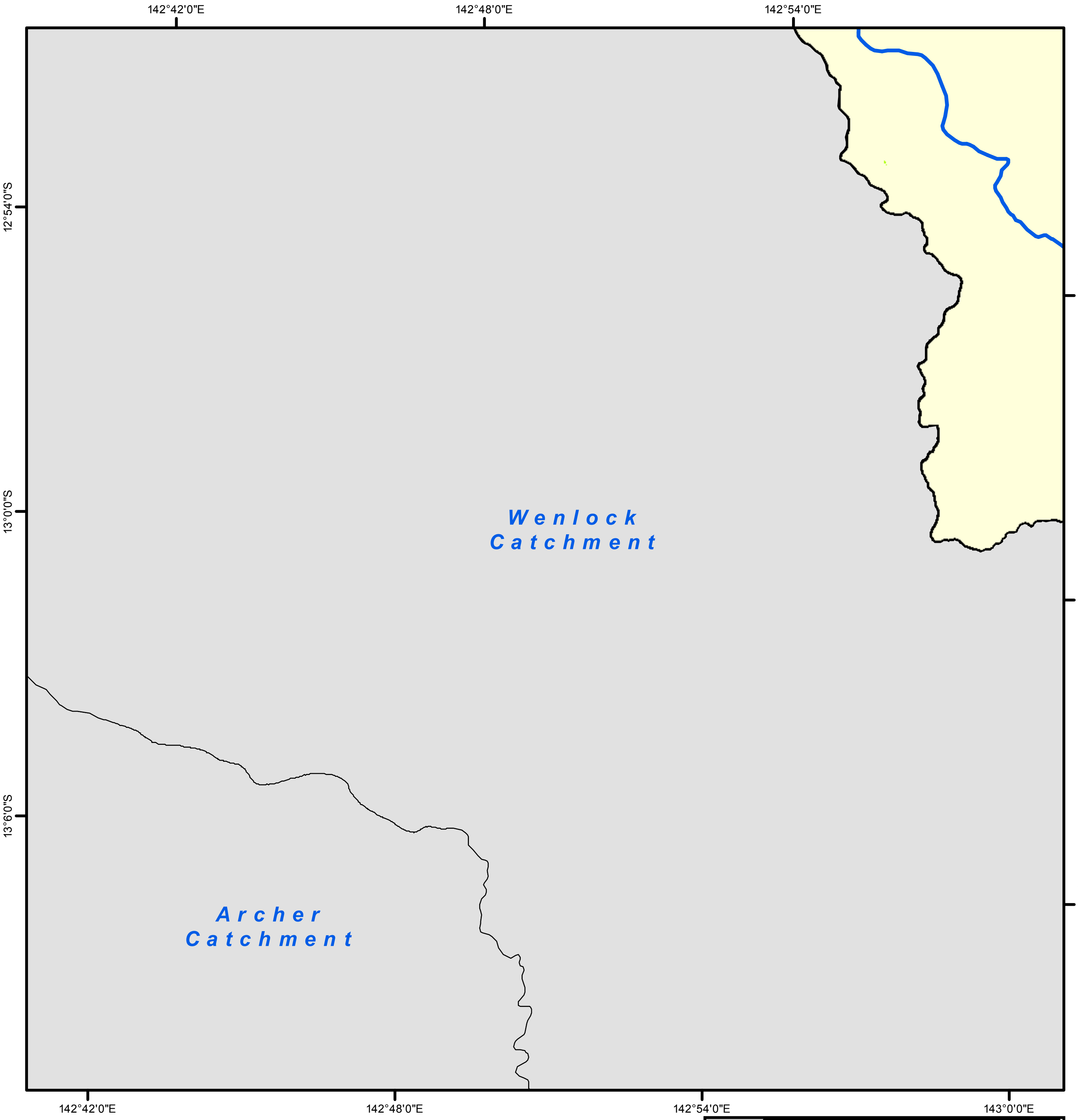
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





J5 Olive Pascoe Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

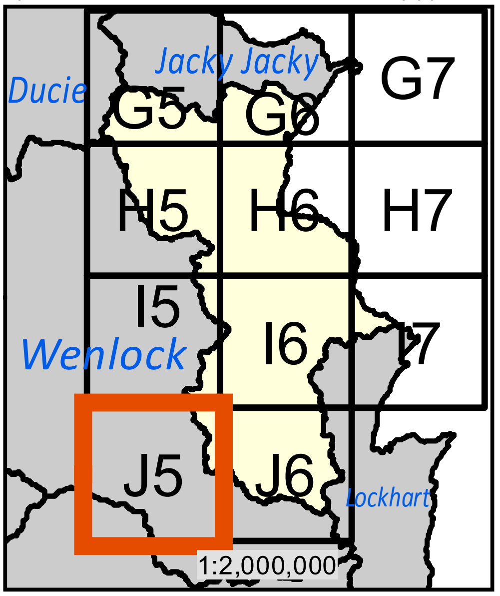
- Known Springs

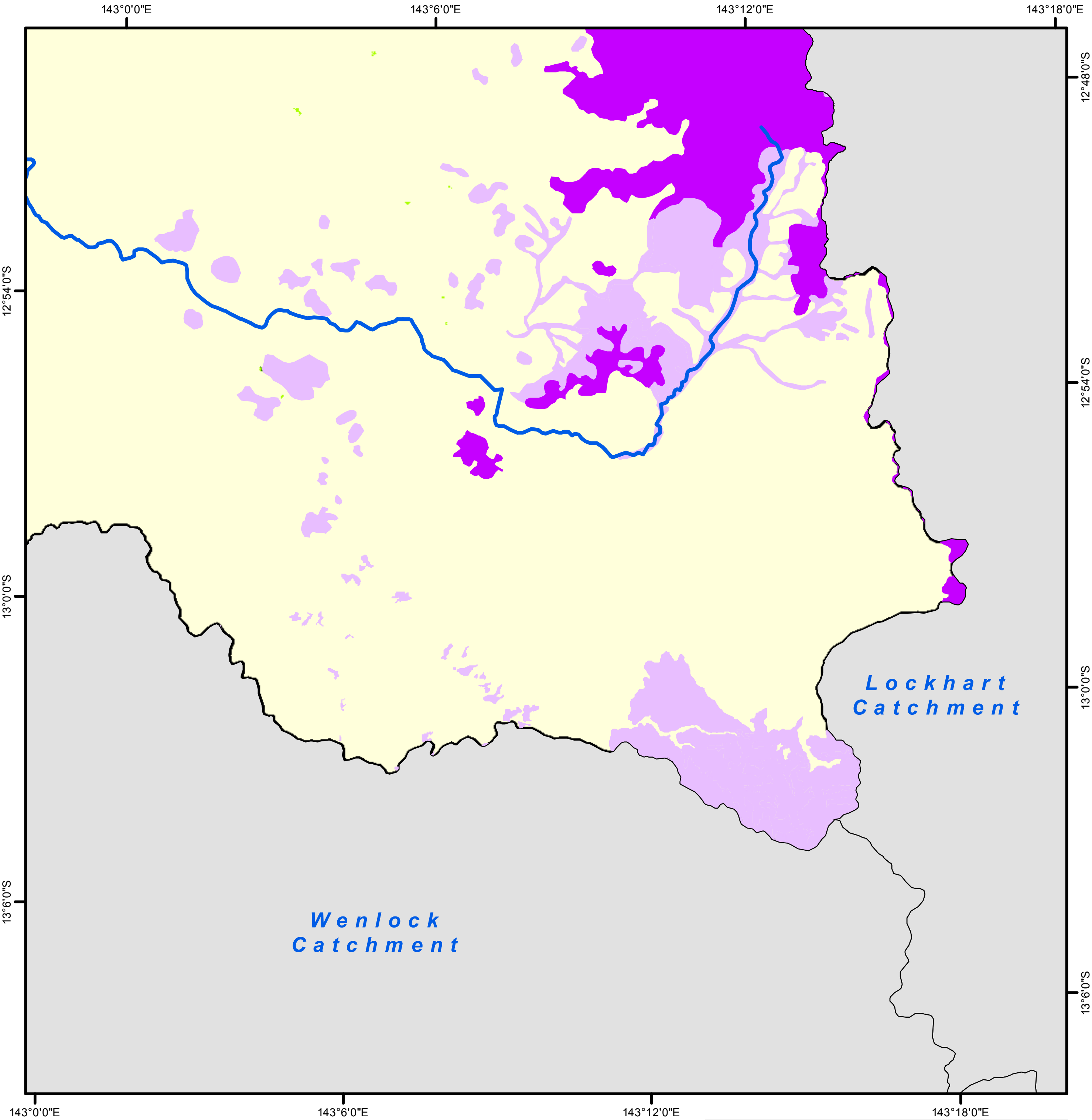
Potential Springs

- Highly Likely
- Likely

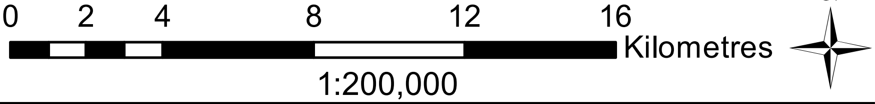
Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





J6 Olive Pascoe Catchment



1:200,000

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

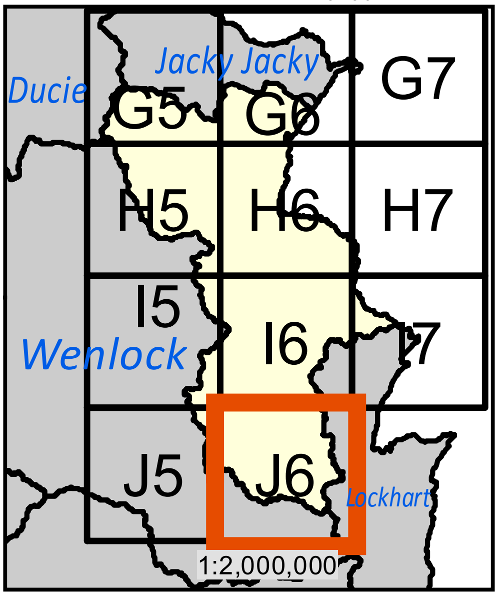
Likely

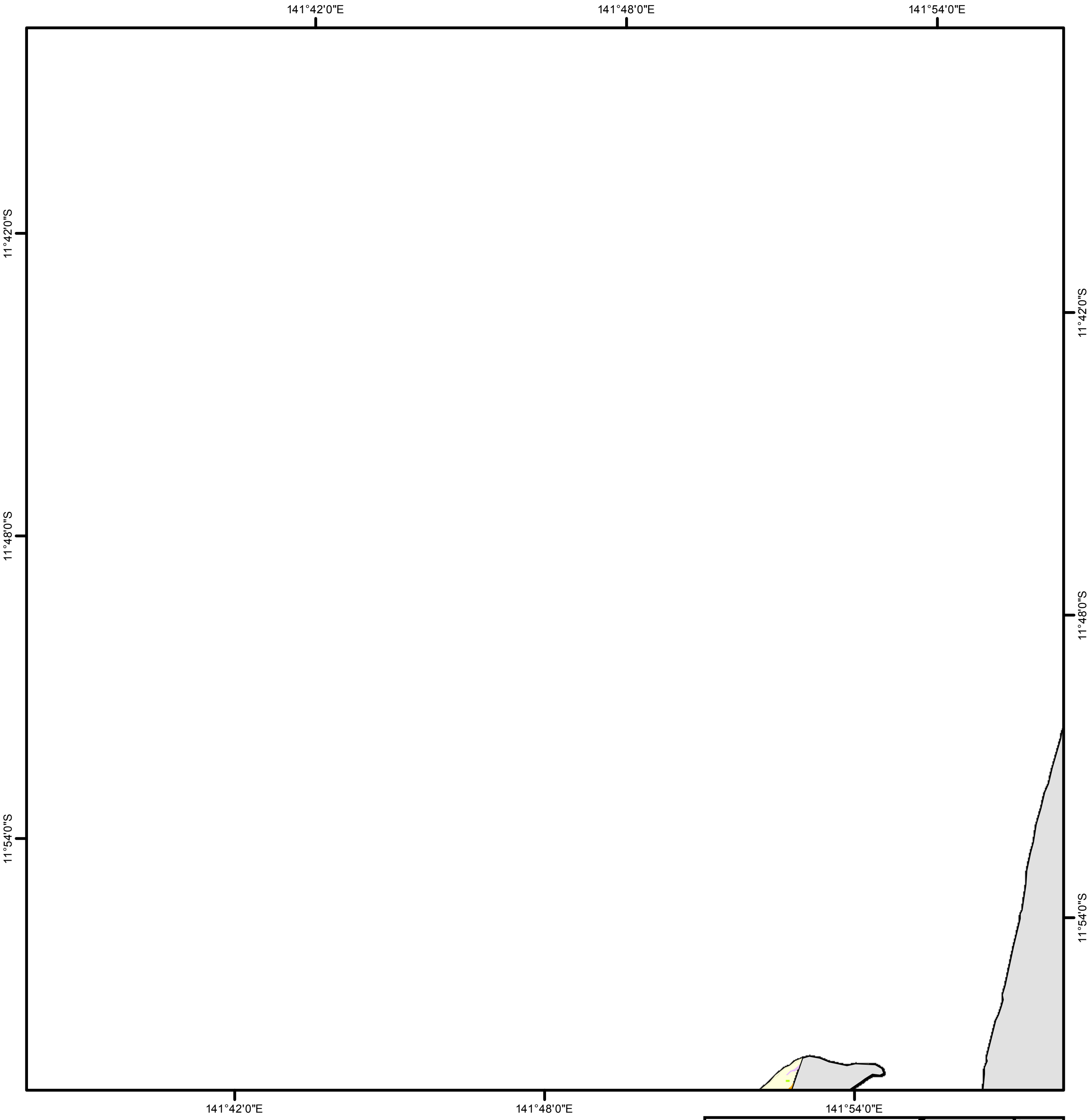
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





F2 Embley Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

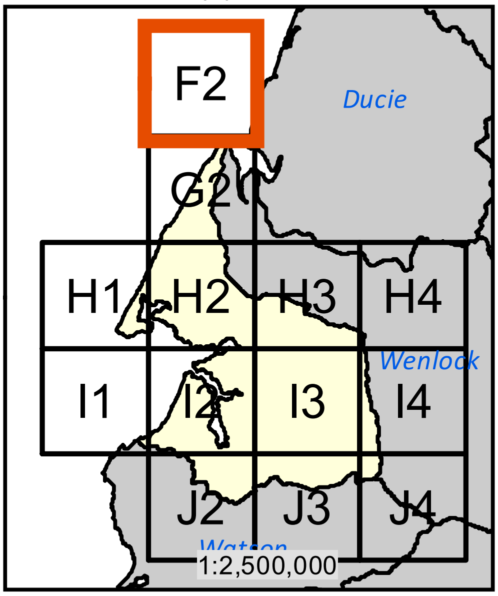
- Known Springs

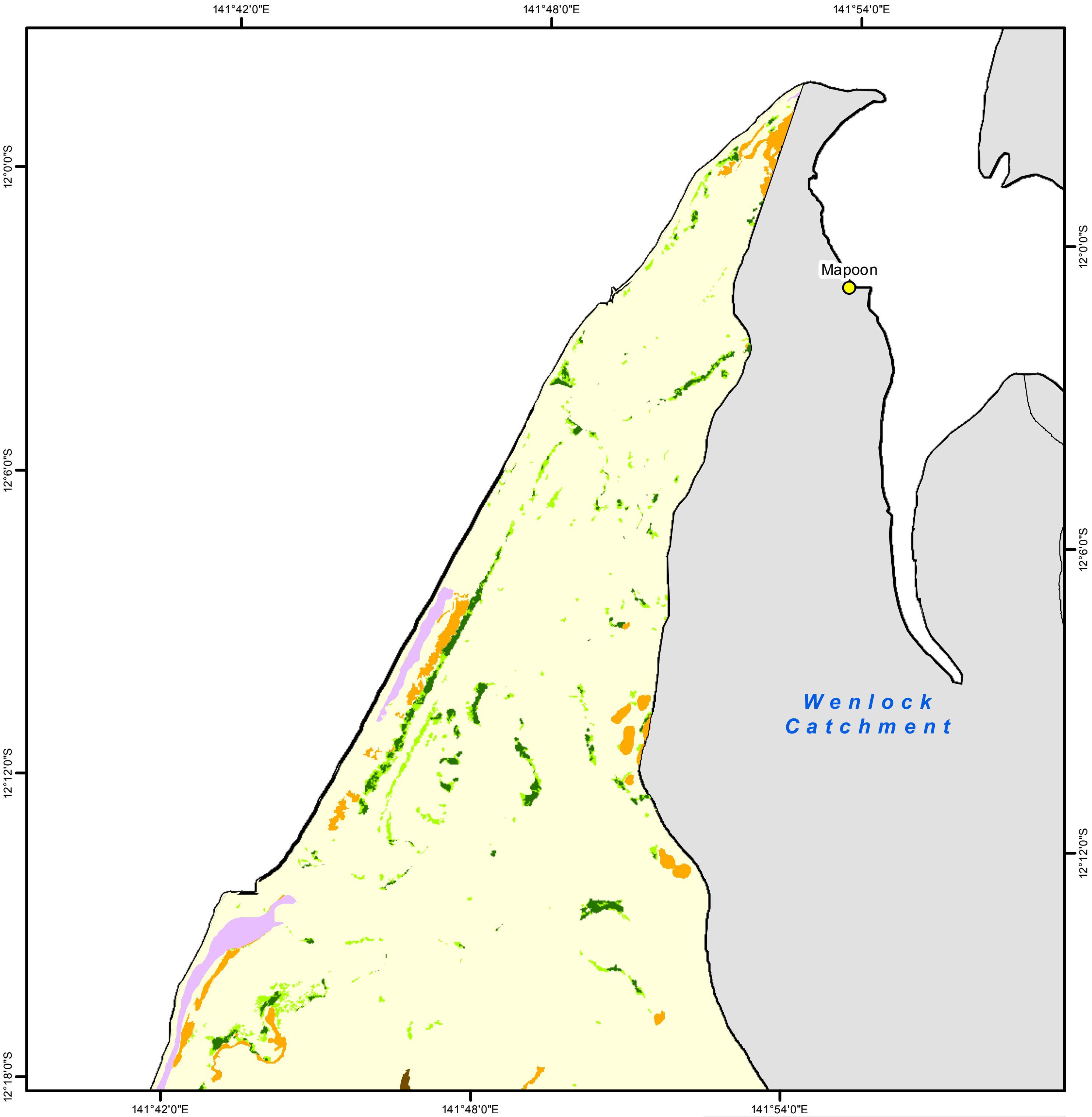
Potential Springs

- Highly Likely
- Likely

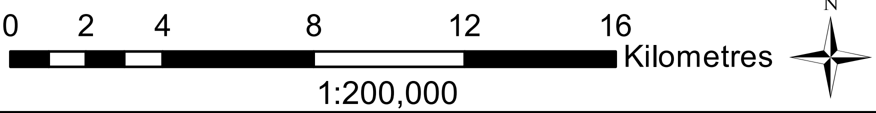
Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





G2 Embley Catchment



- Place Names
- Catchment
- Known Springs

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

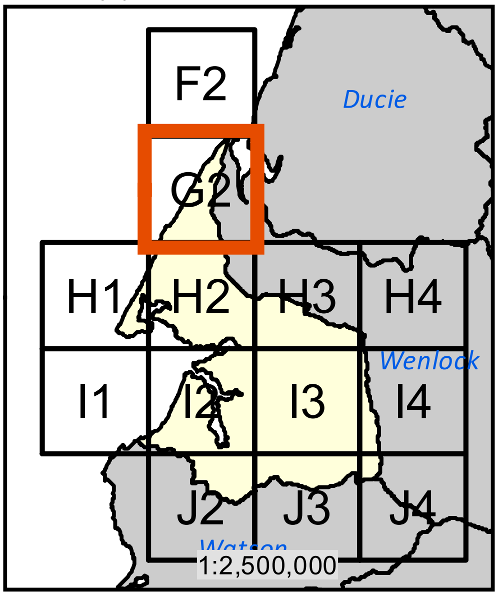
- Highly Likely
- Likely

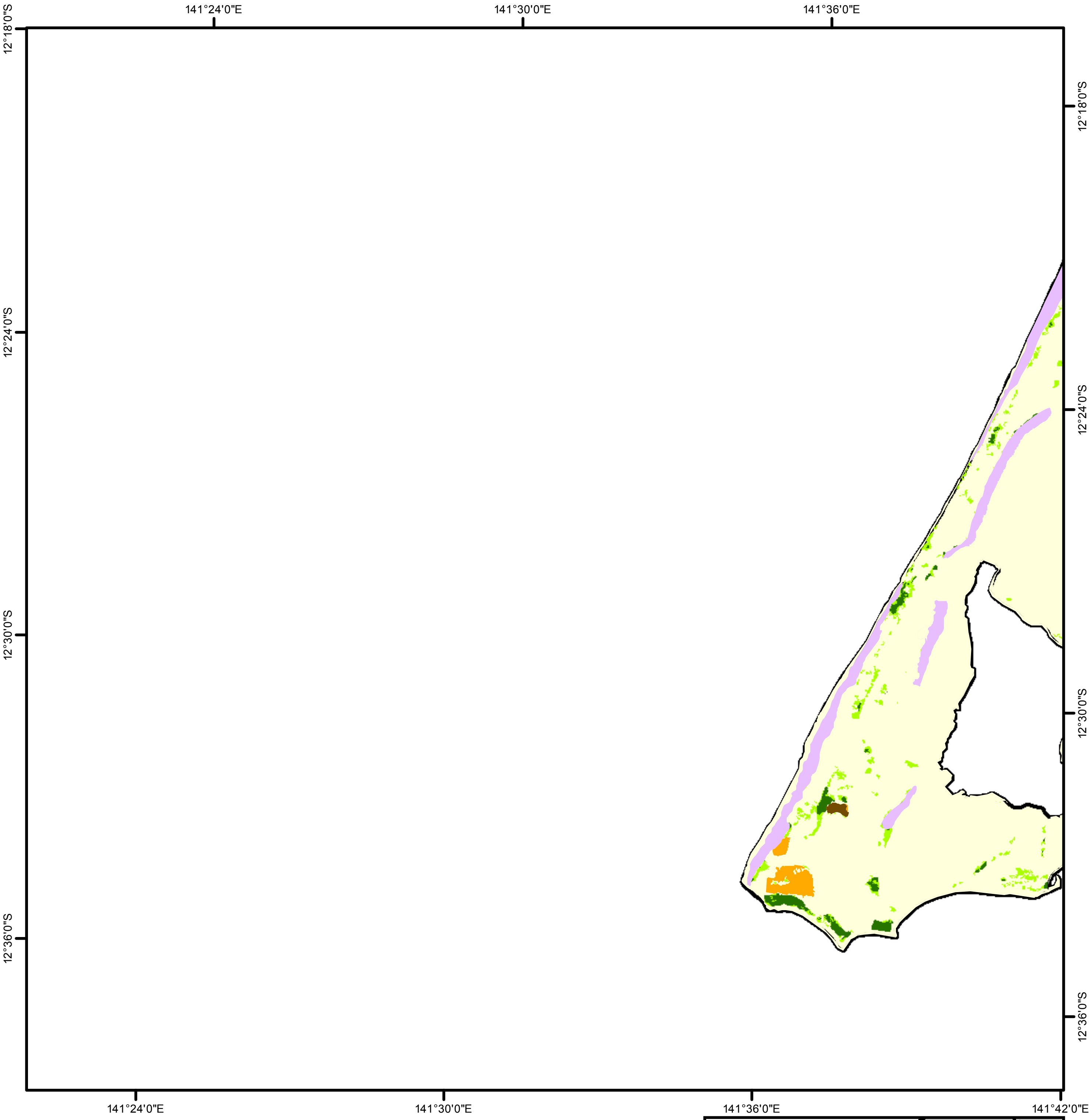
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





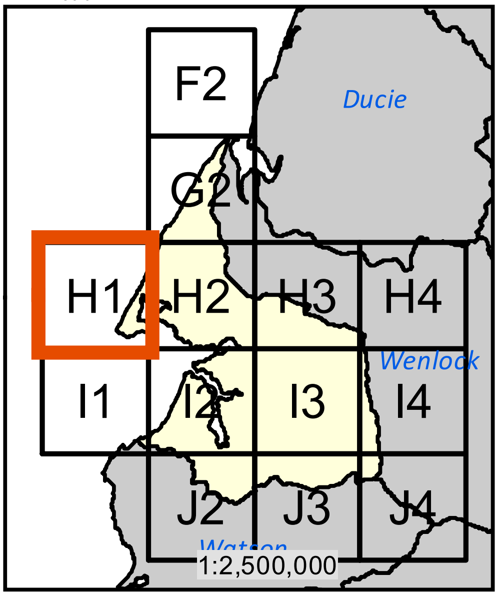
H1 Embley Catchment

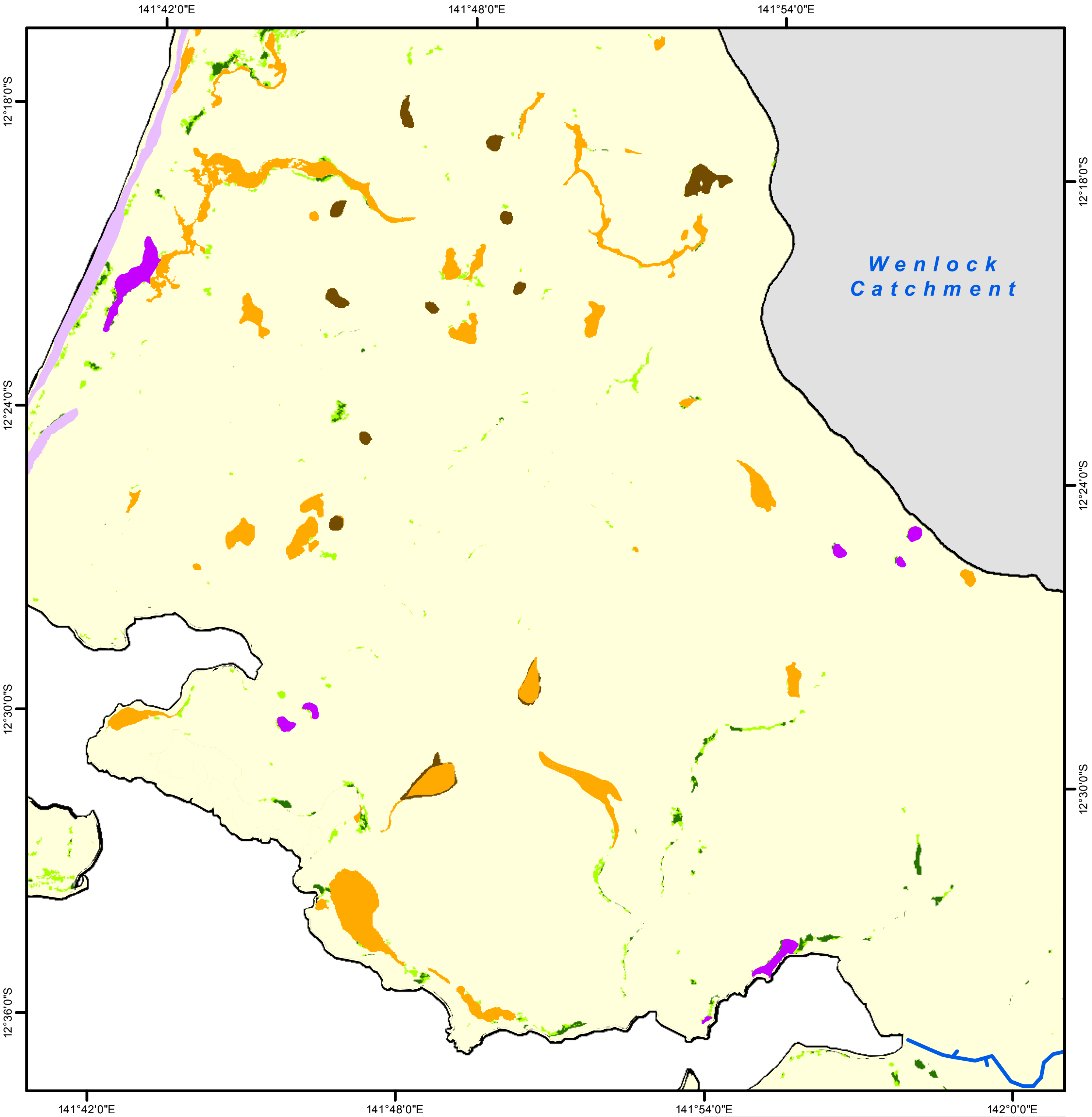
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





H2 Embley Catchment

0 2 4 8 12 16
Kilometres
1:200,000

N

Place Names
Catchment

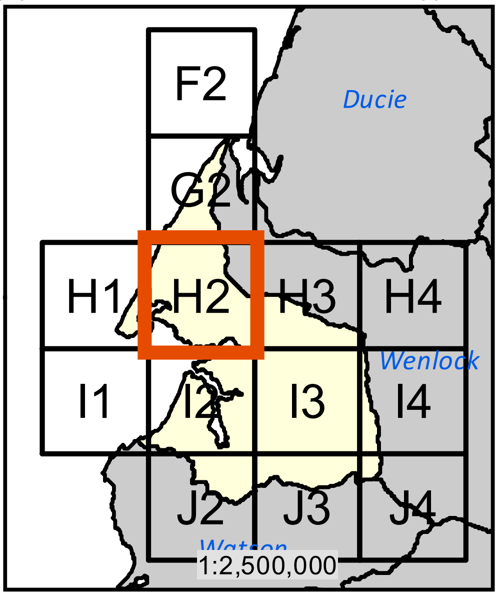
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

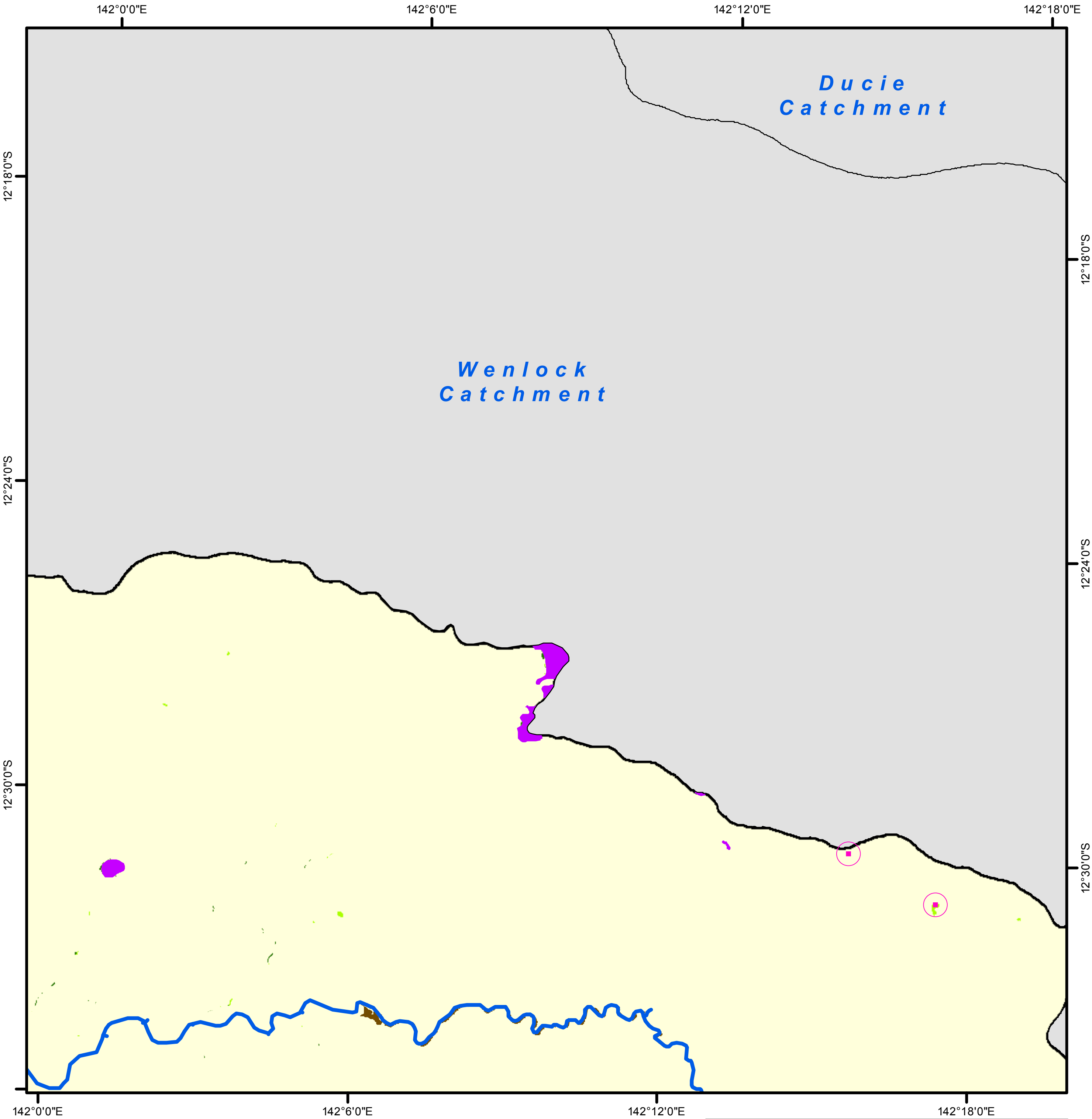
Wetlands GDE Likelihood
- Highly Likely
- Likely

Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





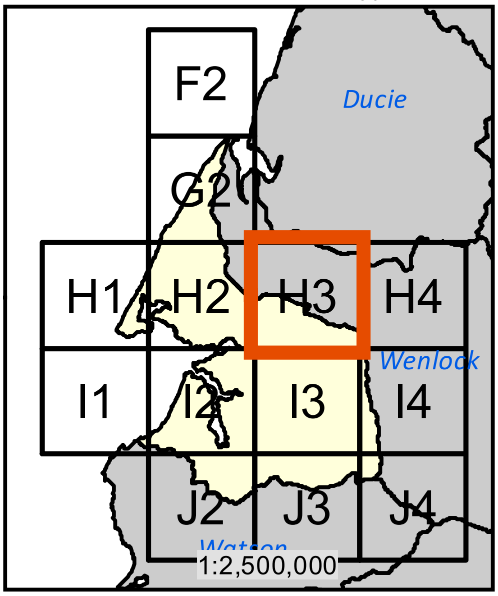
H3 Embley Catchment

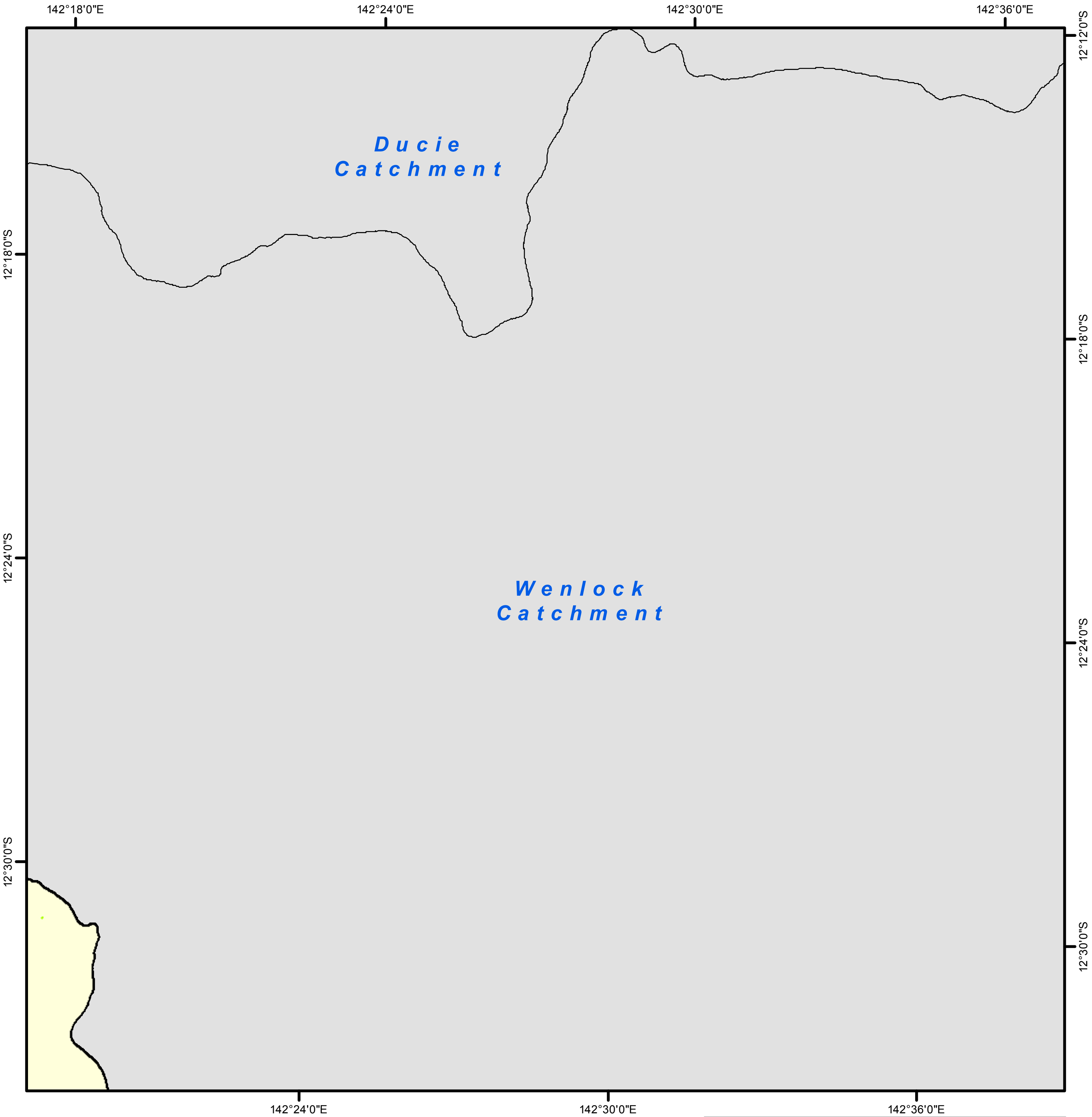
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



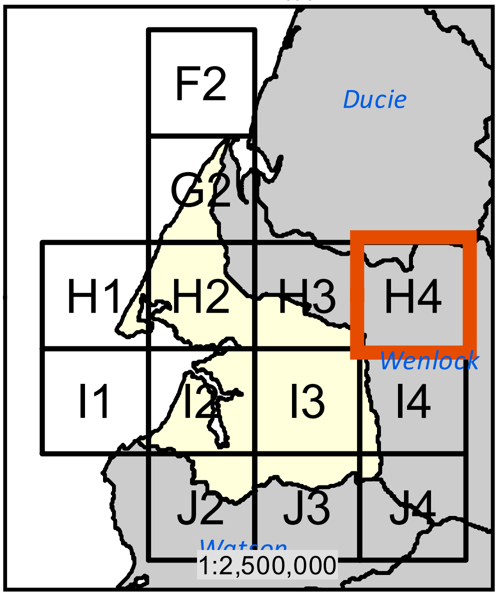


H4 Embley Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

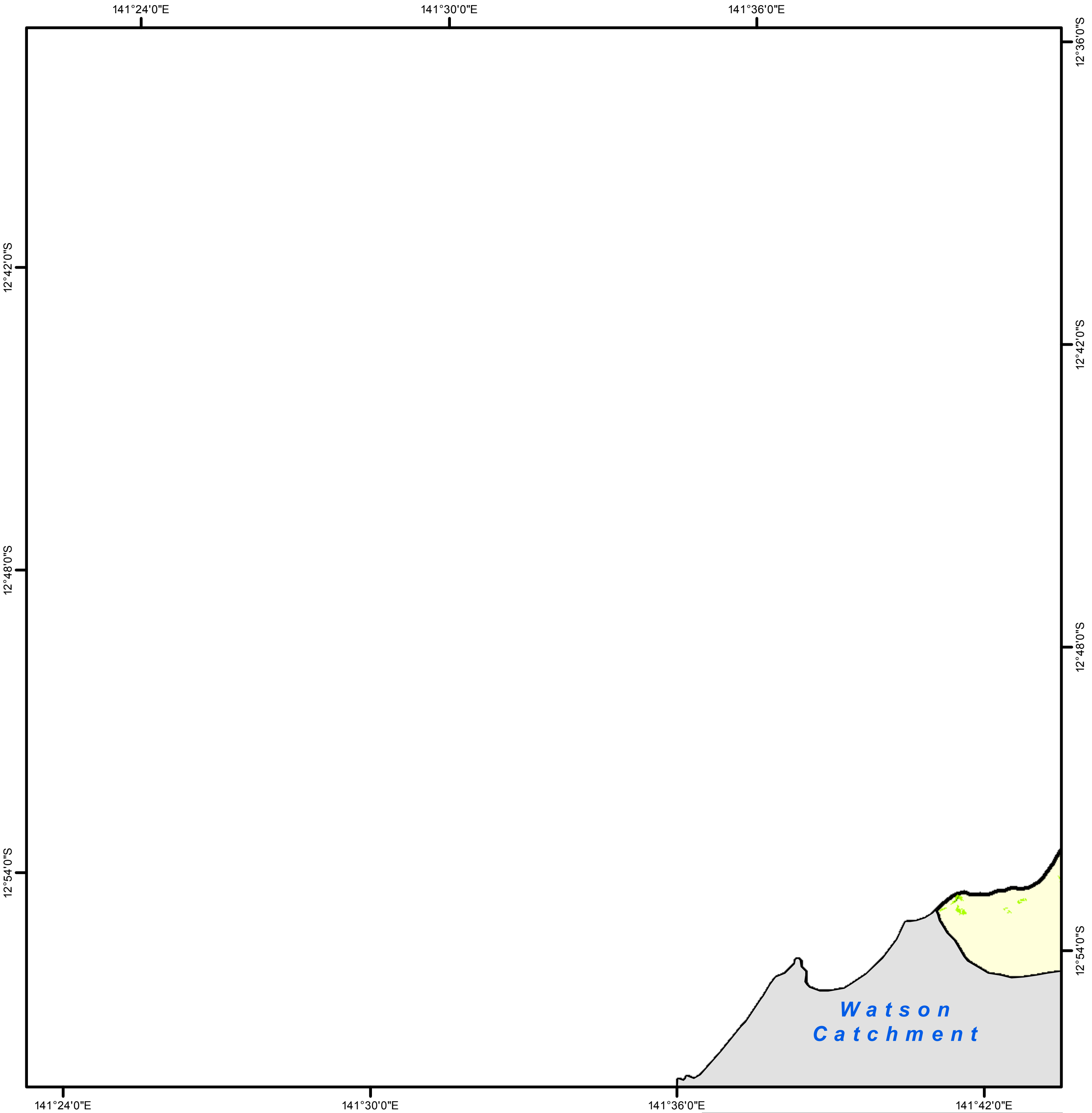
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



I1 Embley Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment

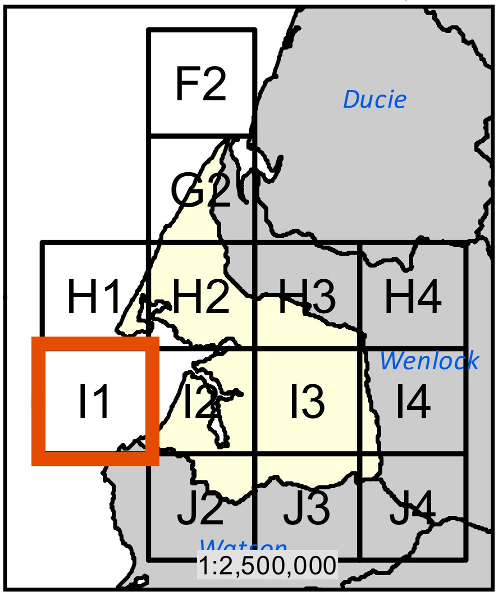
Regional Ecosystems GDE Likelihood
Highly Likely
Likely

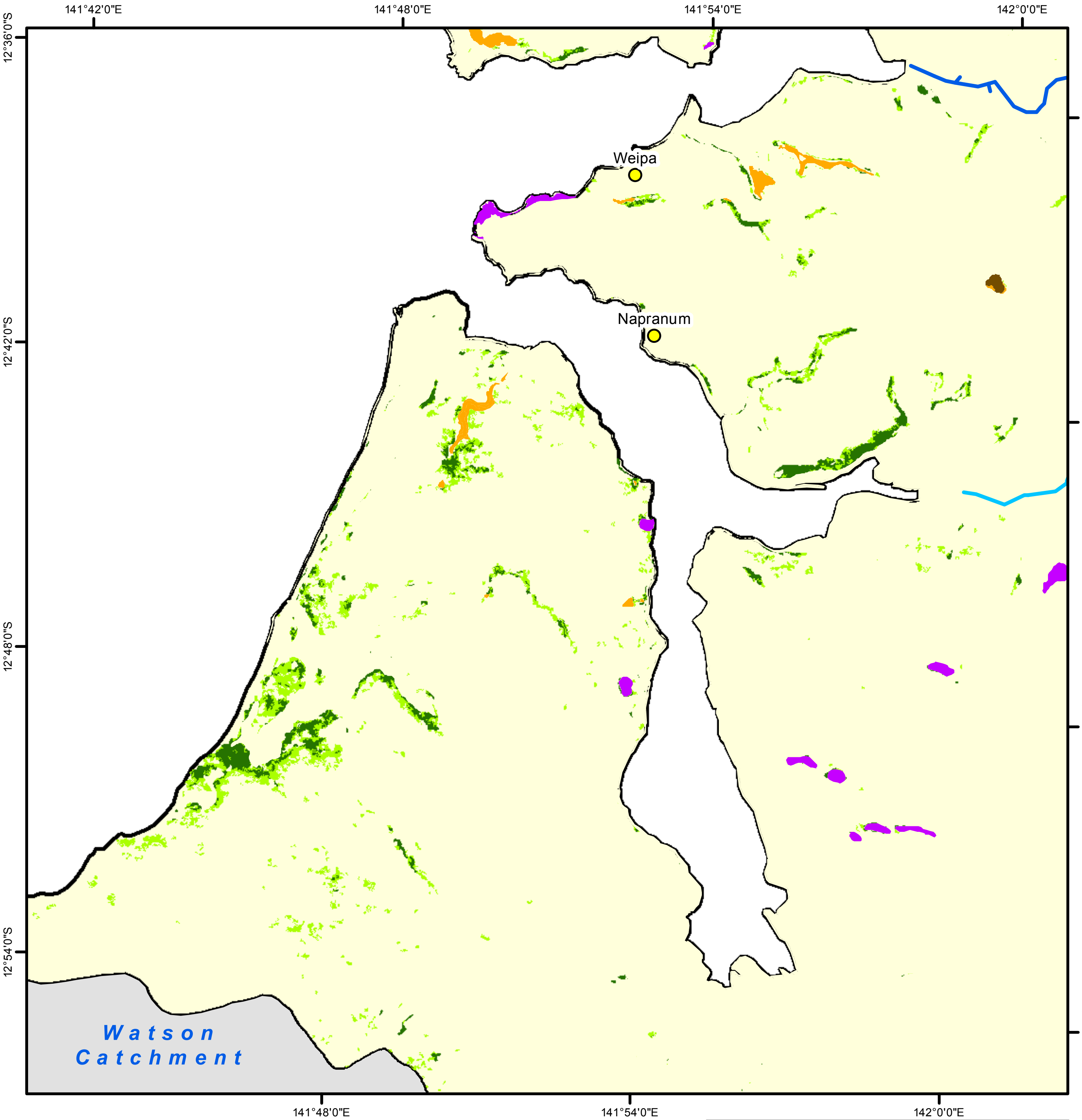
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs

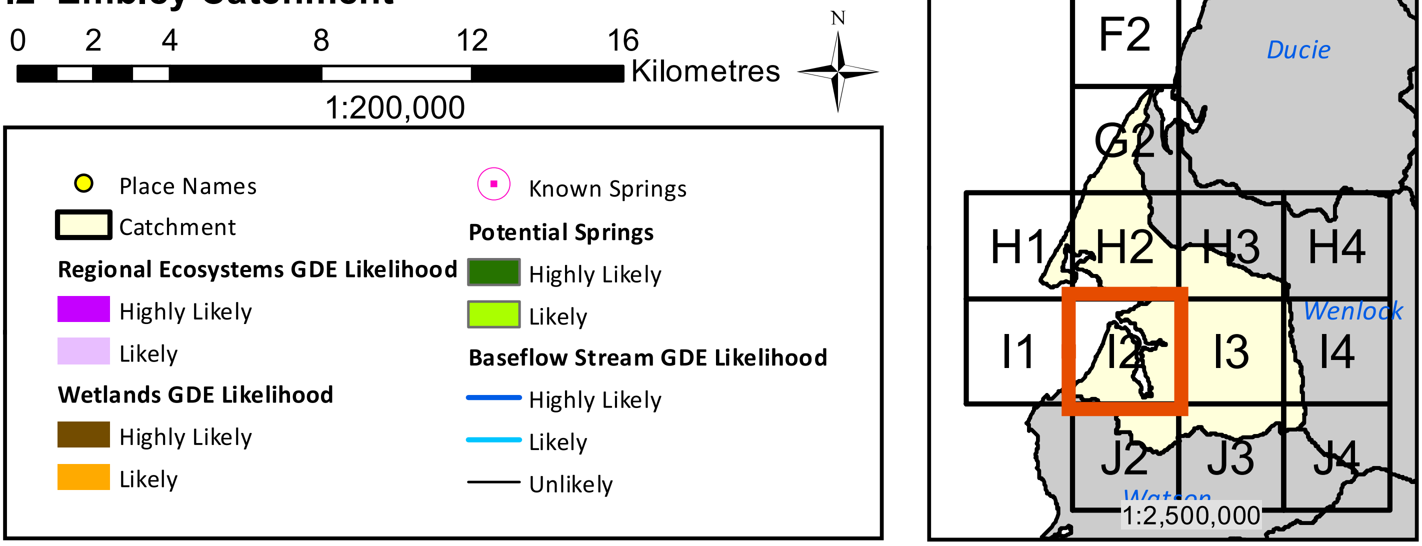
Potential Springs
Highly Likely
Likely

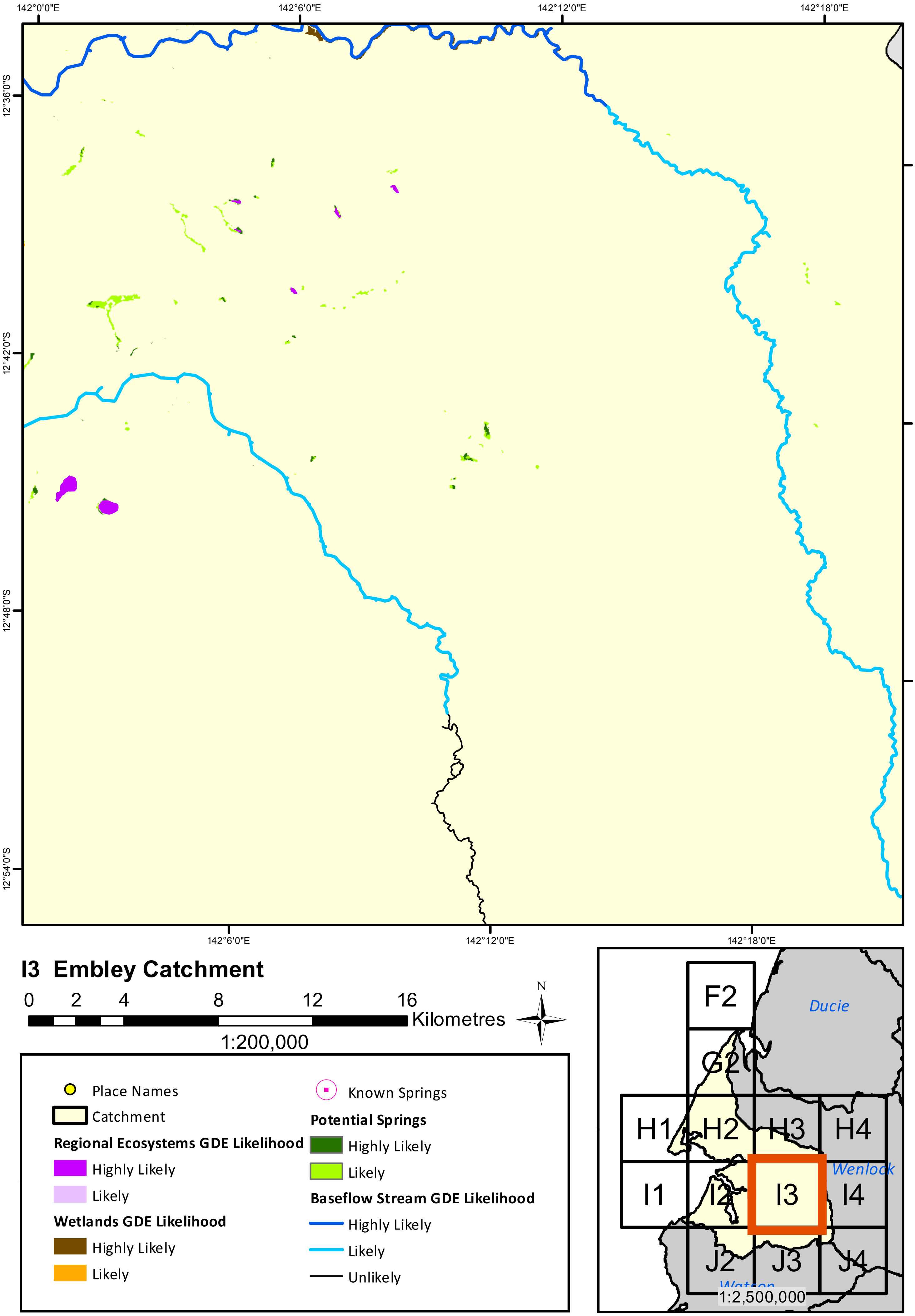
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





I2 Embley Catchment





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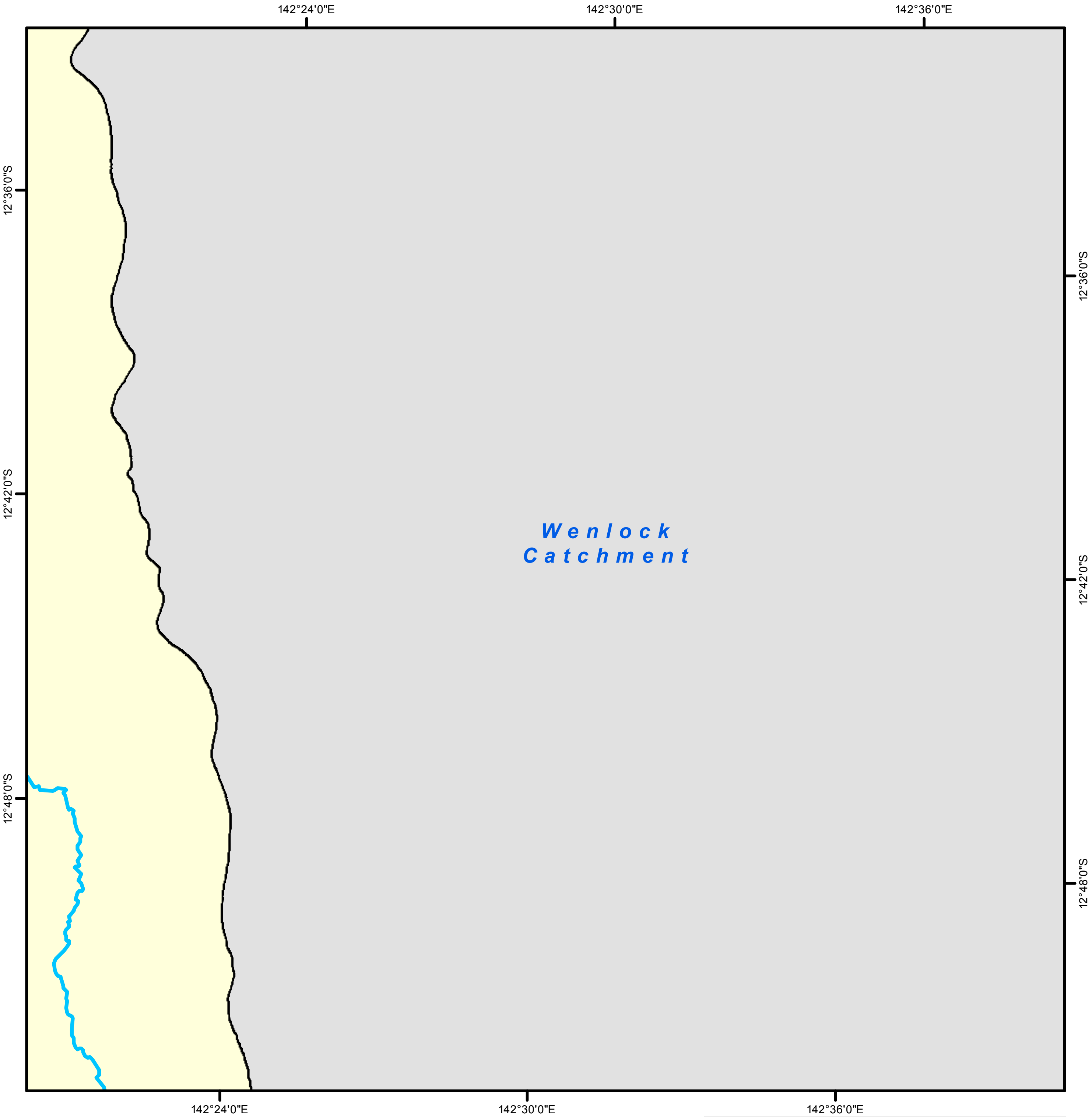
142°6'0"E
142°12'0"E
142°18'0"E
12°36'0"S
12°42'0"S
12°48'0"S
12°54'0"S
I3 Embley Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
F2
G2
Ducie
H1
H2
H3
H4
Wenlock
I1
I2
I3
I4
J2
J3
J4
1:2,500,000



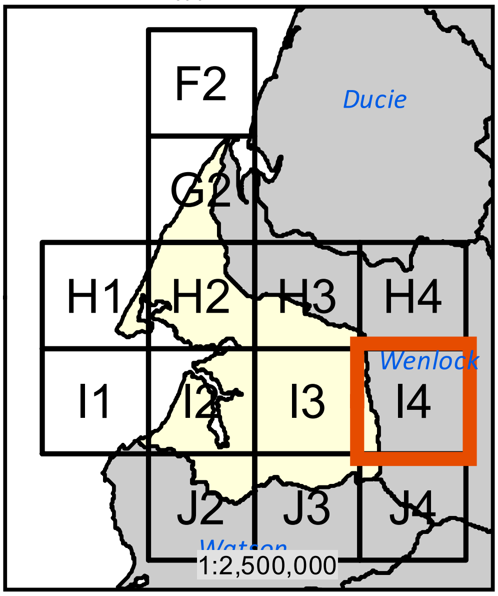
I4 Embley Catchment

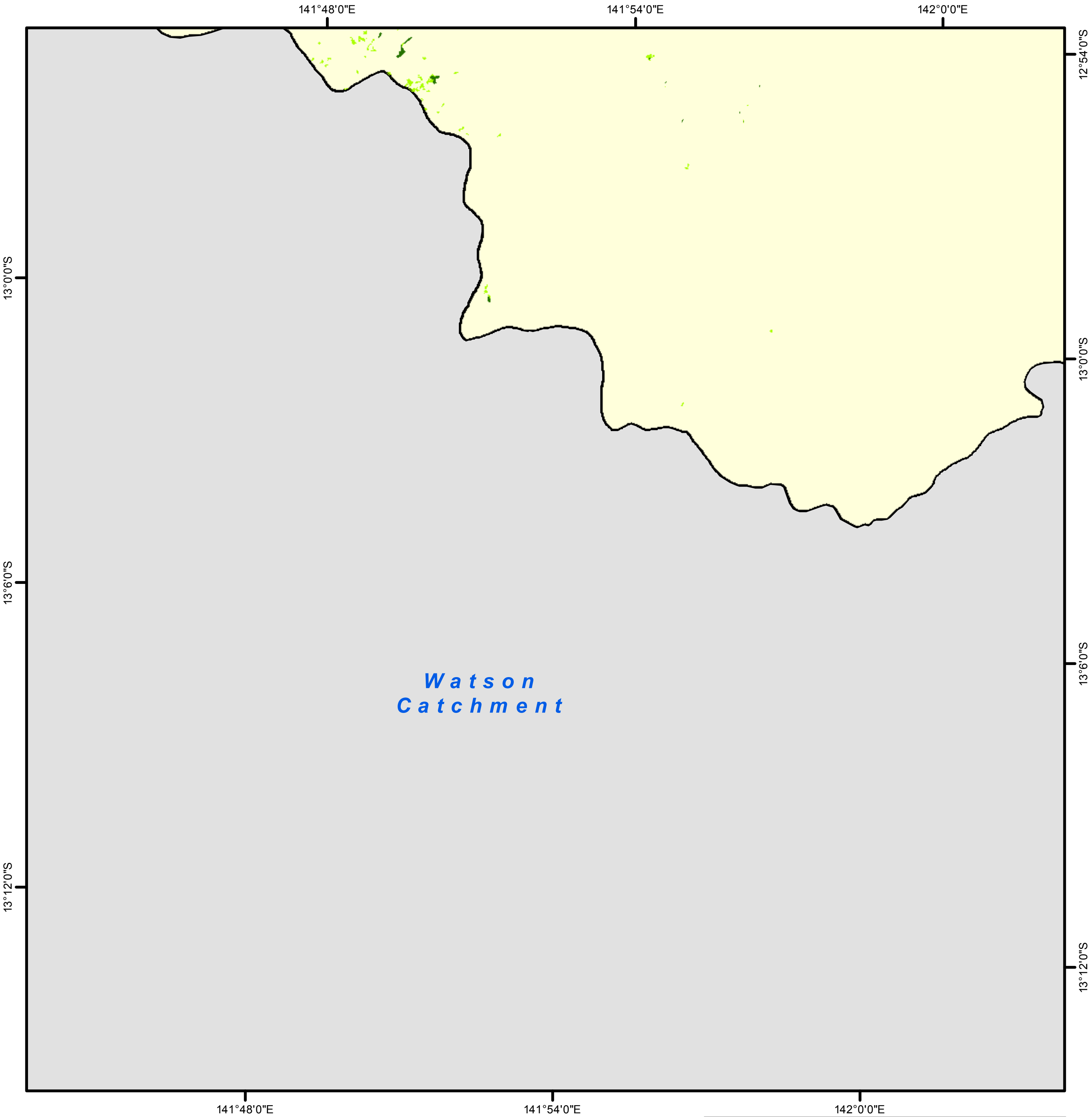
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely

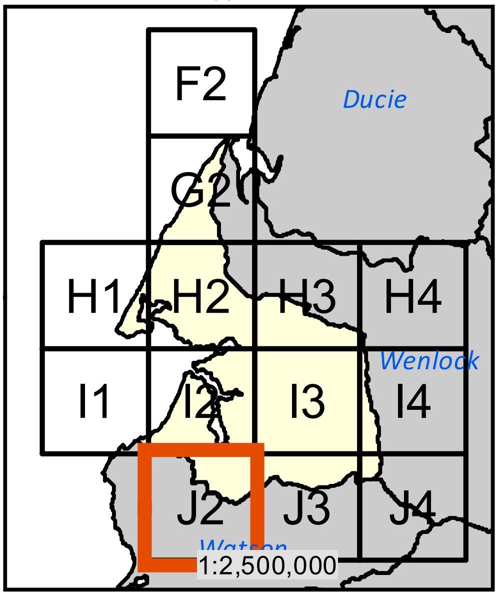




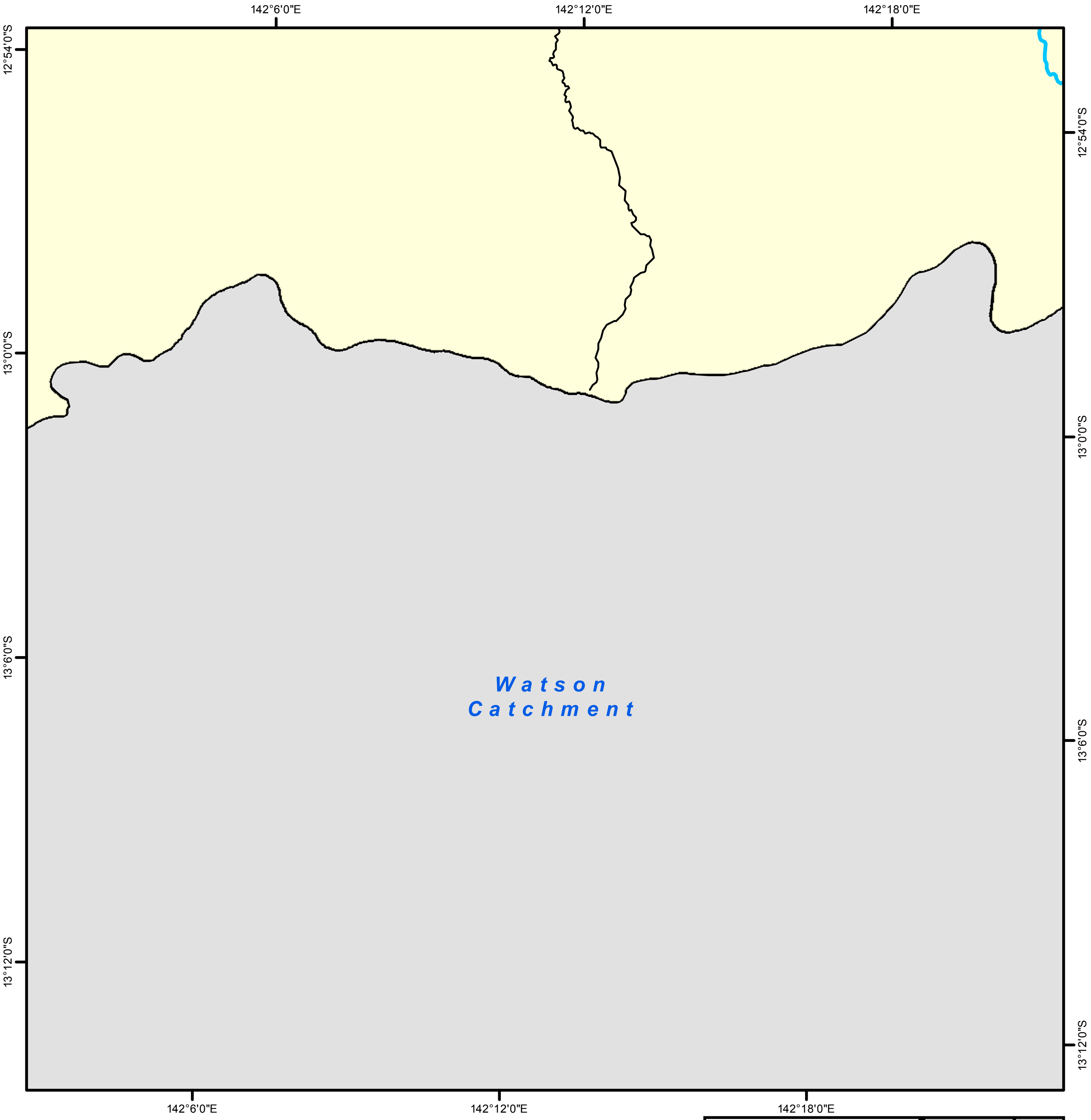
J2 Embley Catchment

0 2 4 8 12 16 Kilometres

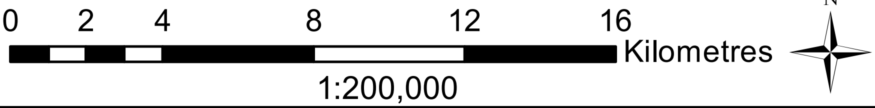
1:200,000



Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely



J3 Embley Catchment



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

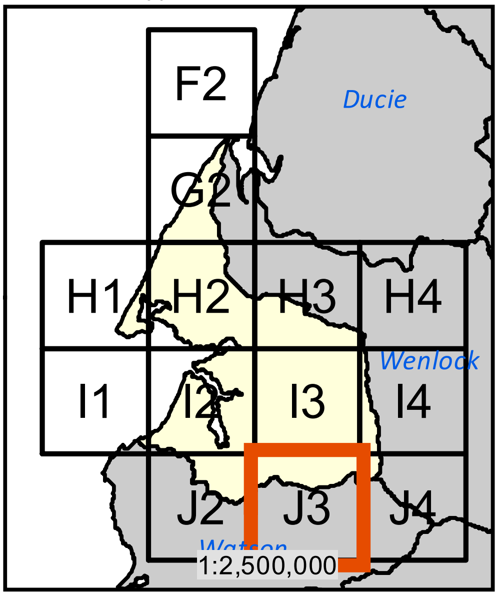
- Known Springs

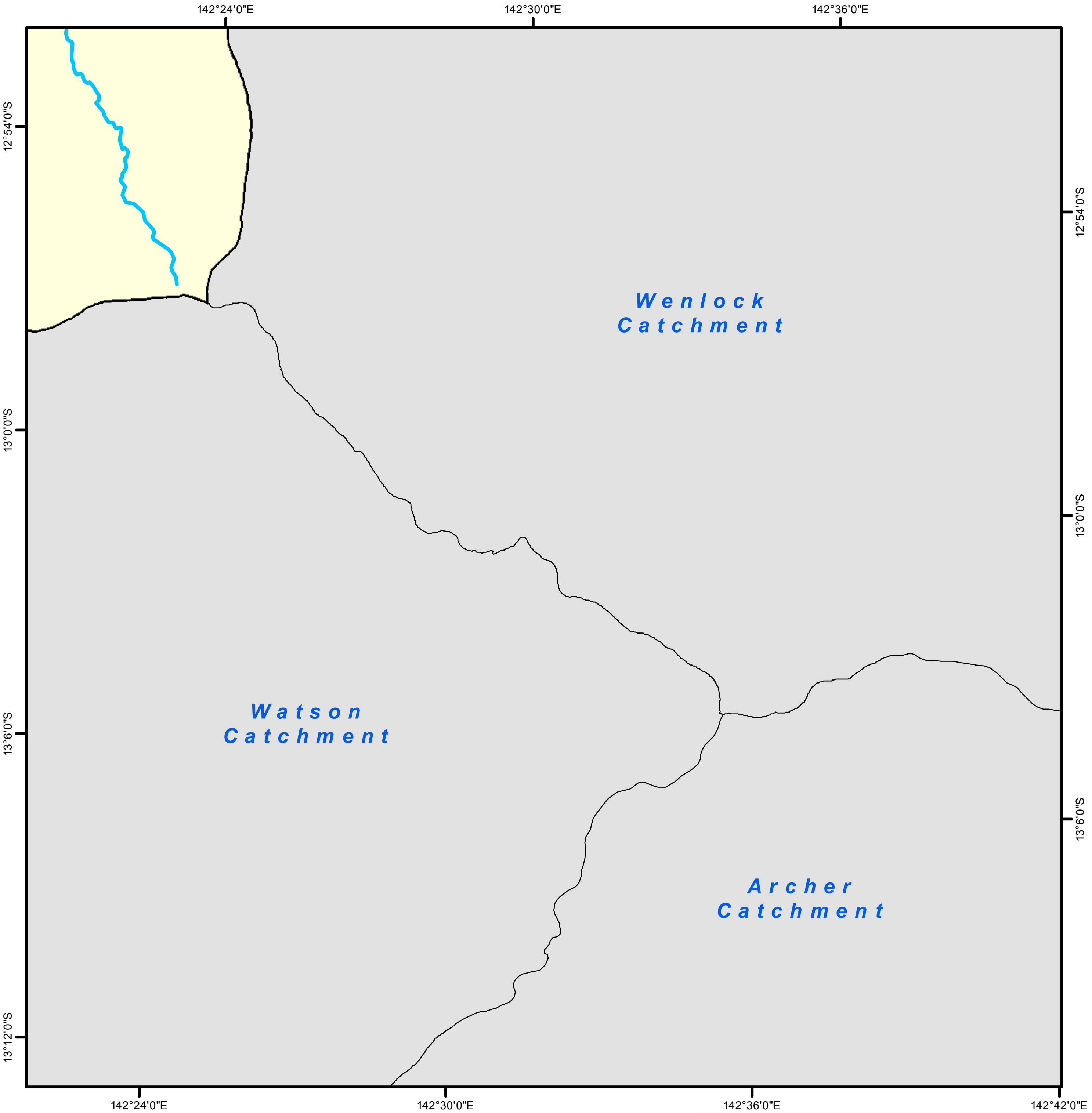
Potential Springs

- Highly Likely
- Likely

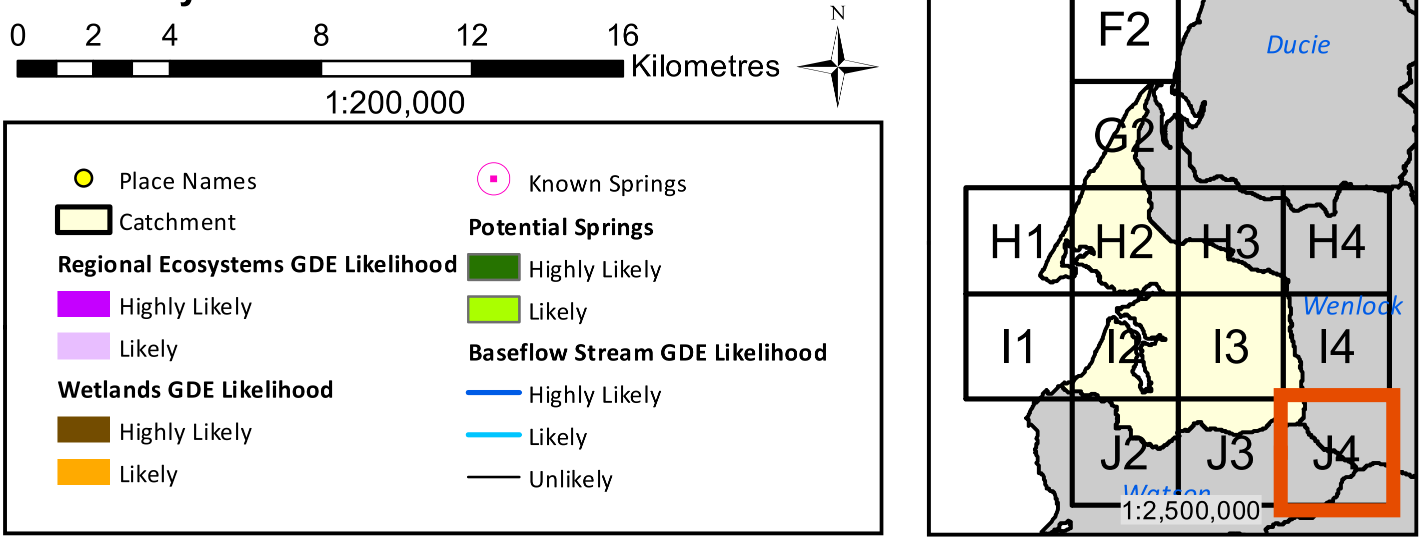
Baseflow Stream GDE Likelihood

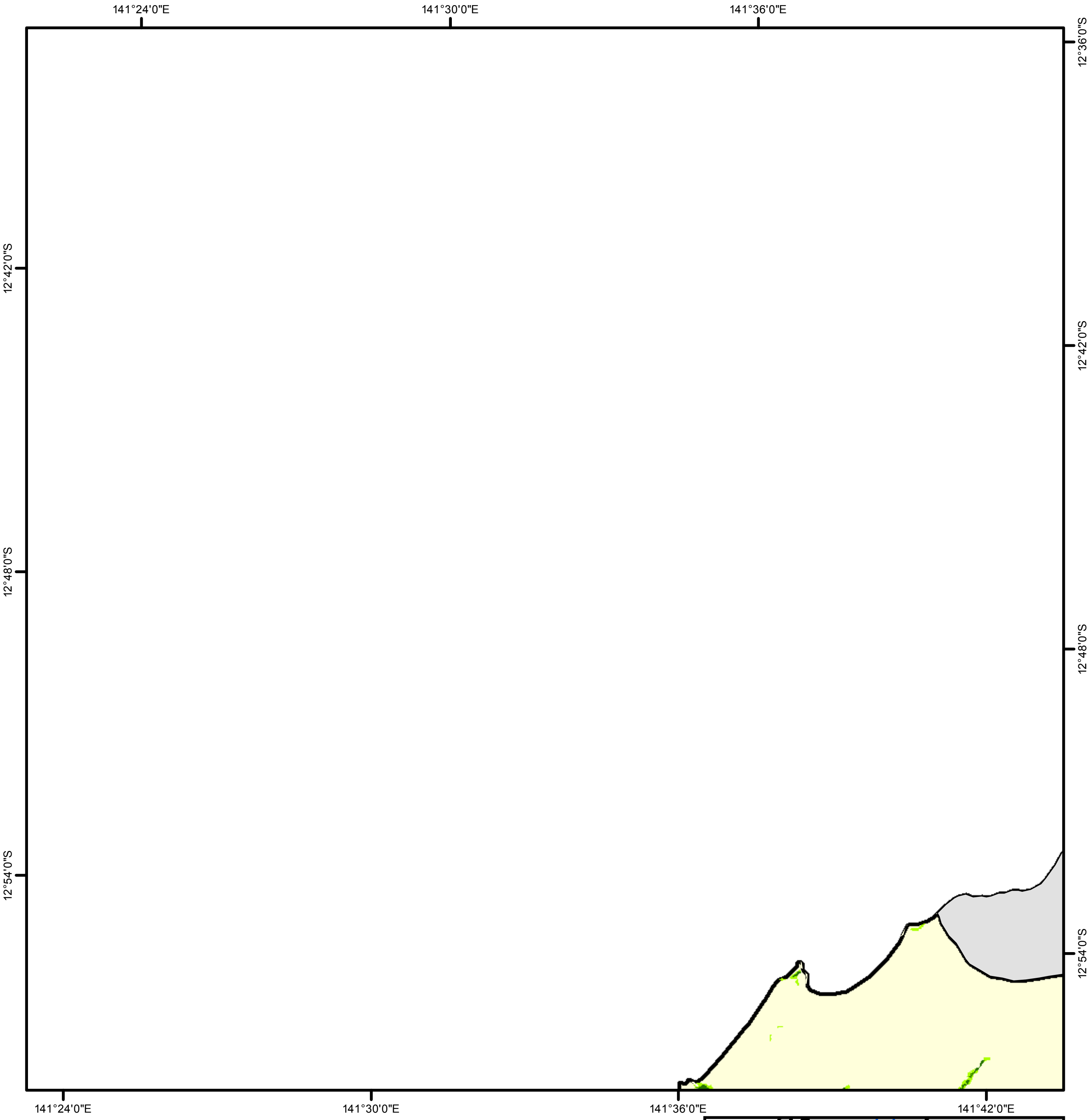
- Highly Likely
- Likely
- Unlikely



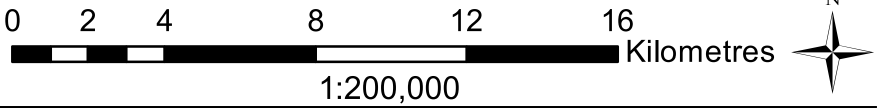


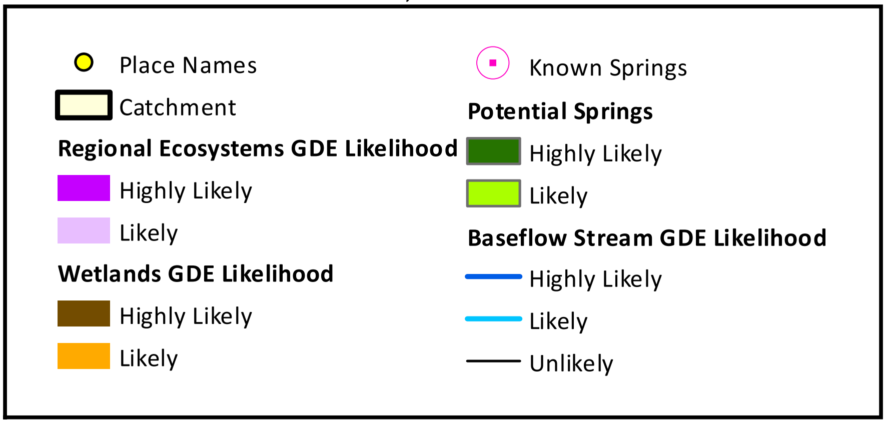
J4 Embley Catchment

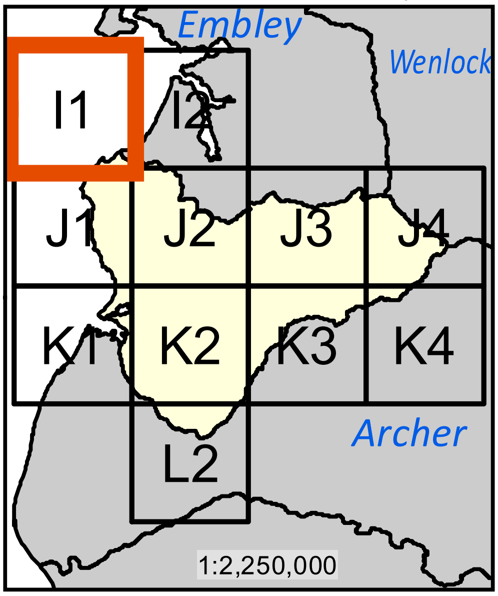


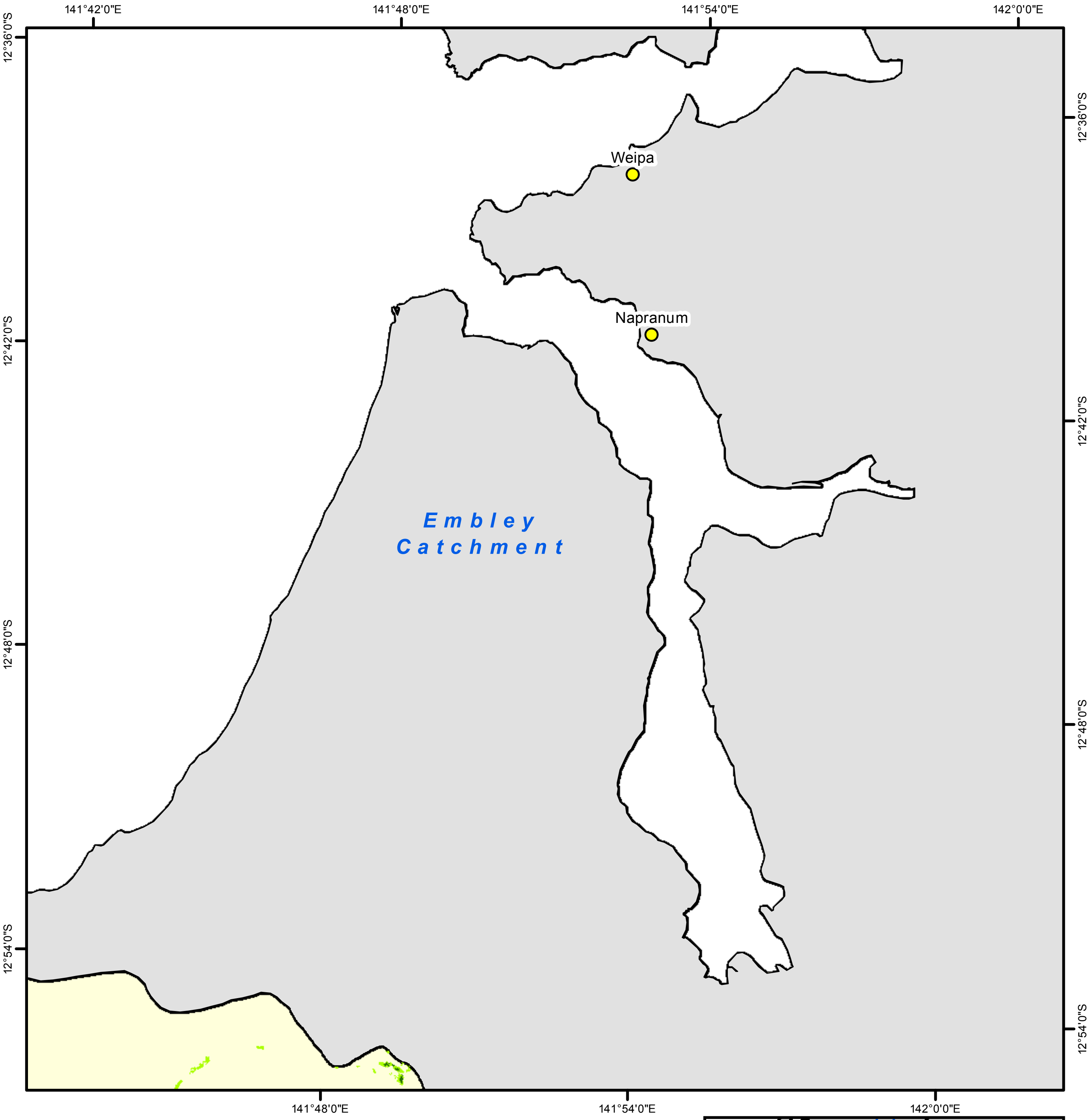


I1 Watson Catchment

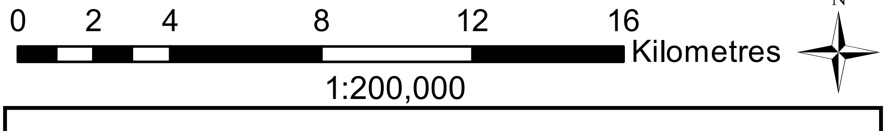


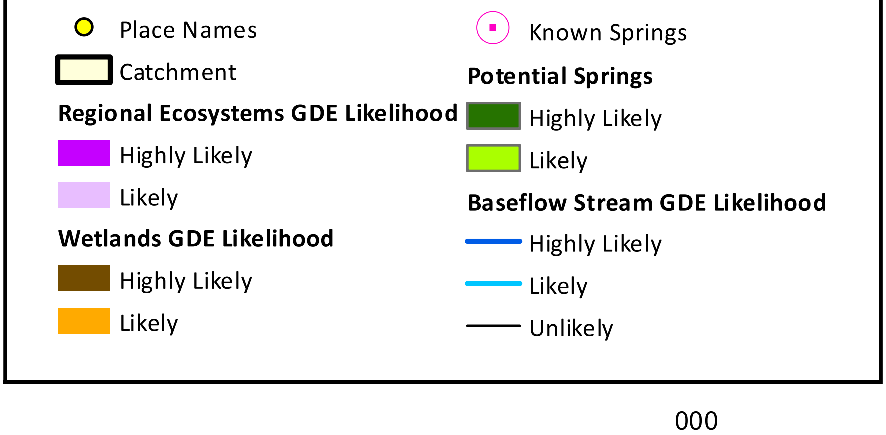


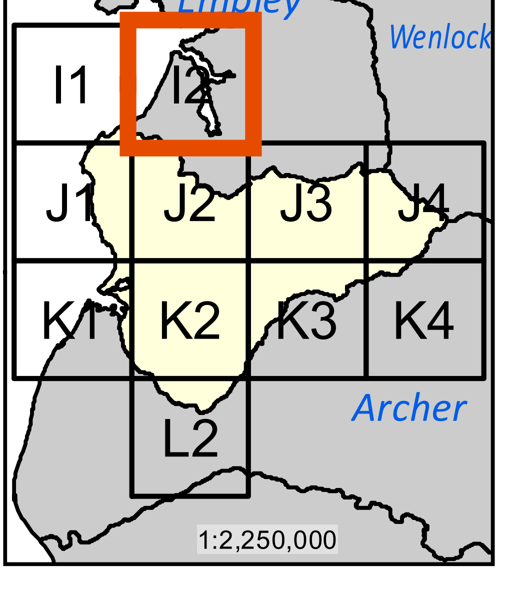


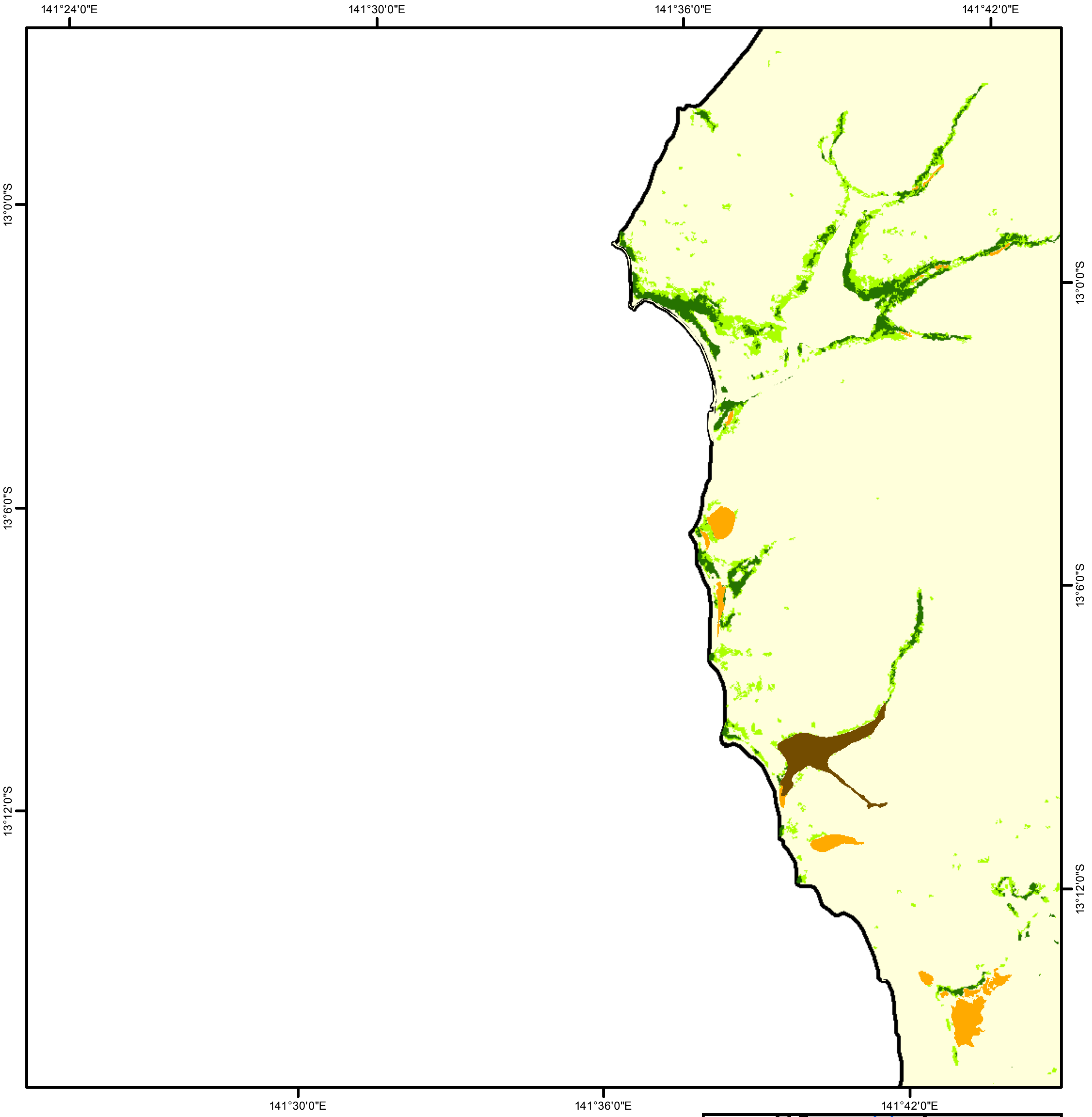


I2 Watson Catchment

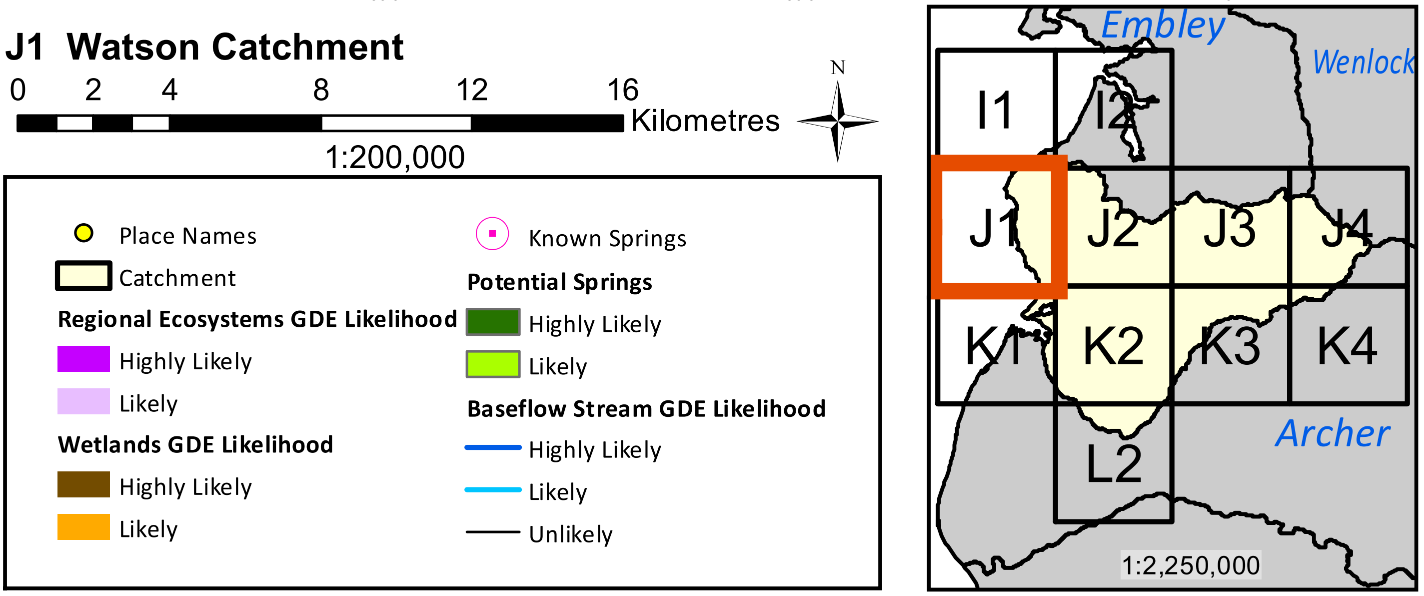


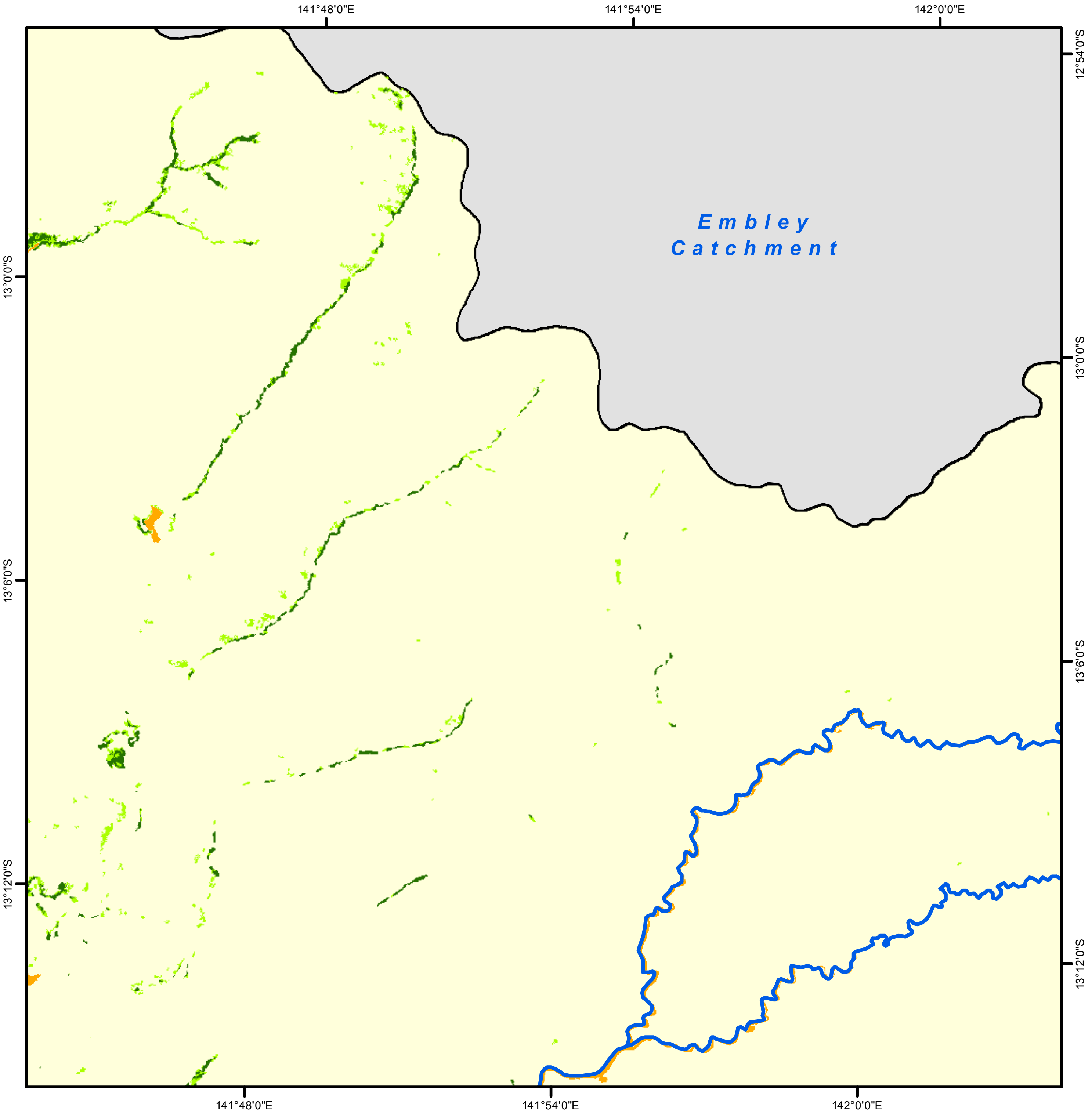






J1 Watson Catchment





J2 Watson Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

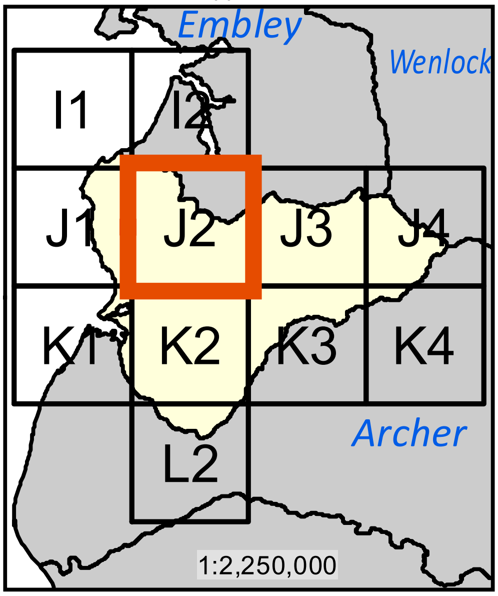
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

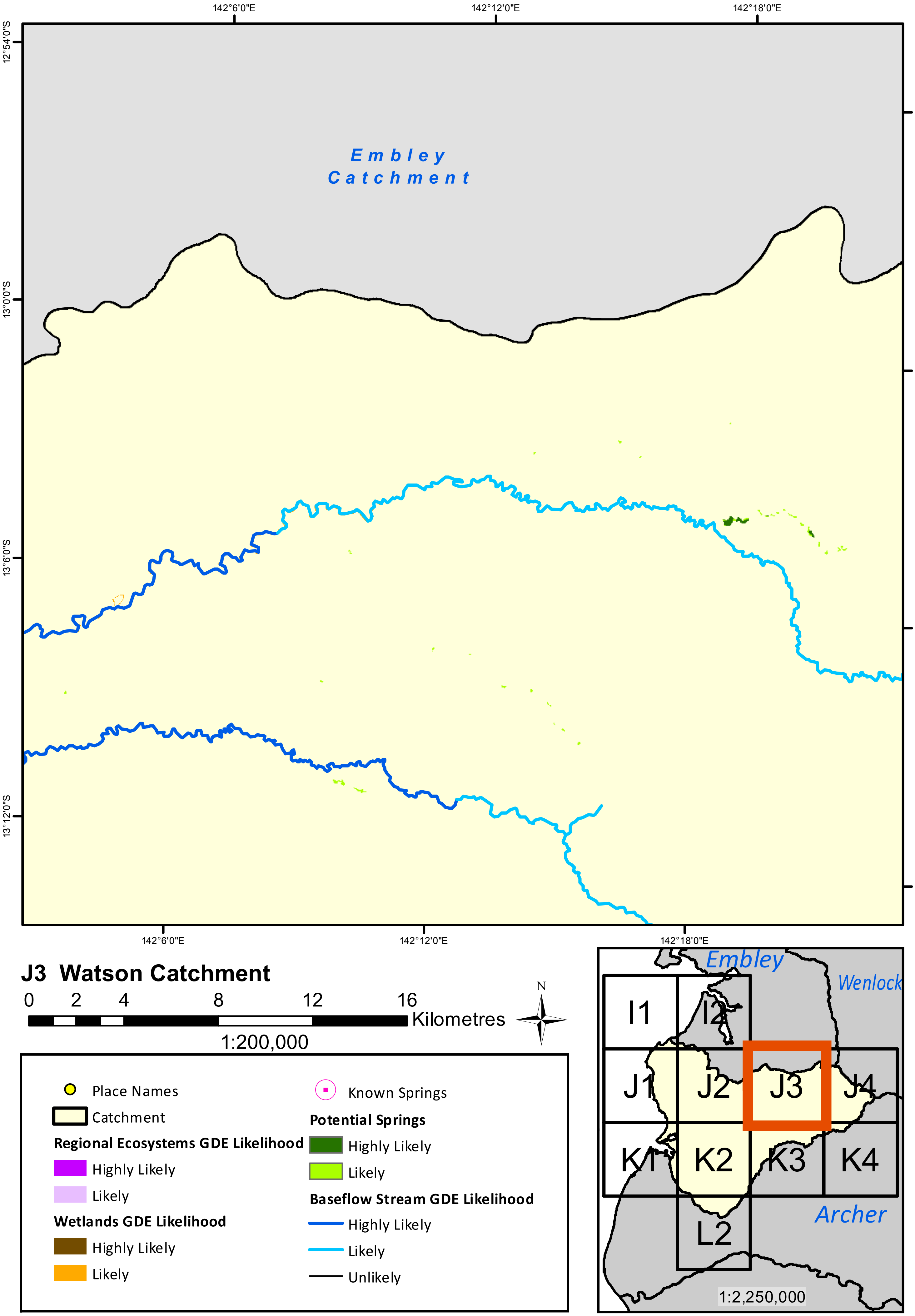
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





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142°12'0"E
142°18'0"E
12°54'0"S
13°0'0"S
13°6'0"S
13°12'0"S
Embley Catchment
J3 Watson Catchment
0 2 4 8 12 16 Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Embley
Wenlock
I1
I2
J1
J2
J3
J4
K1
K2
K3
K4
L2
Archer
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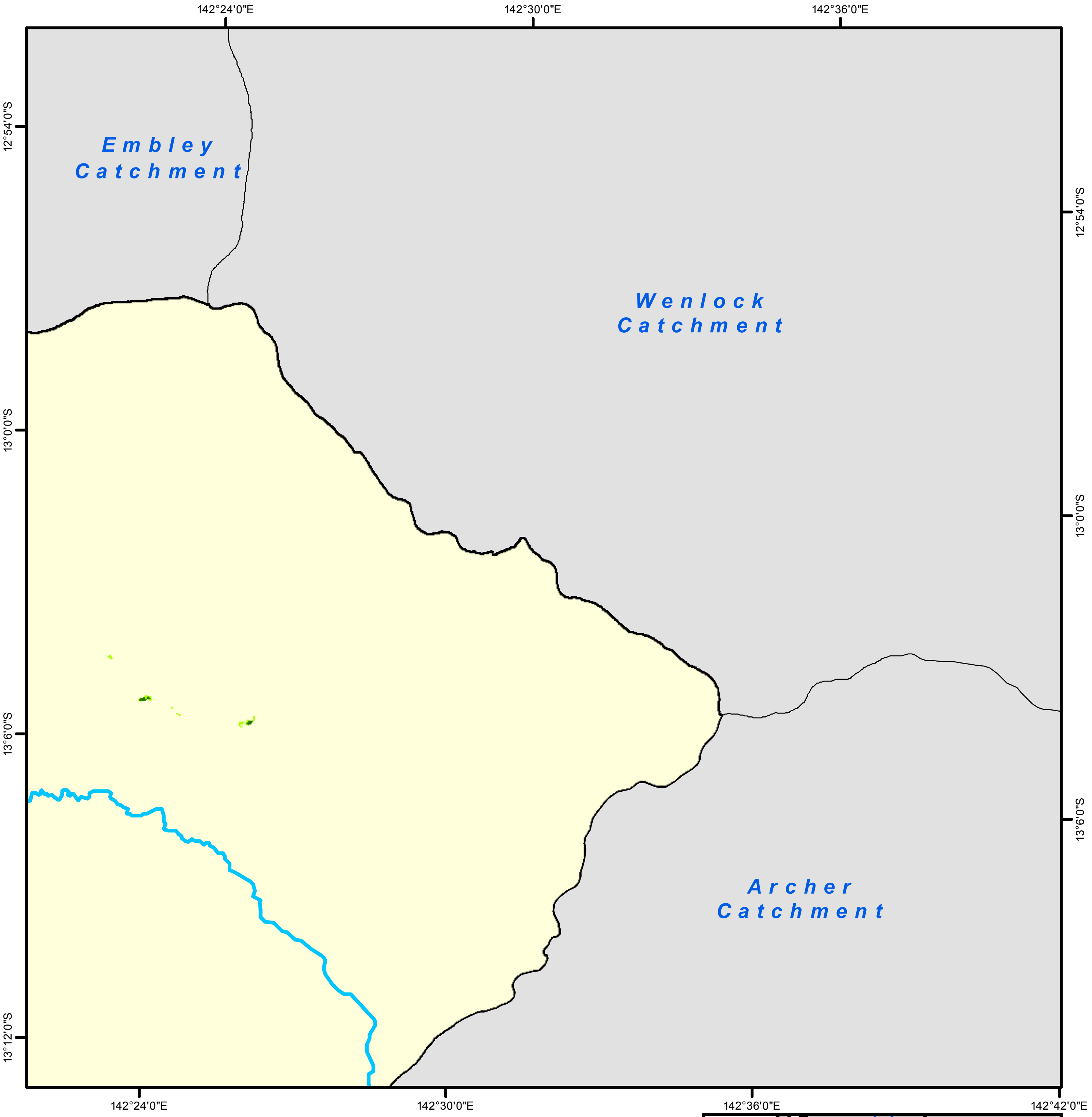


J4 Watson Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

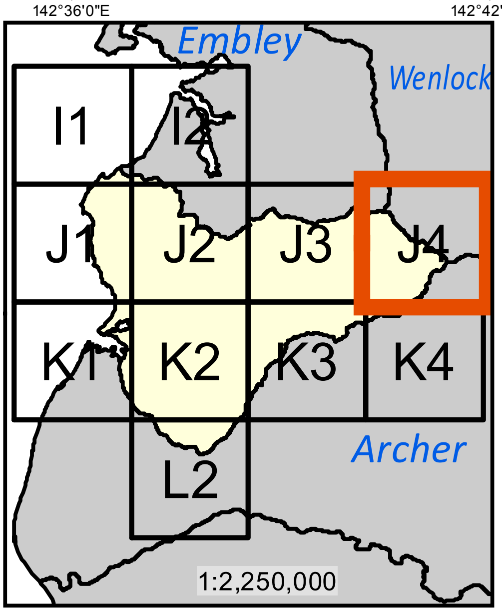
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

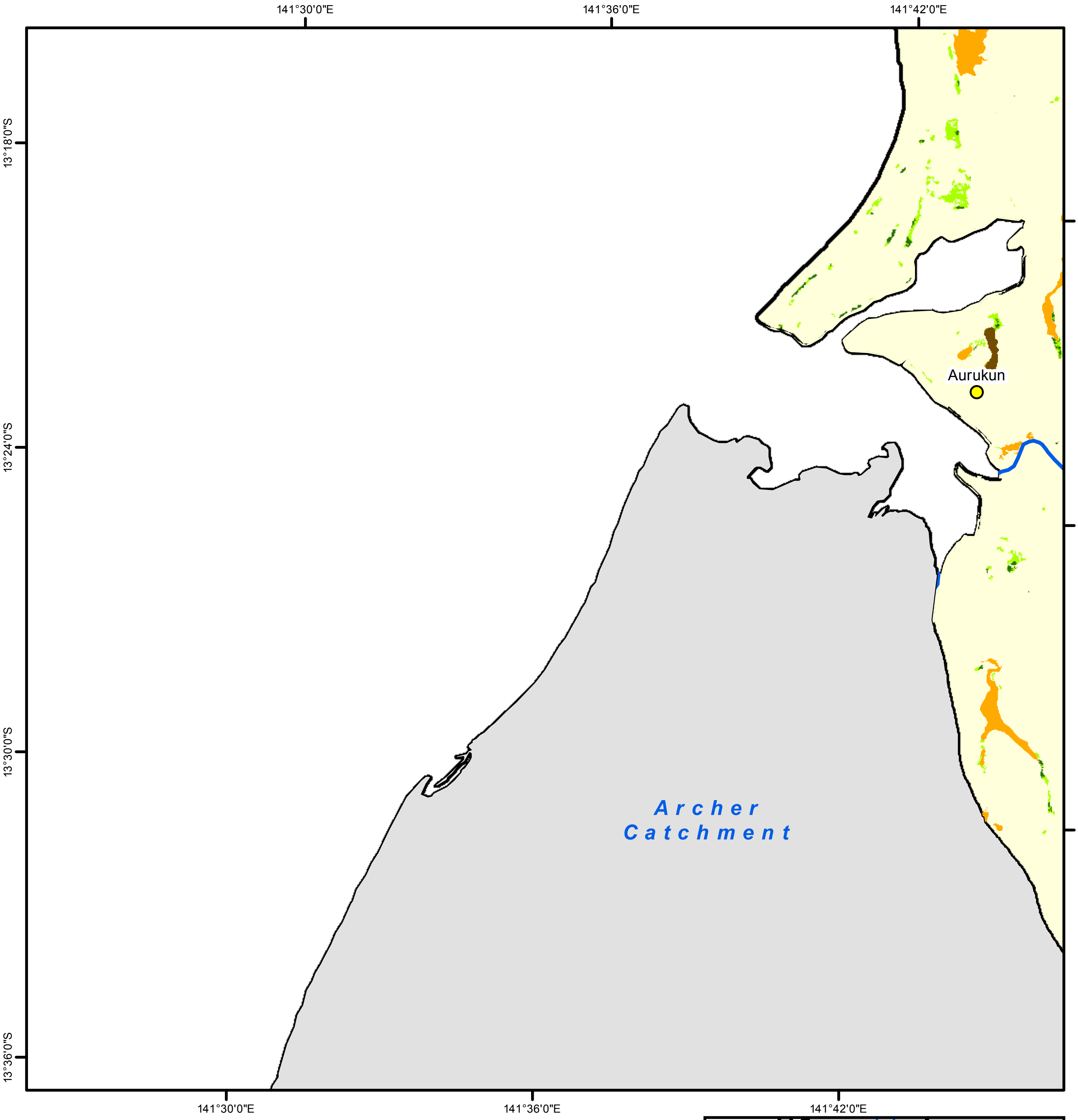
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





K1 Watson Catchment

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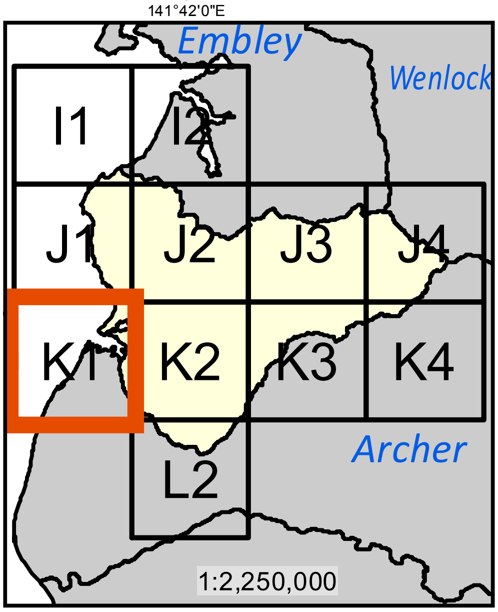
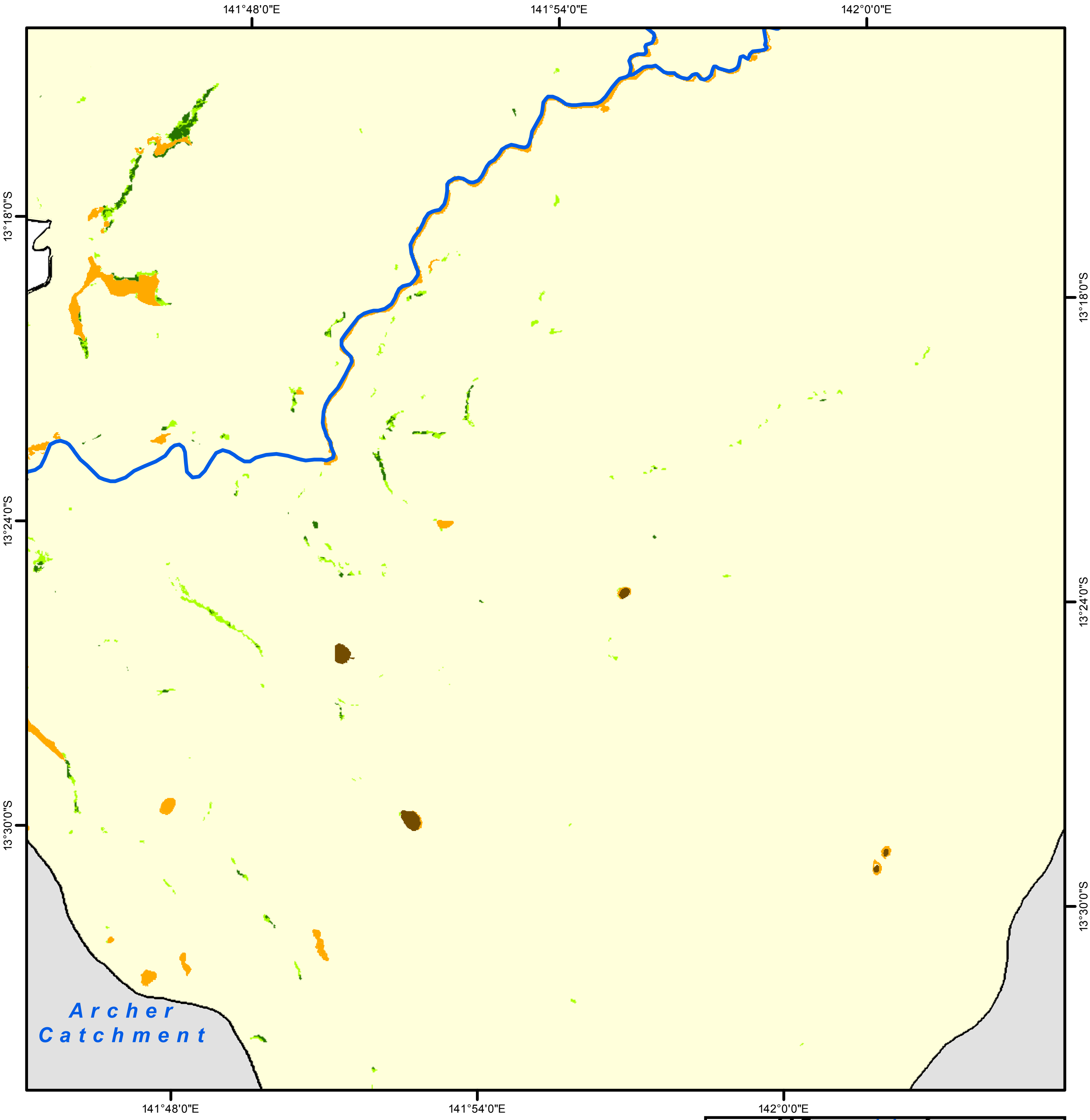


Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



K2 Watson Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

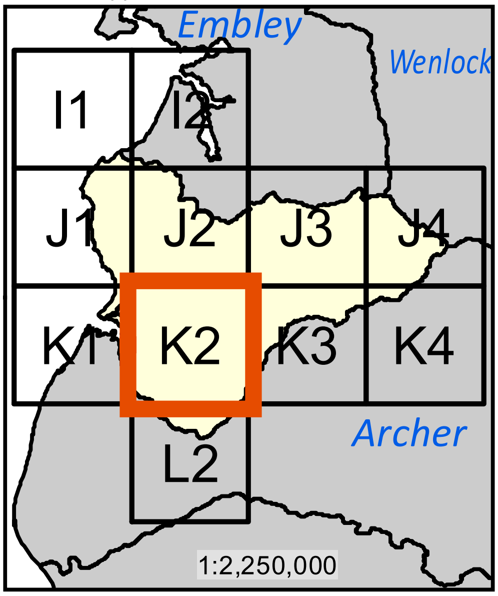
- Known Springs

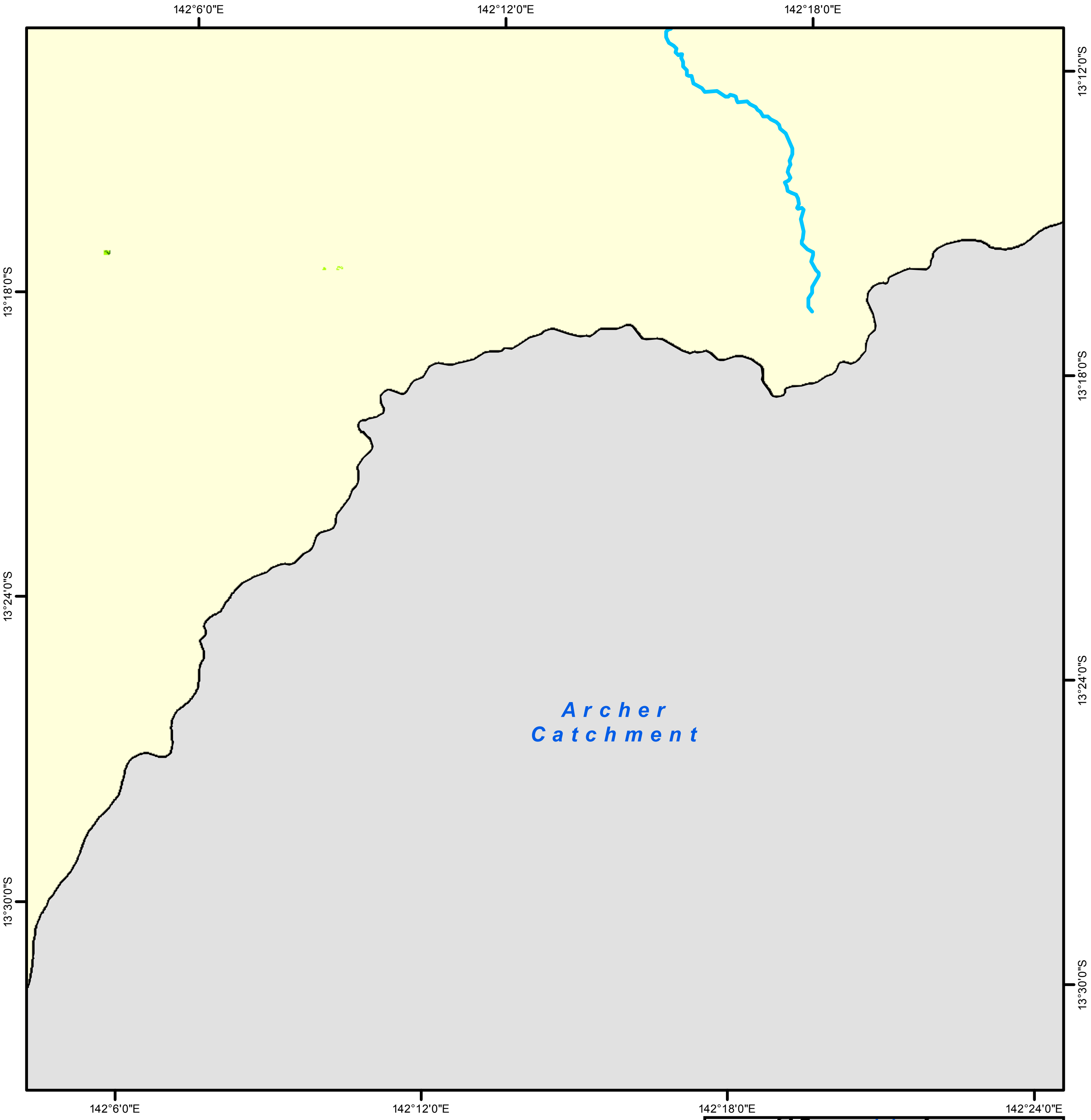
Potential Springs

- Highly Likely
- Likely

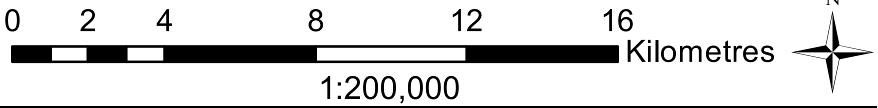
Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





K3 Watson Catchment



- Place Names
- Catchment

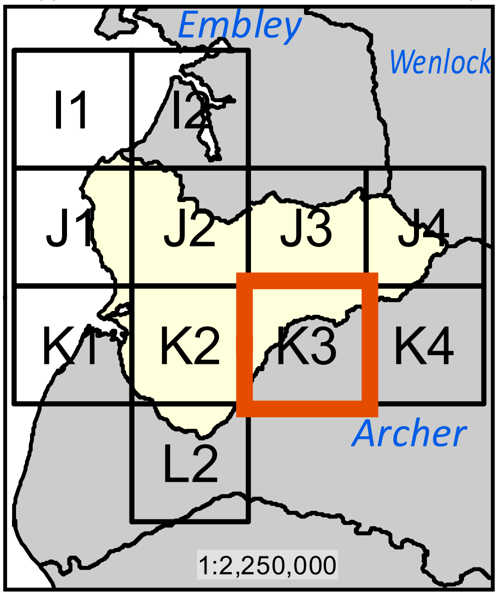
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

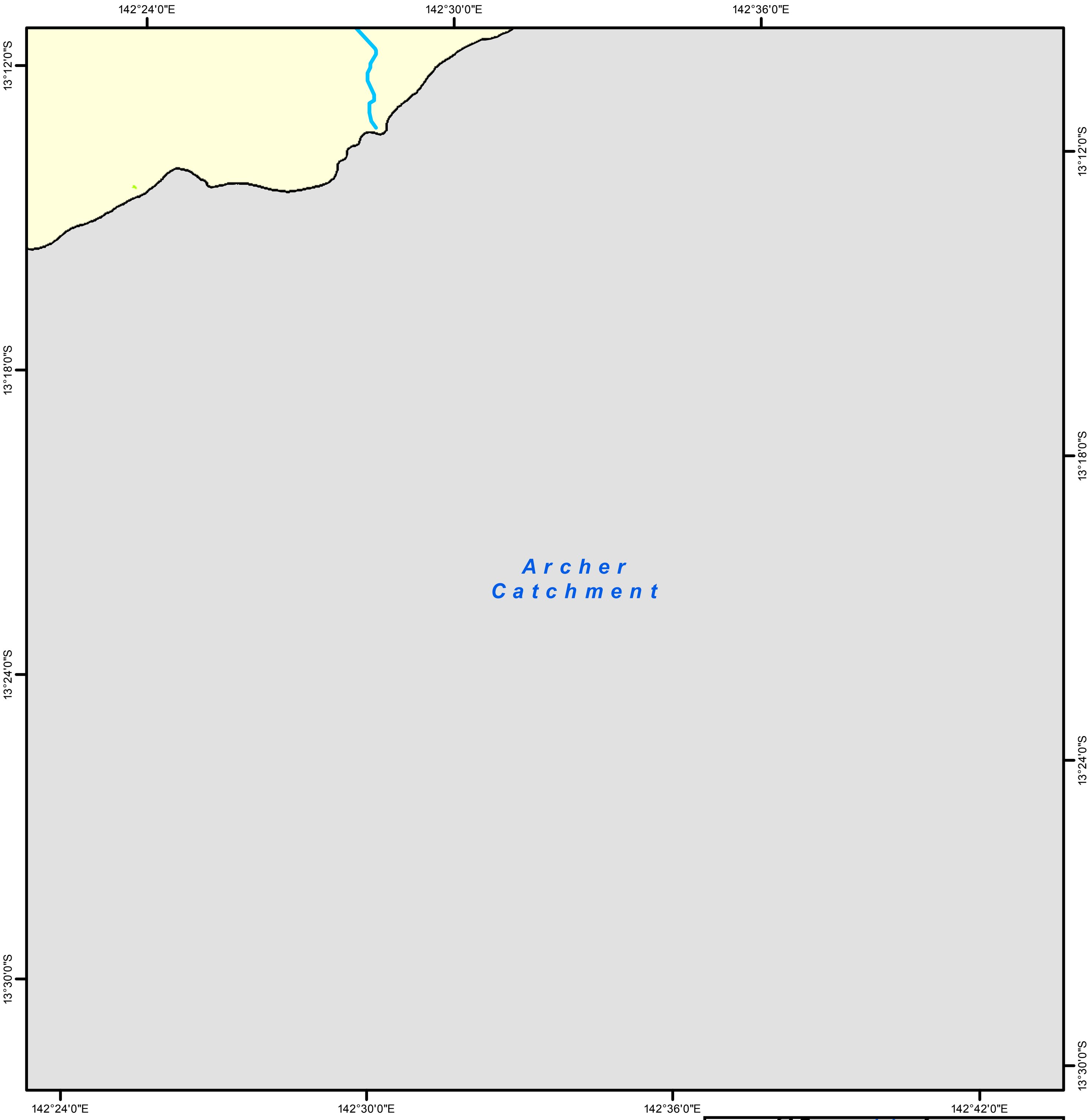
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





K4 Watson Catchment

0 2 4 8 12 16 Kilometres

N

1:200,000

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

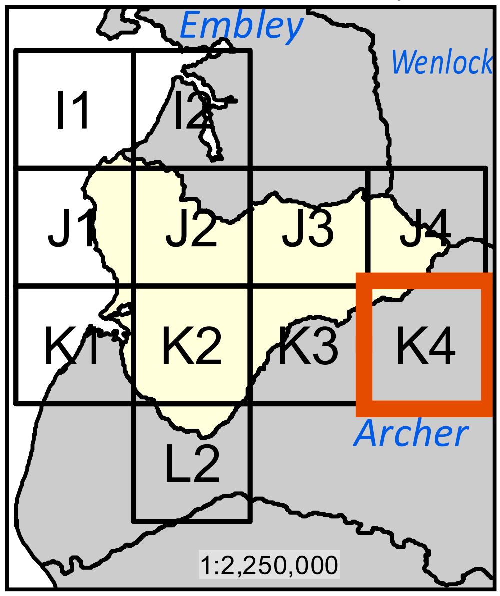
Likely

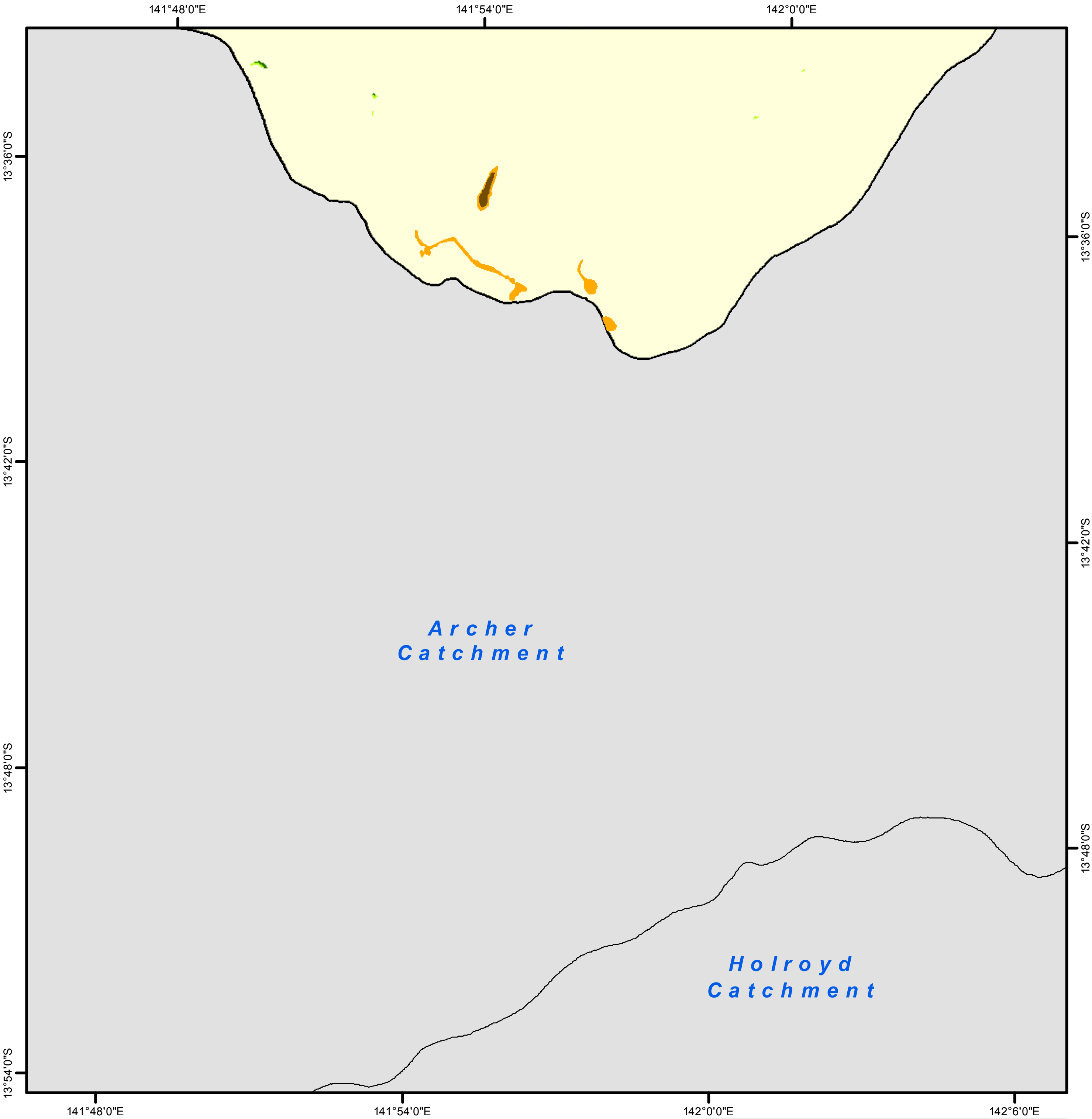
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





L2 Watson Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

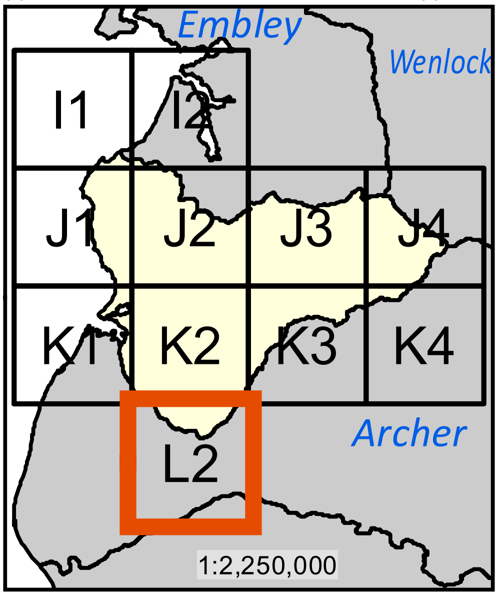
Likely

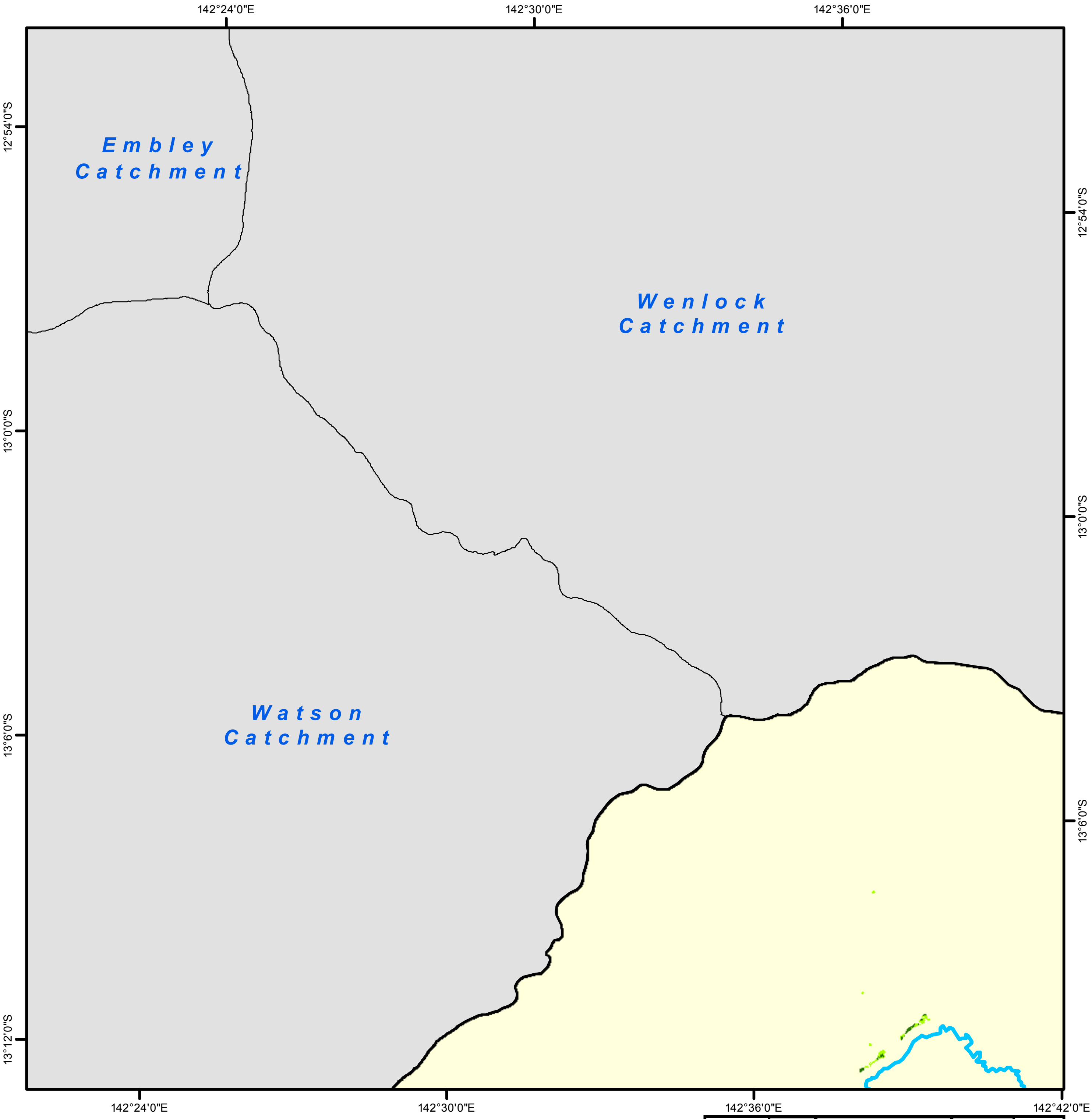
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





J4 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

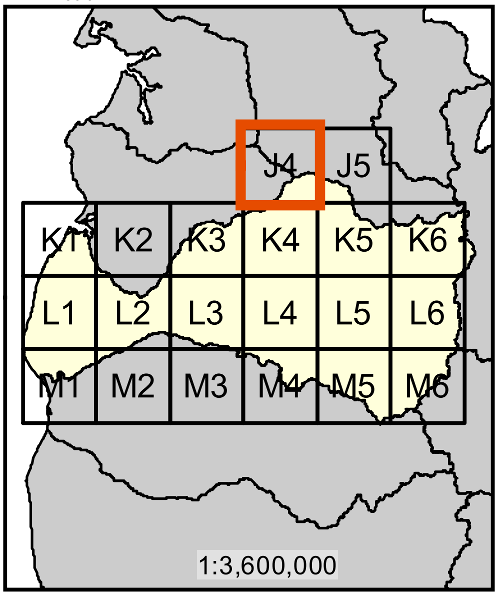
Likely

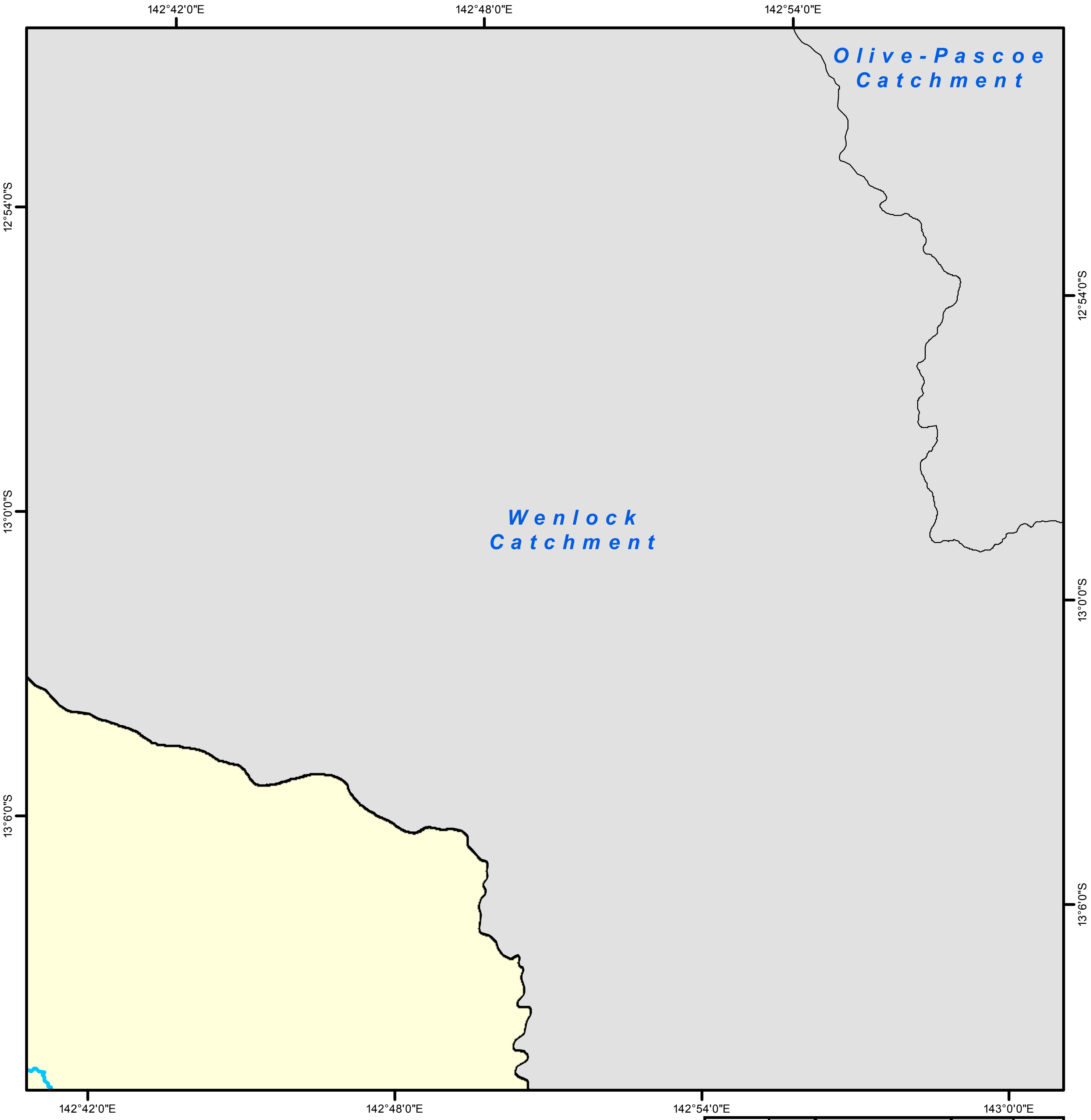
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





J5 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

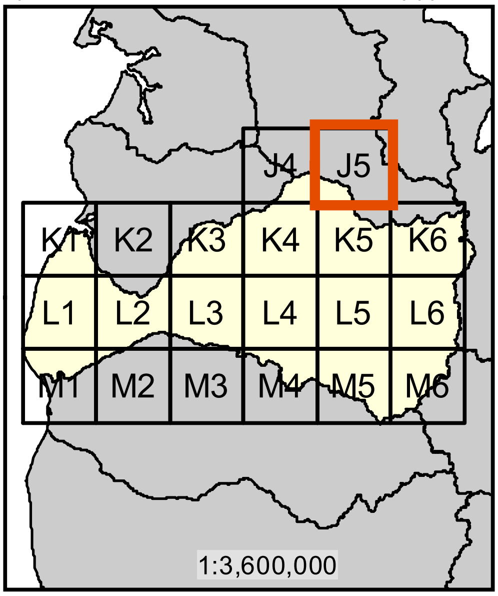
- Known Springs

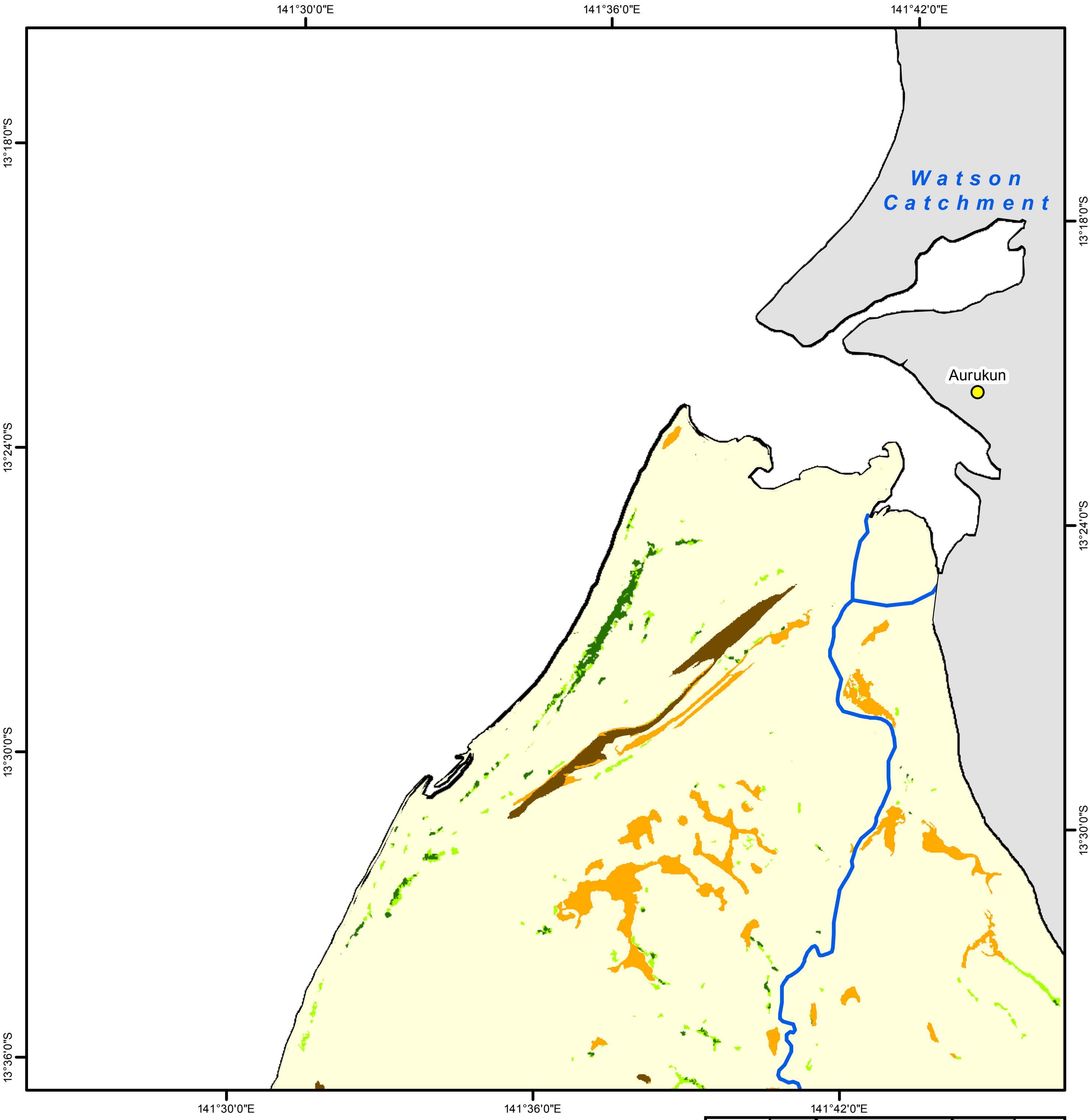
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





K1 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment

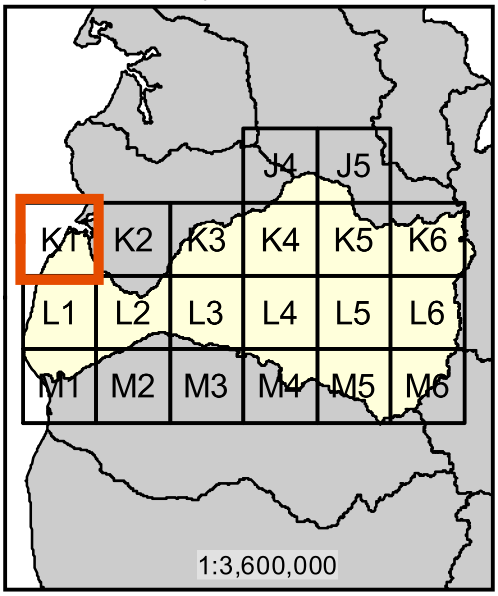
Regional Ecosystems GDE Likelihood
Highly Likely
Likely

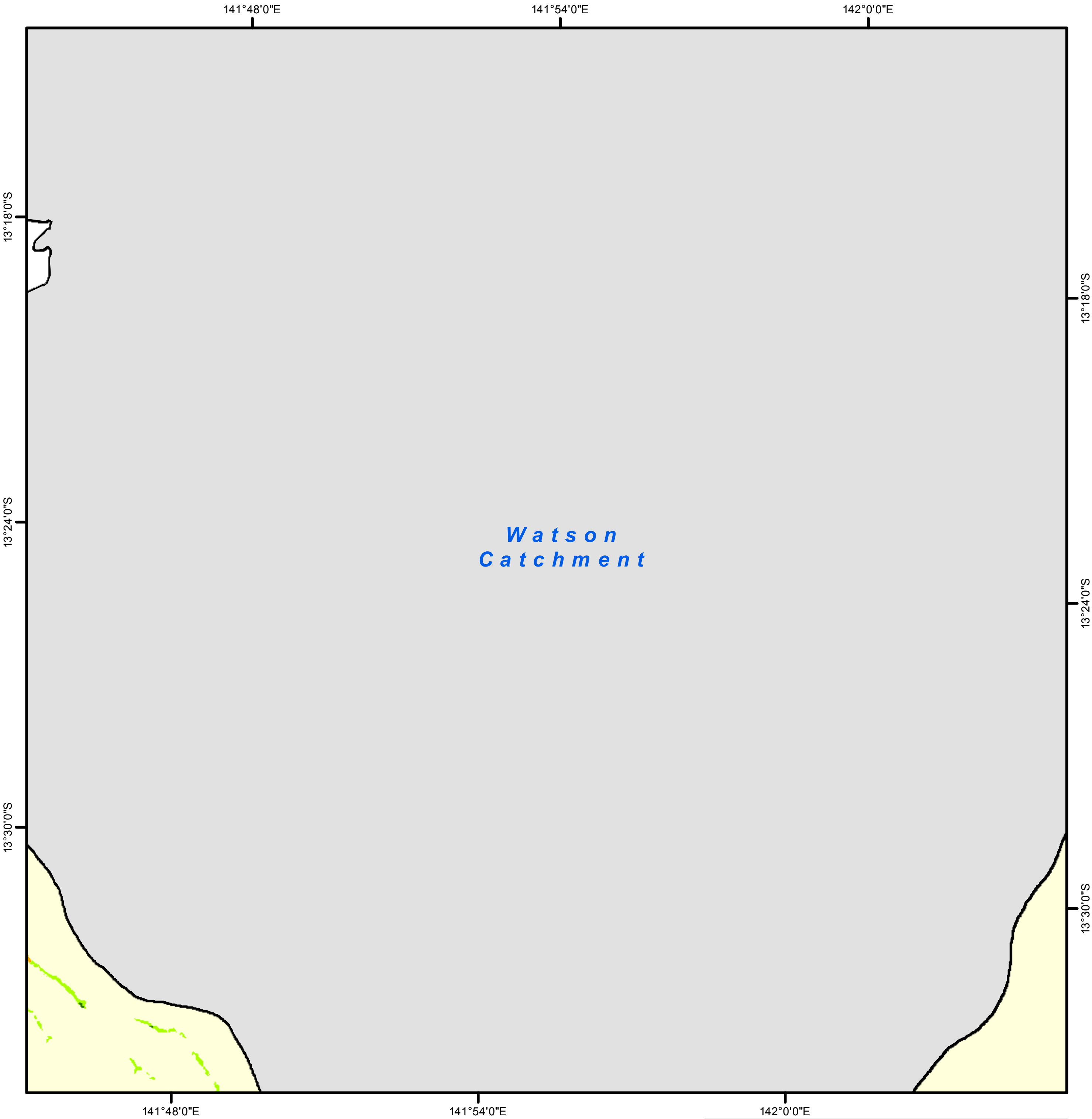
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs

Potential Springs
Highly Likely
Likely

Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





K2 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

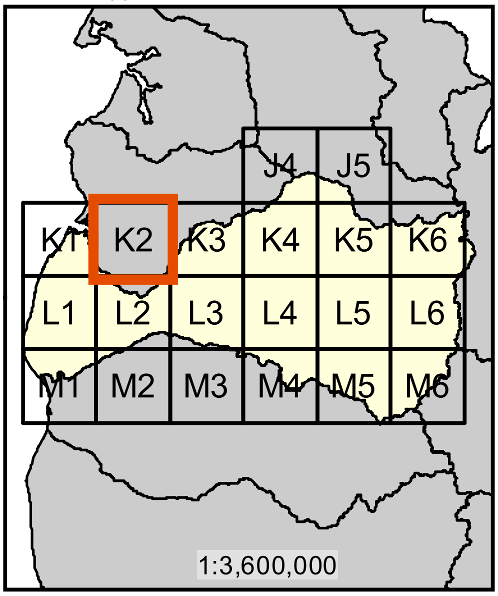
Likely

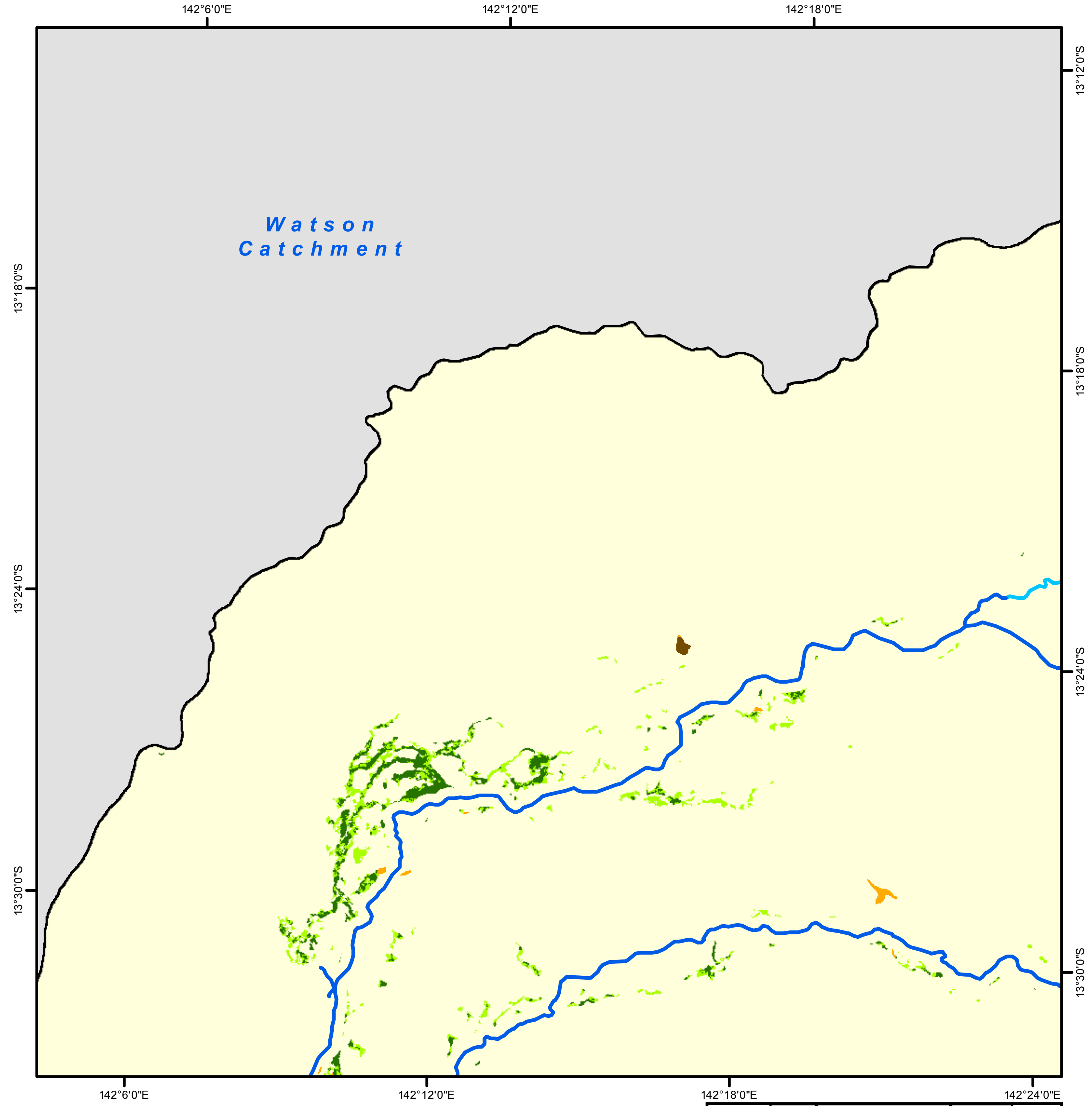
Baseflow Stream GDE Likelihood

Highly Likely

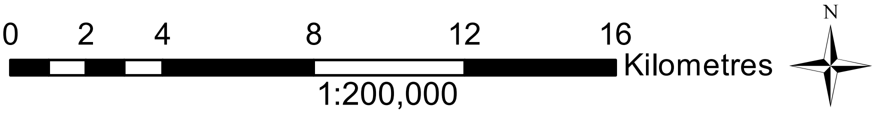
Likely

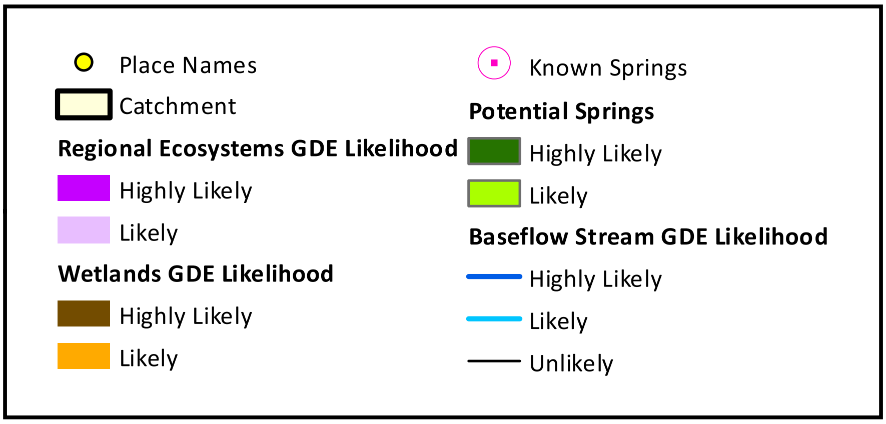
Unlikely

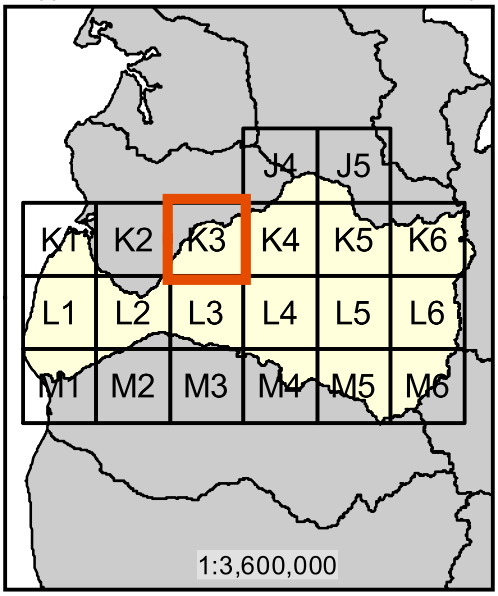


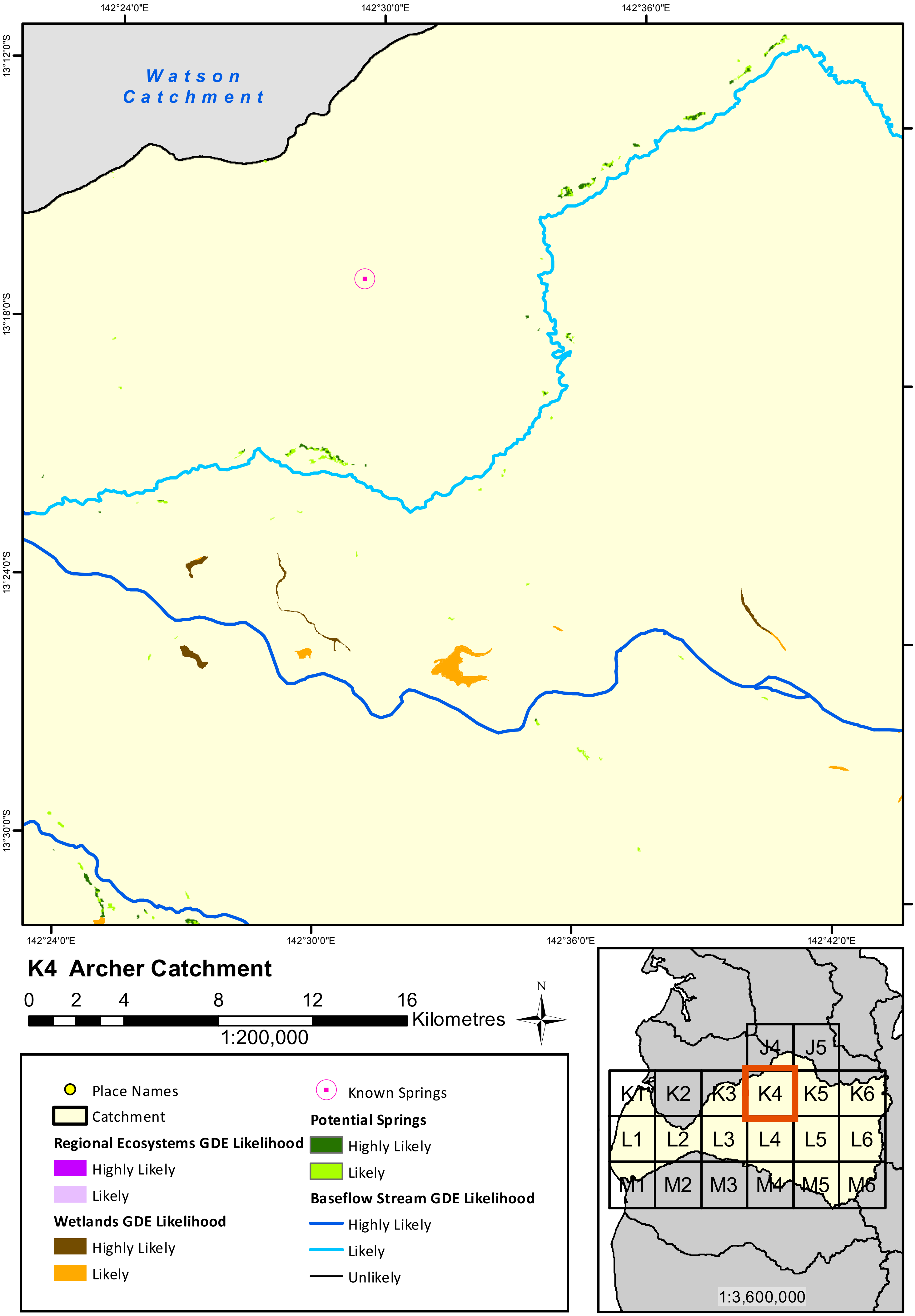


K3 Archer Catchment





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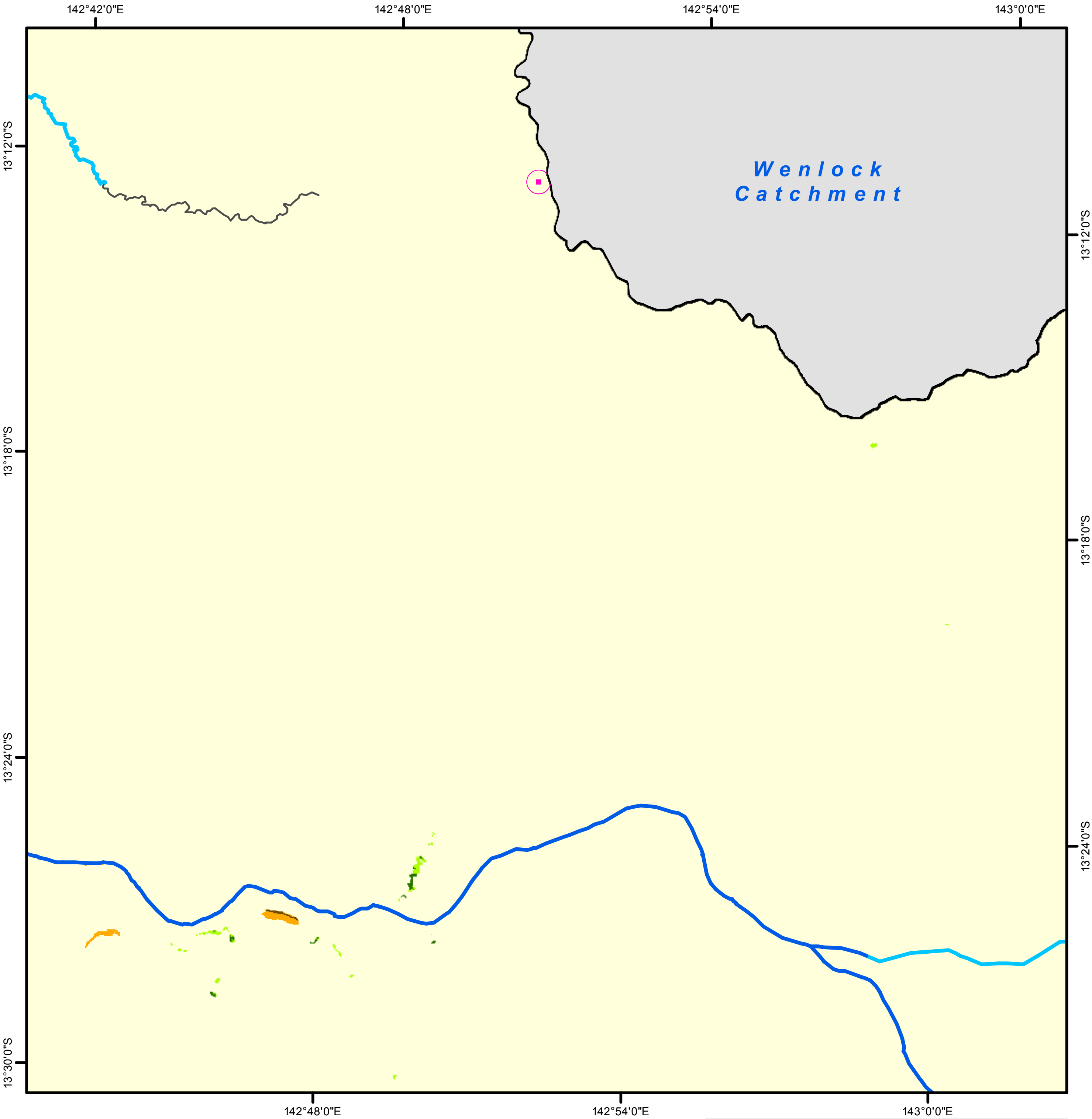
13°12'0"S
13°18'0"S
13°24'0"S
13°30'0"S
Watson Catchment
K4 Archer Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
J4 J5
K1 K2 K3 K4 K5 K6
L1 L2 L3 L4 L5 L6
M1 M2 M3 M4 M5 M6
1:3,600,000



K5 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

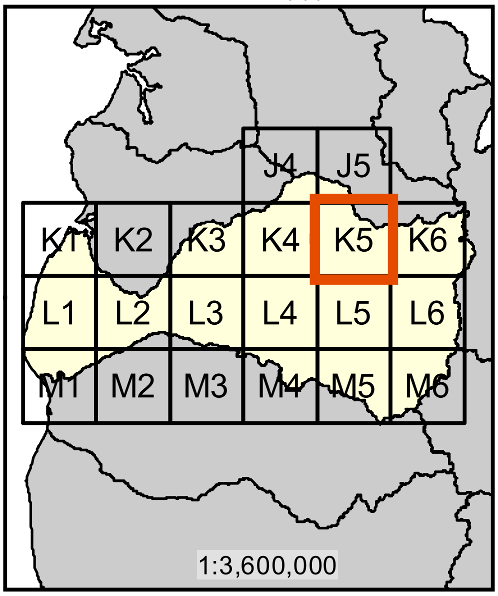
- Known Springs

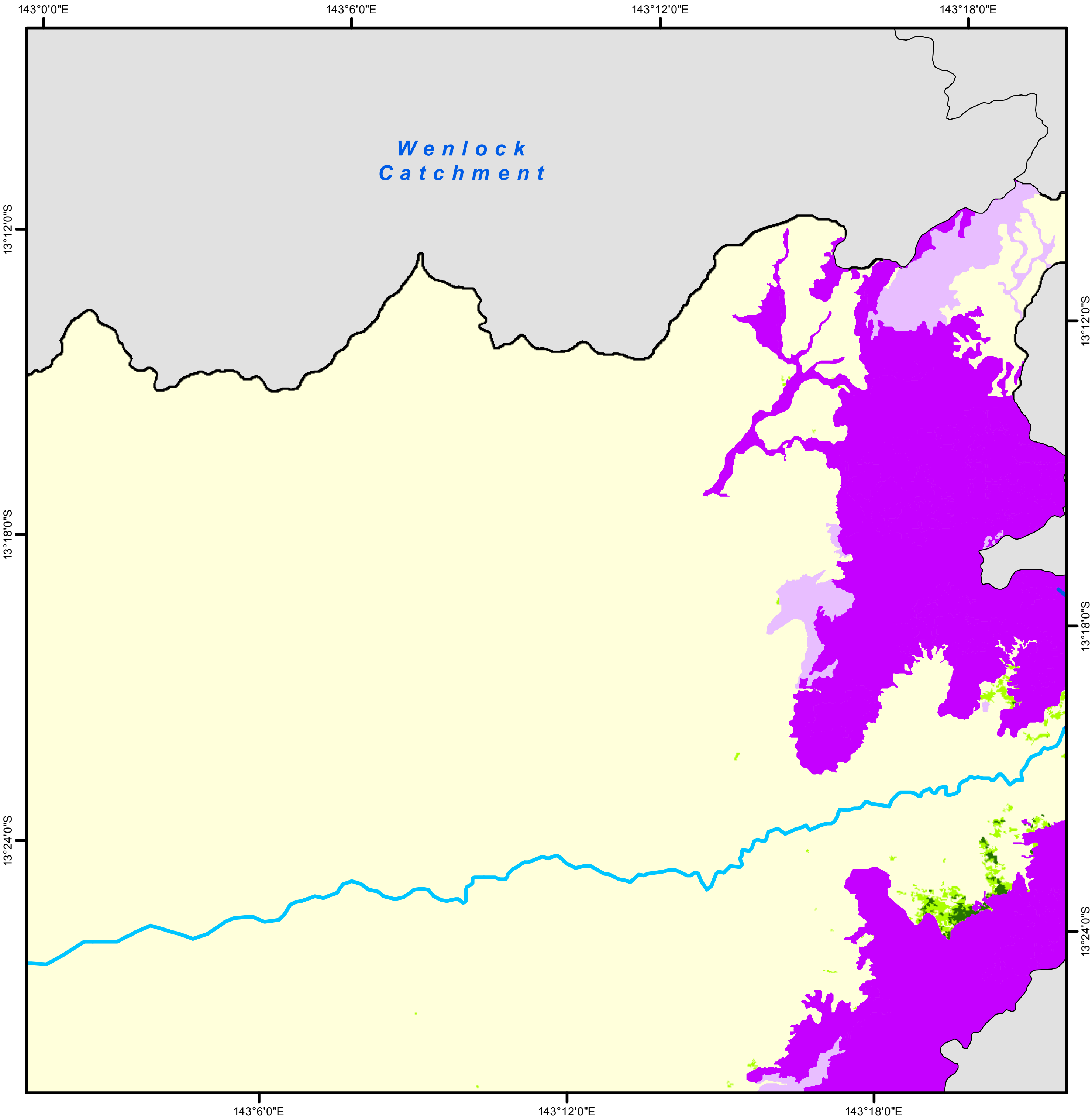
Potential Springs

- Highly Likely
- Likely

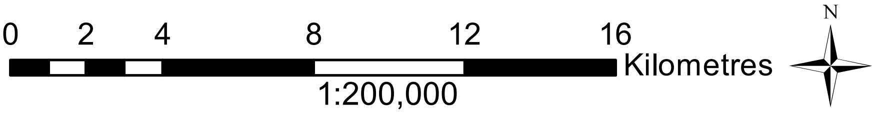
Baseflow Stream GDE Likelihood

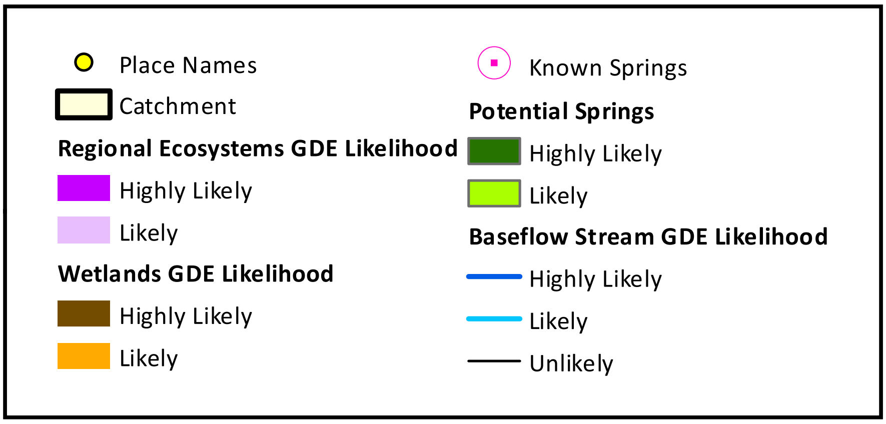
- Highly Likely
- Likely
- Unlikely

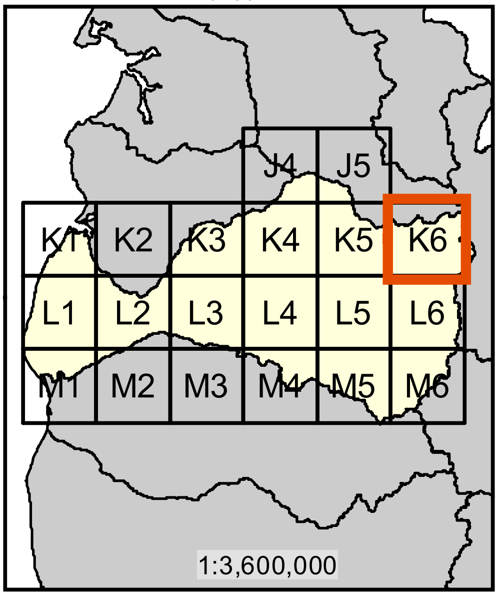


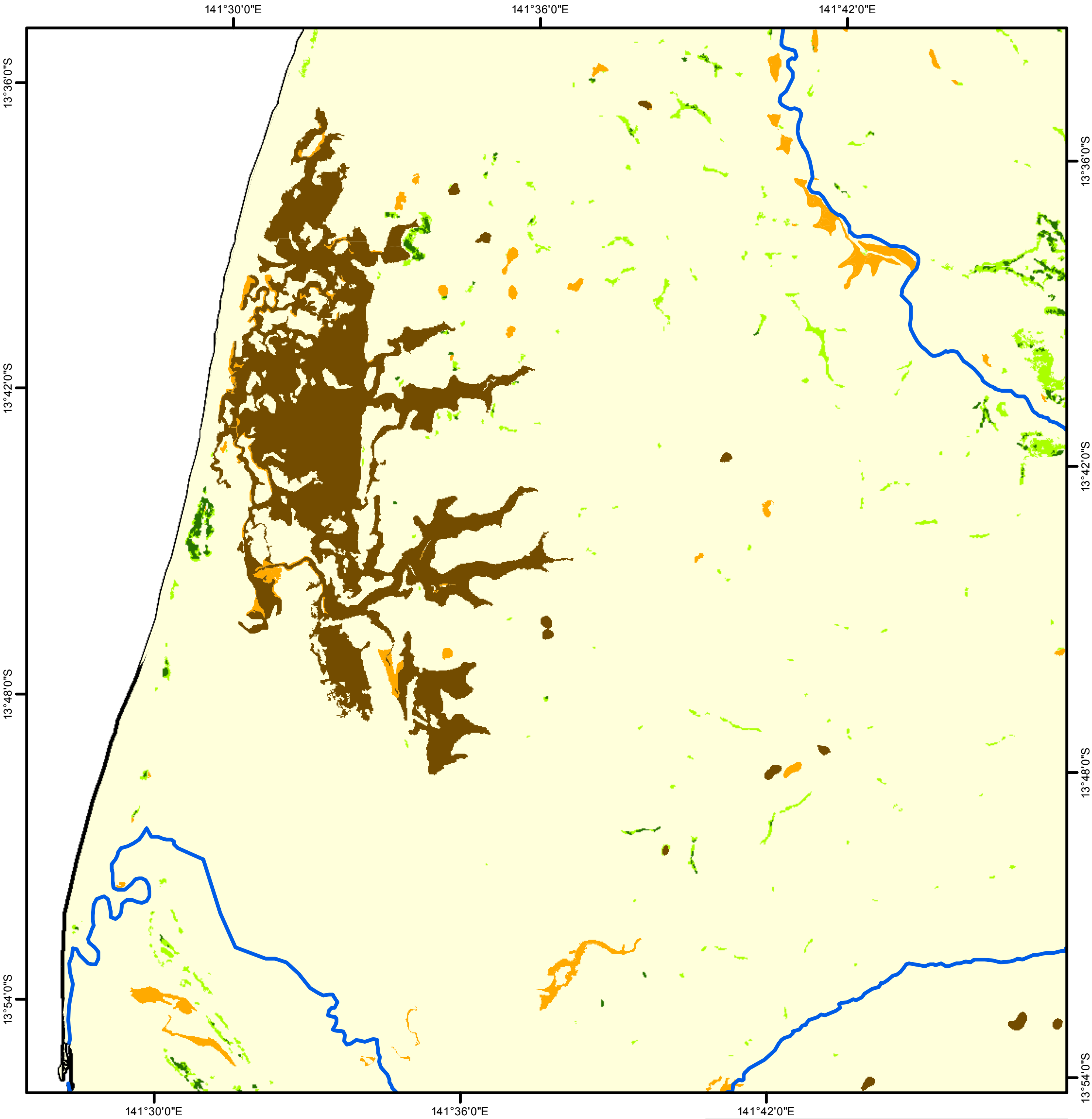


K6 Archer Catchment







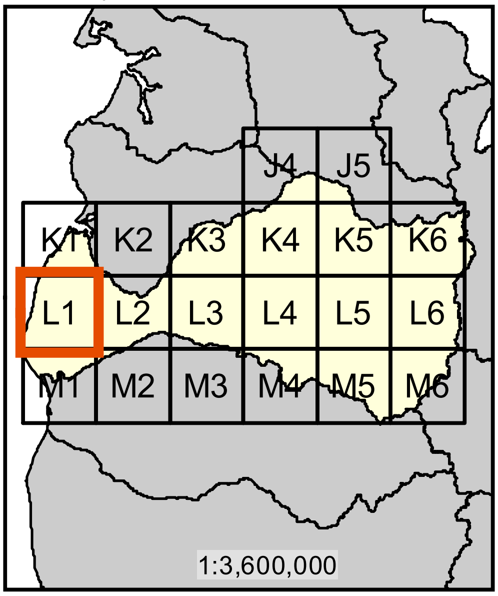


L1 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

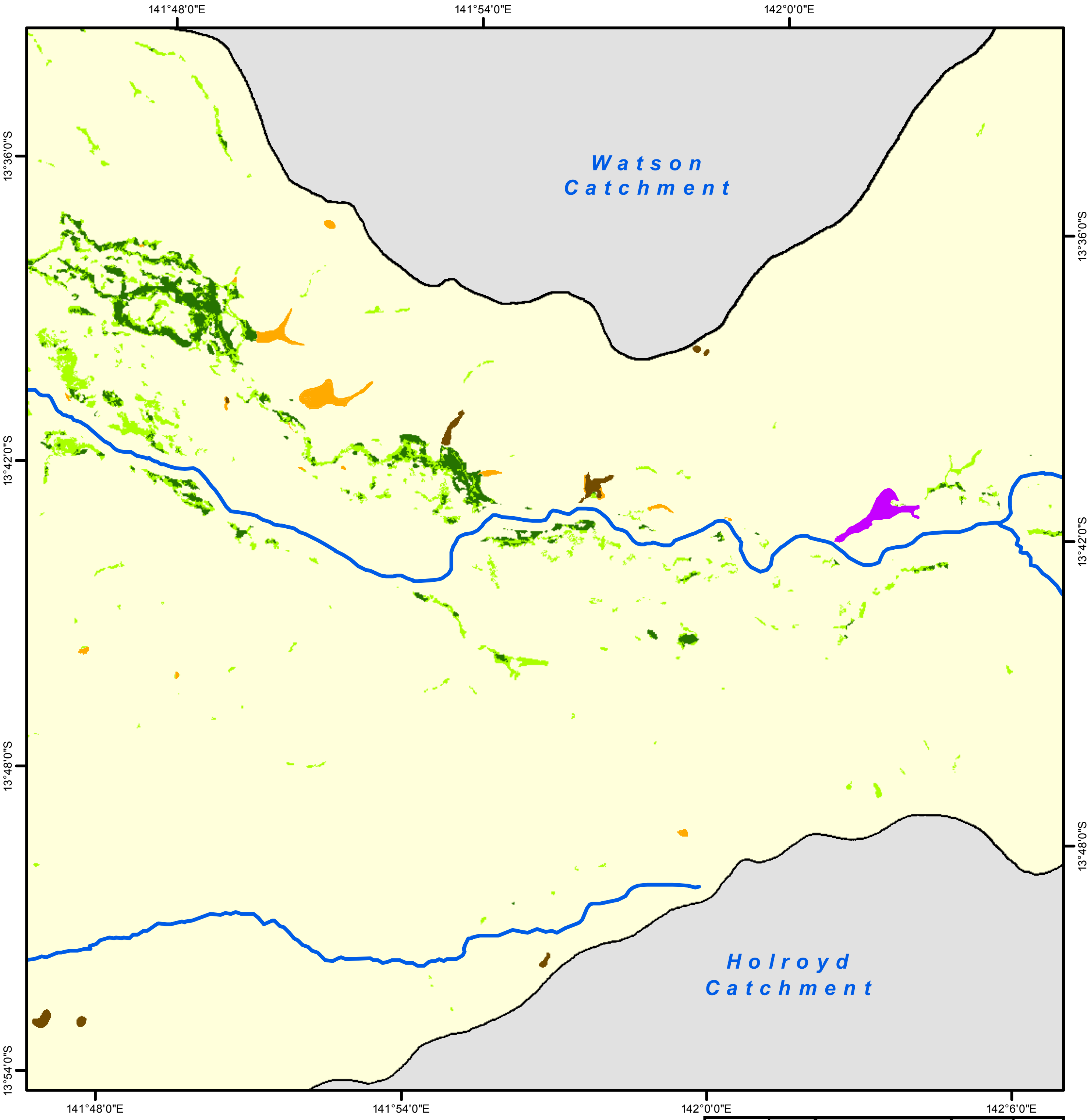
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



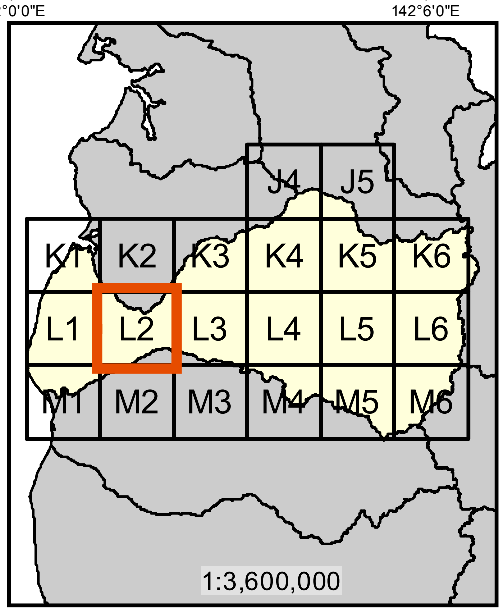
L2 Archer Catchment

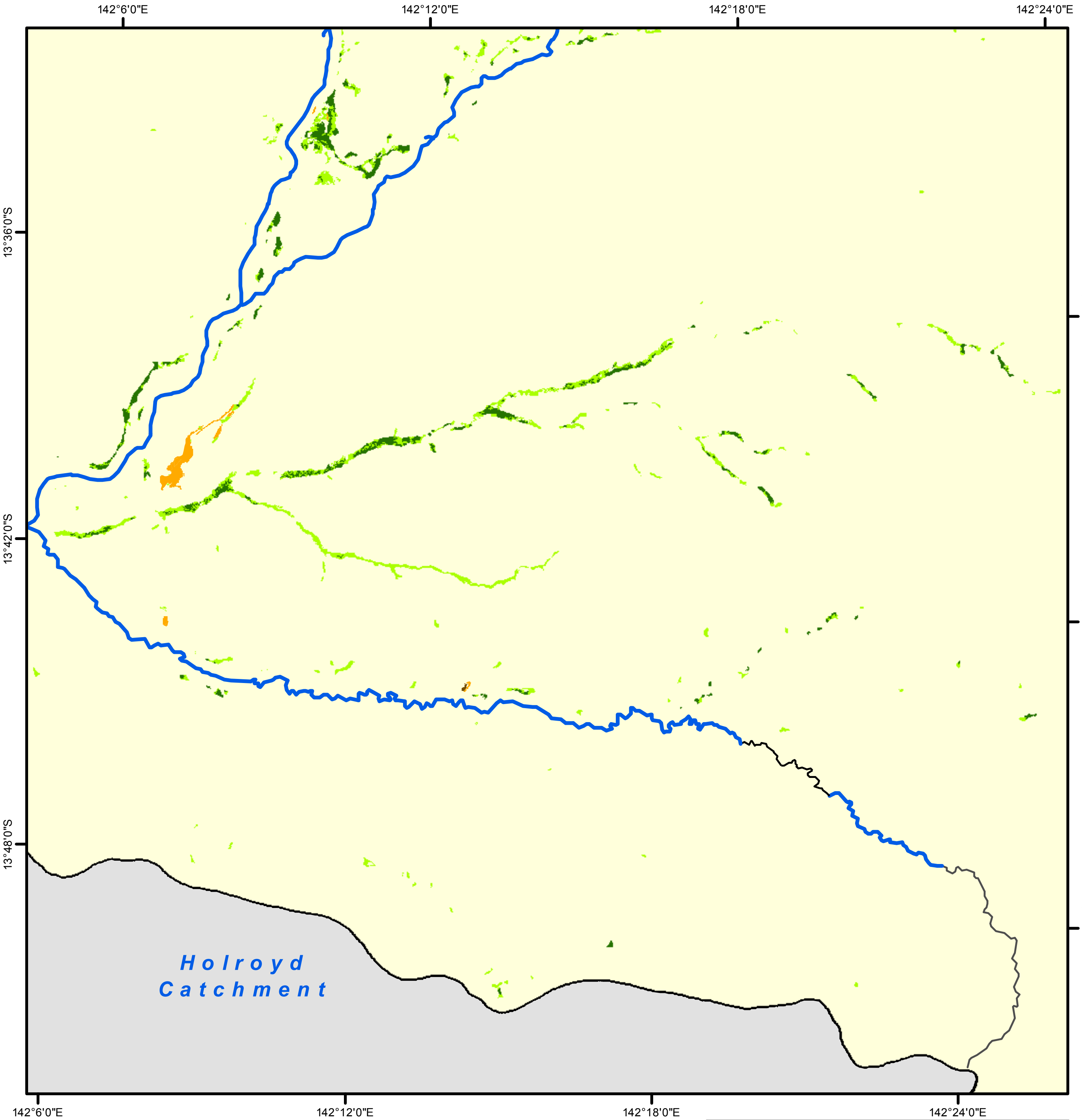
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





L3 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

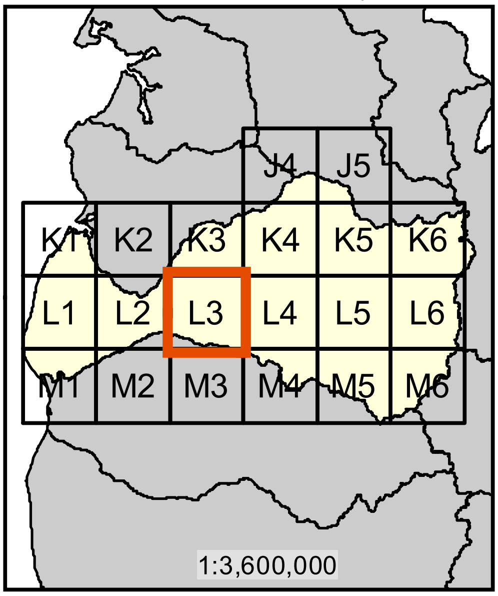
Likely

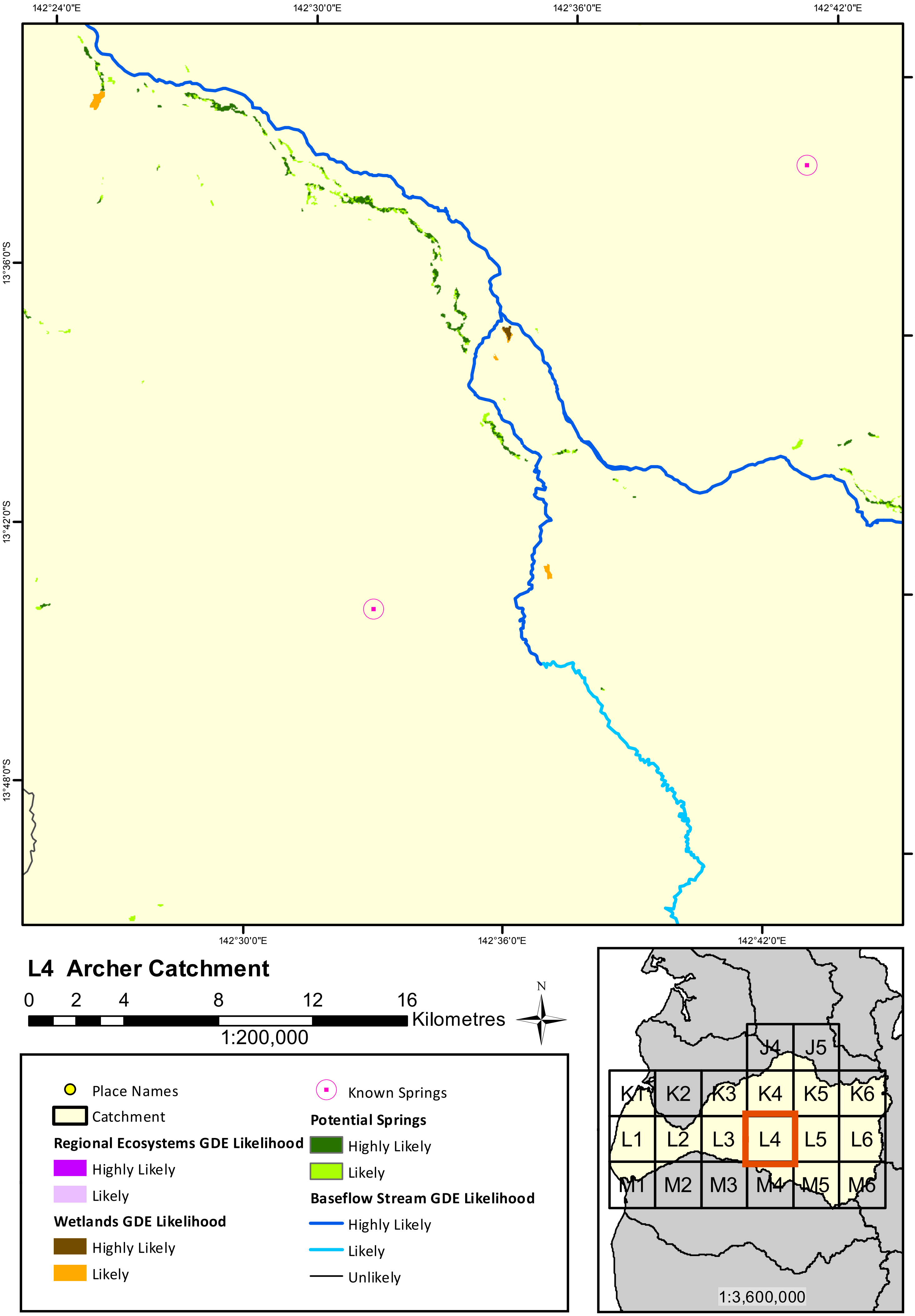
Baseflow Stream GDE Likelihood

Highly Likely

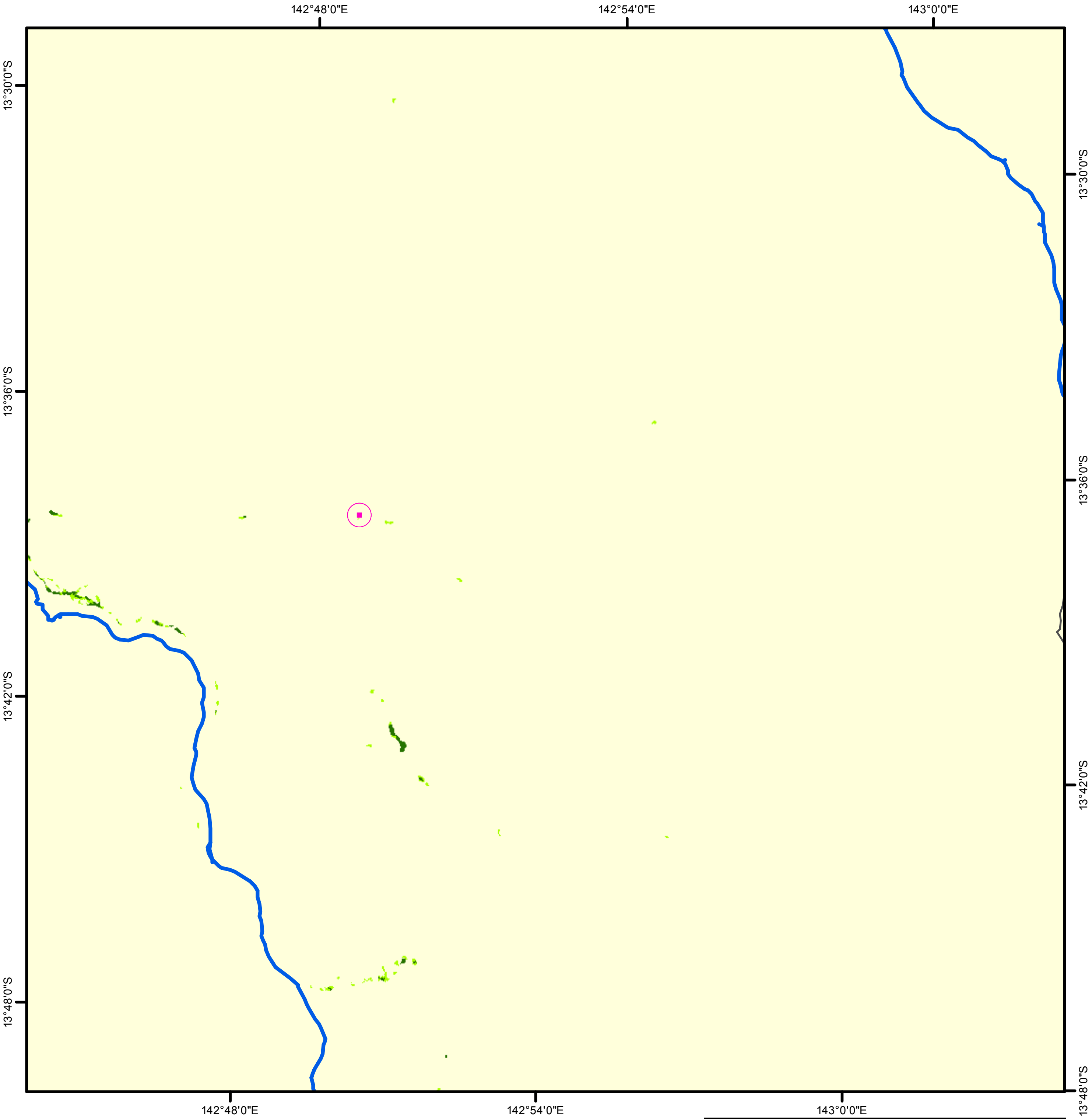
Likely

Unlikely





L4 Archer Catchment



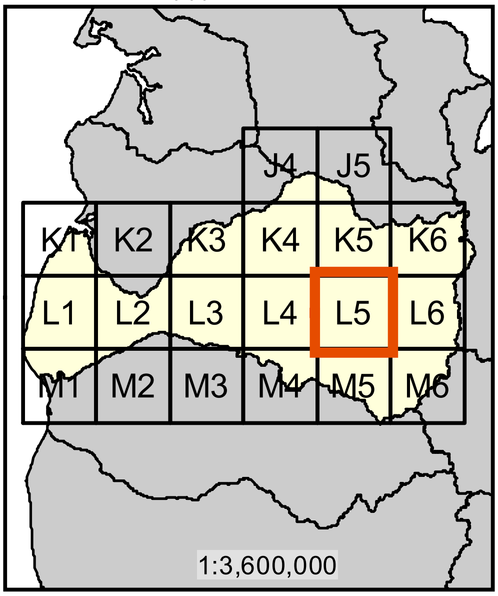
L5 Archer Catchment

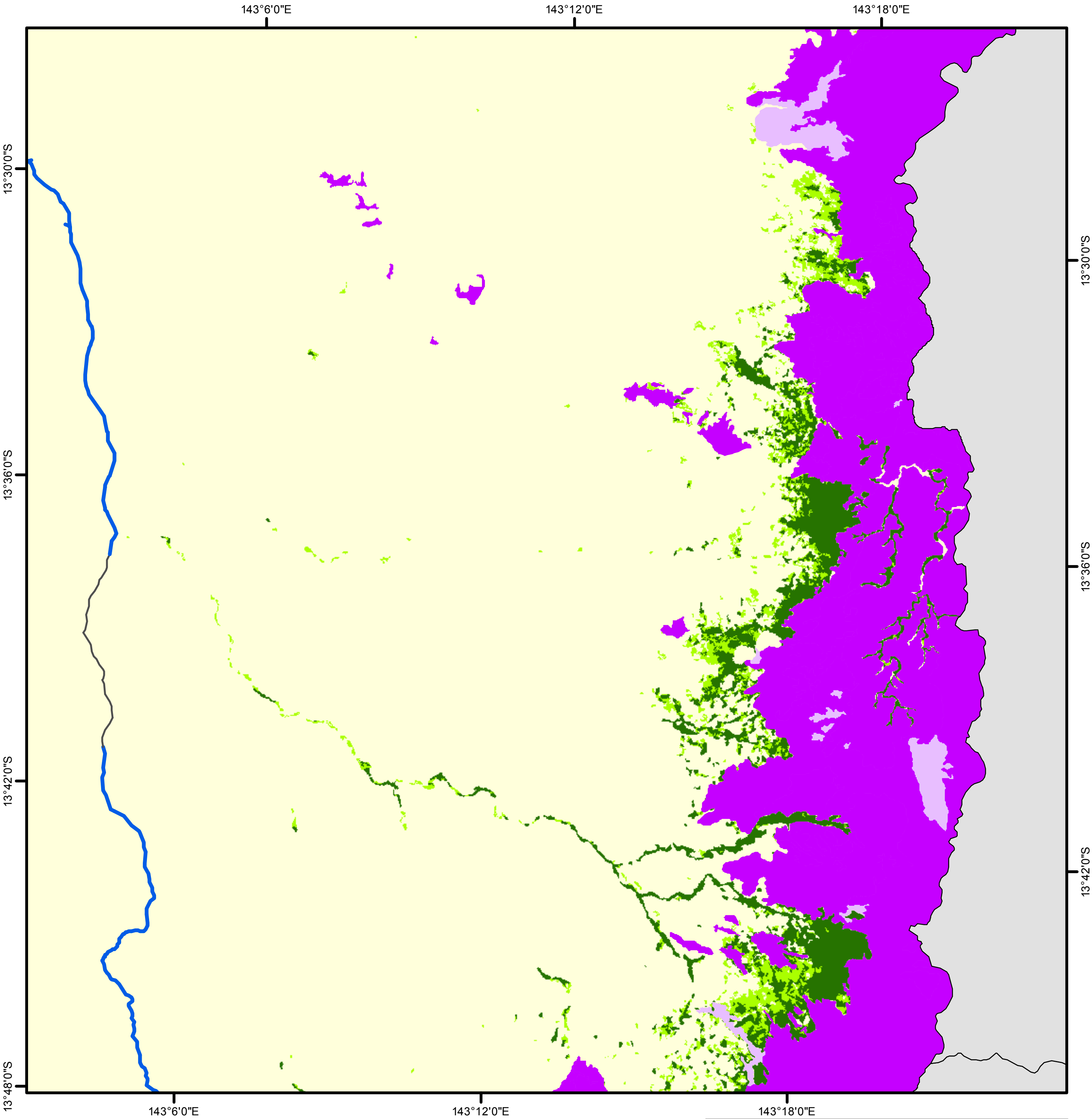
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





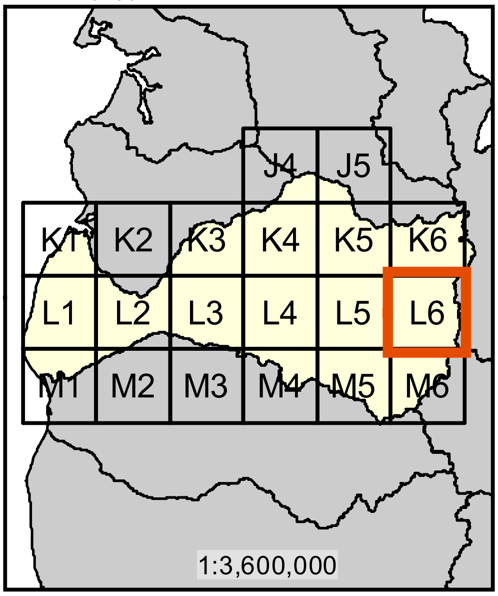
L6 Archer Catchment

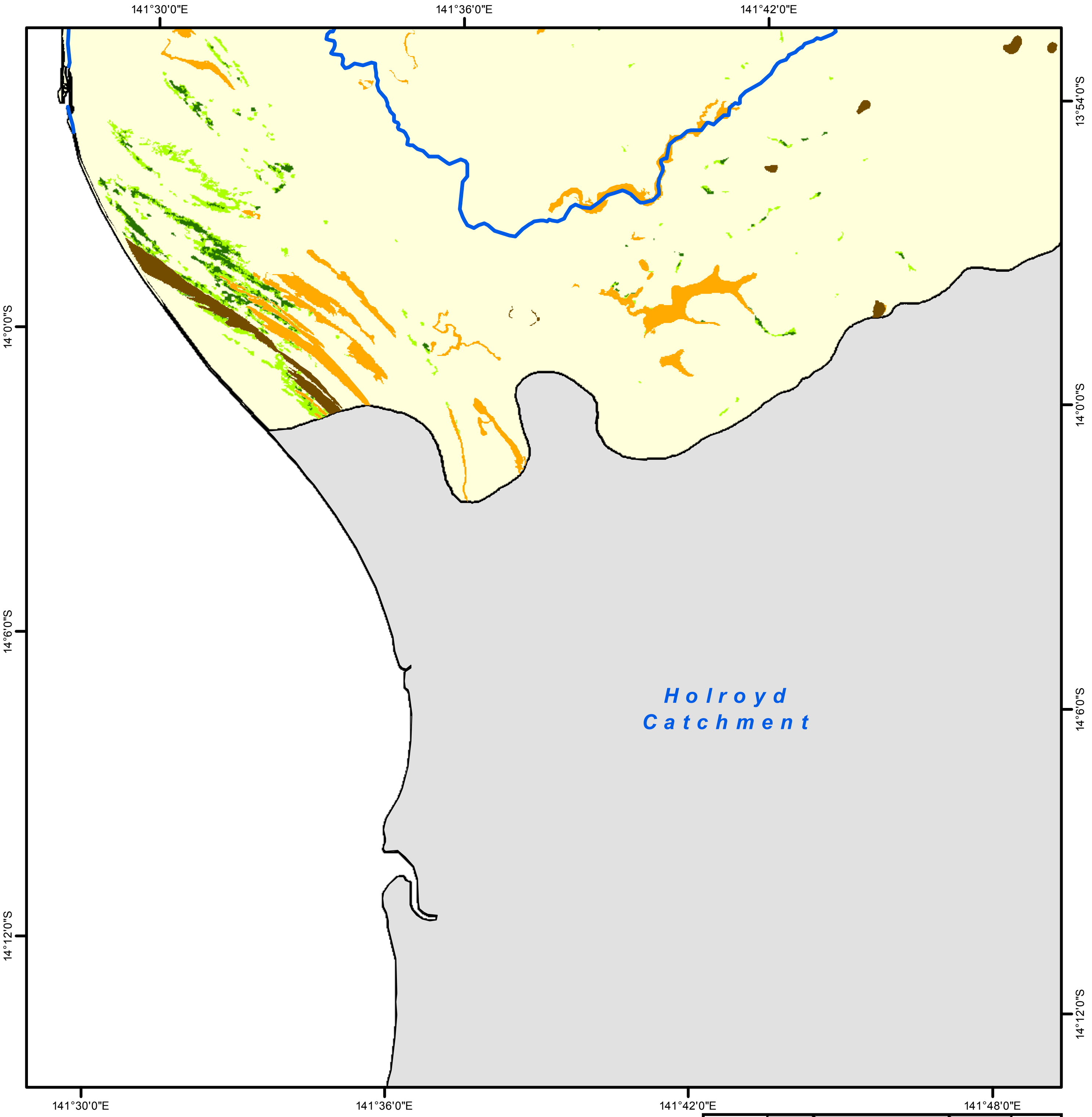
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





M1 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

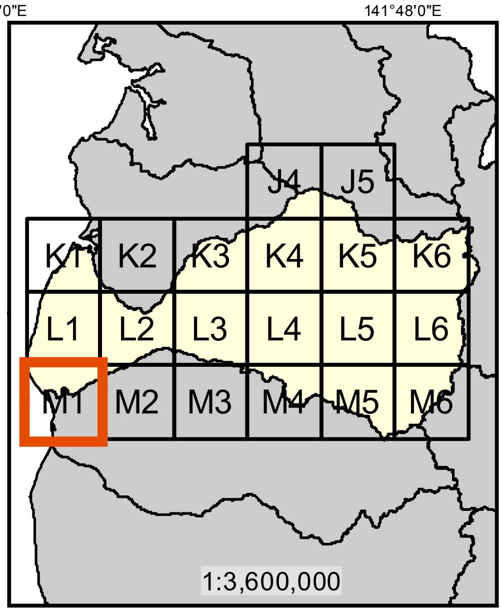
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

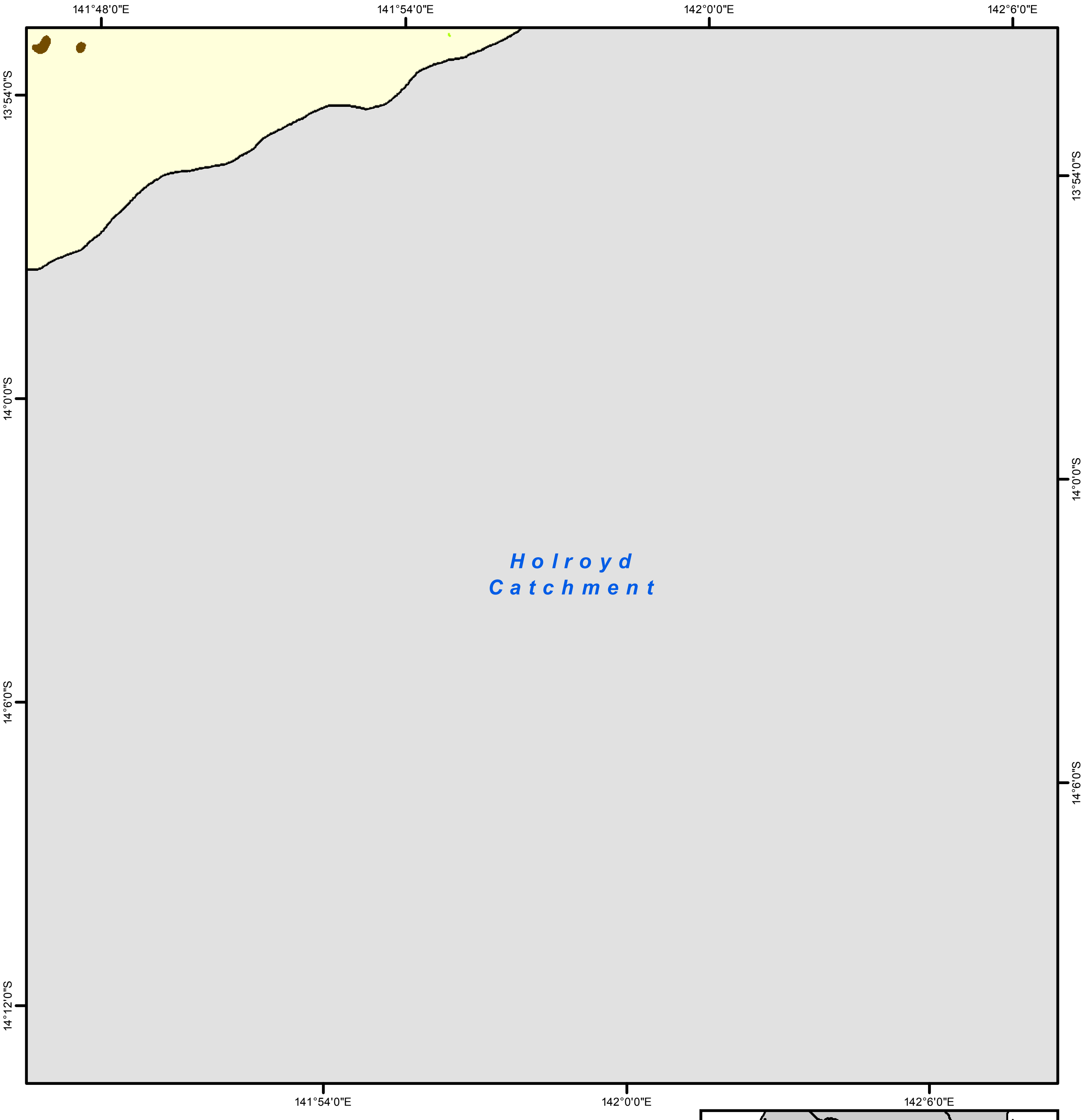
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





M2 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

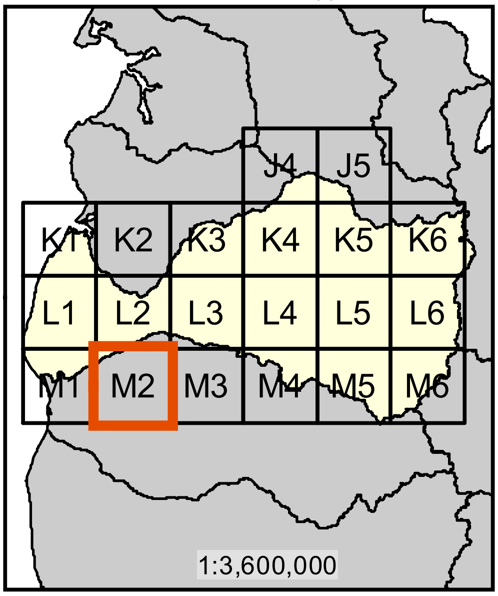
Likely

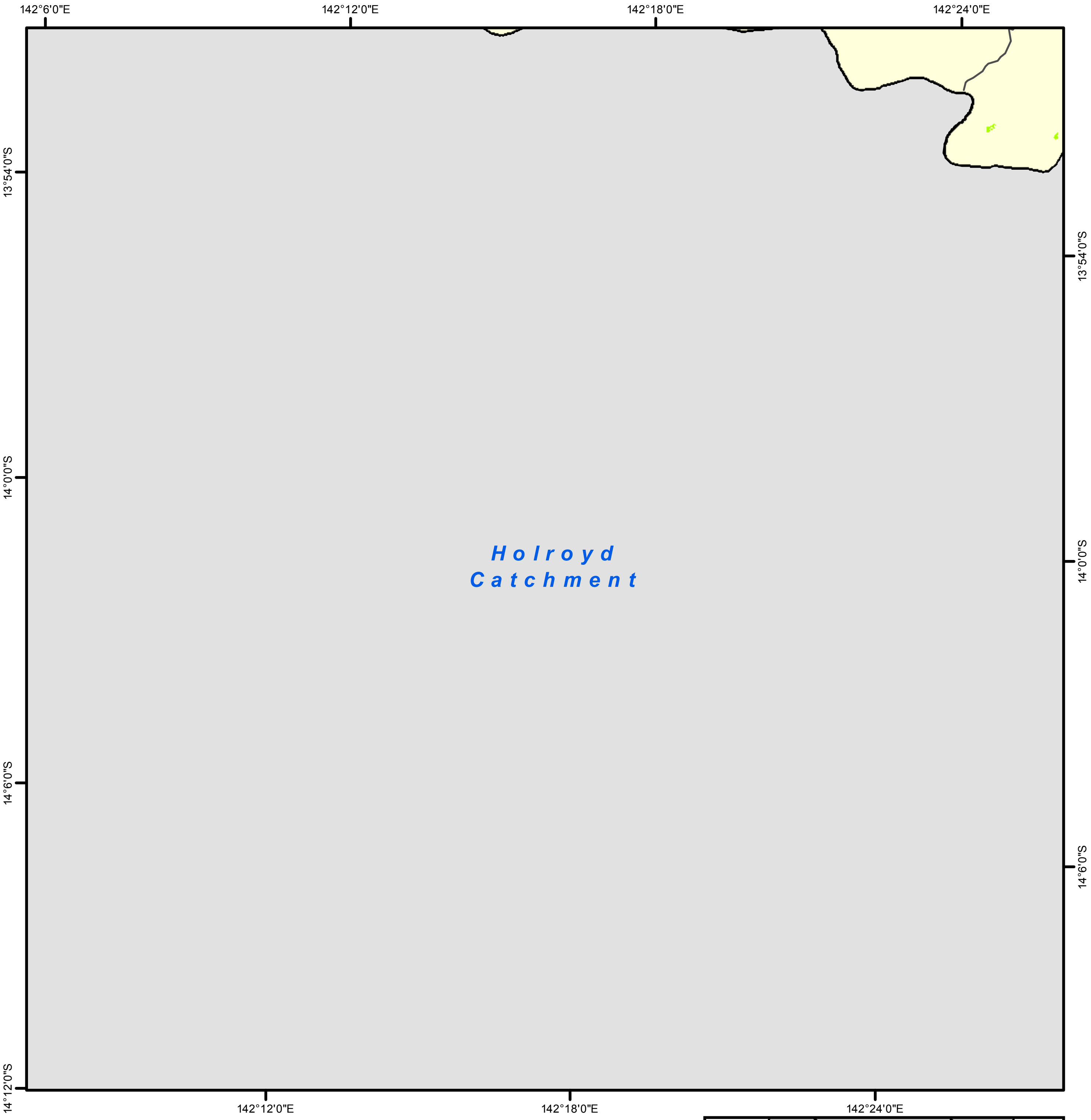
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





M3 Archer Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

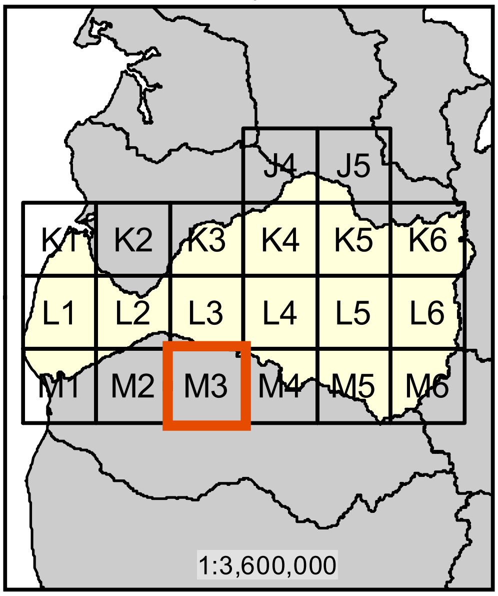
- Known Springs

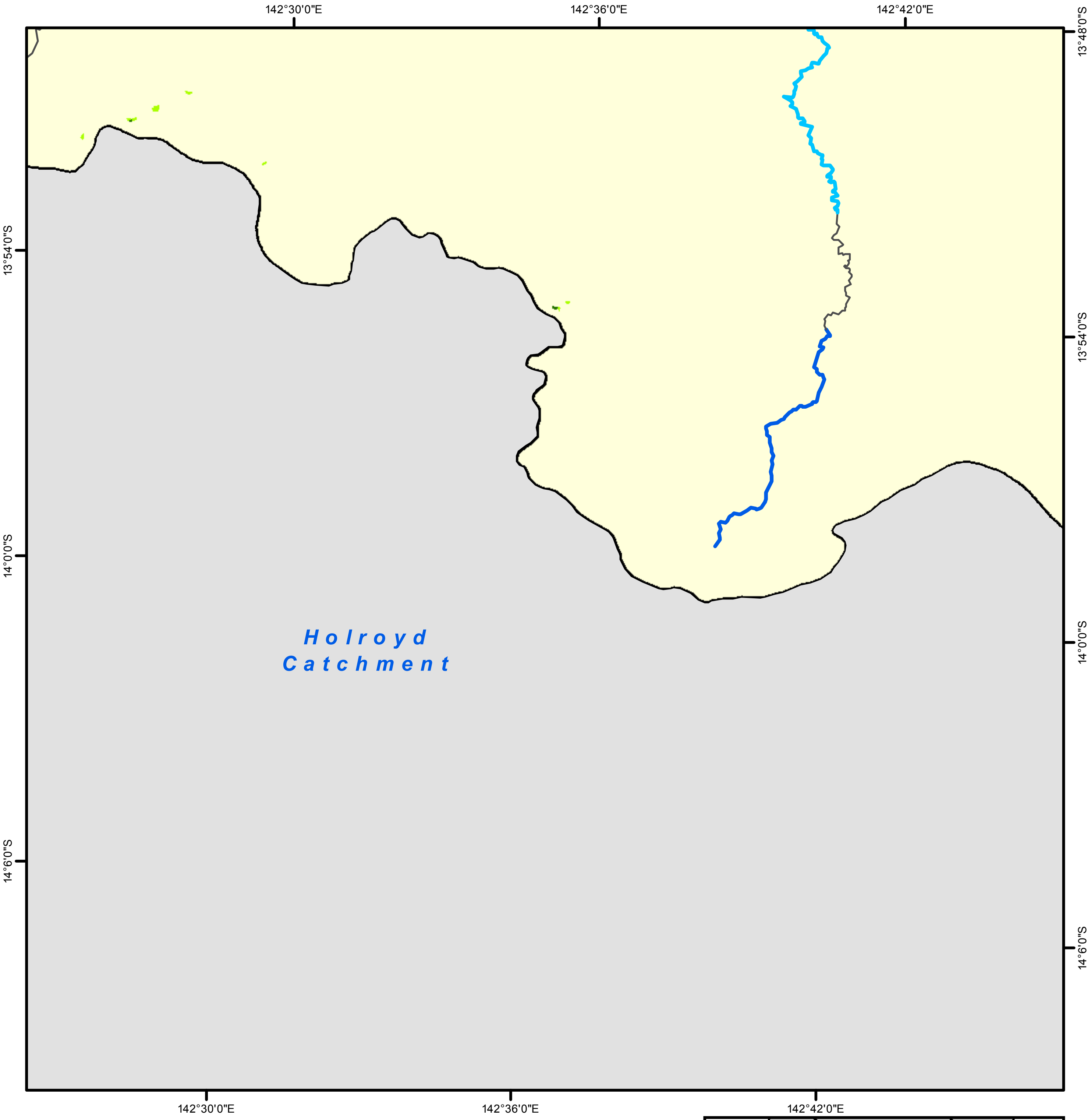
Potential Springs

- Highly Likely
- Likely

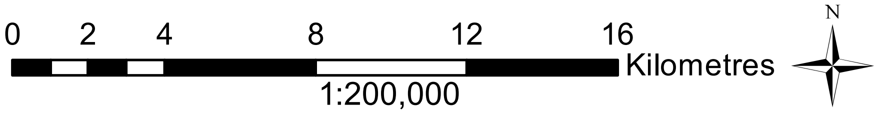
Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





M4 Archer Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

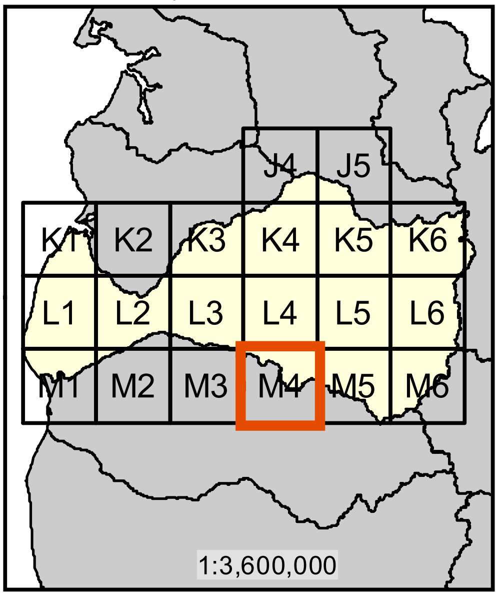
Likely

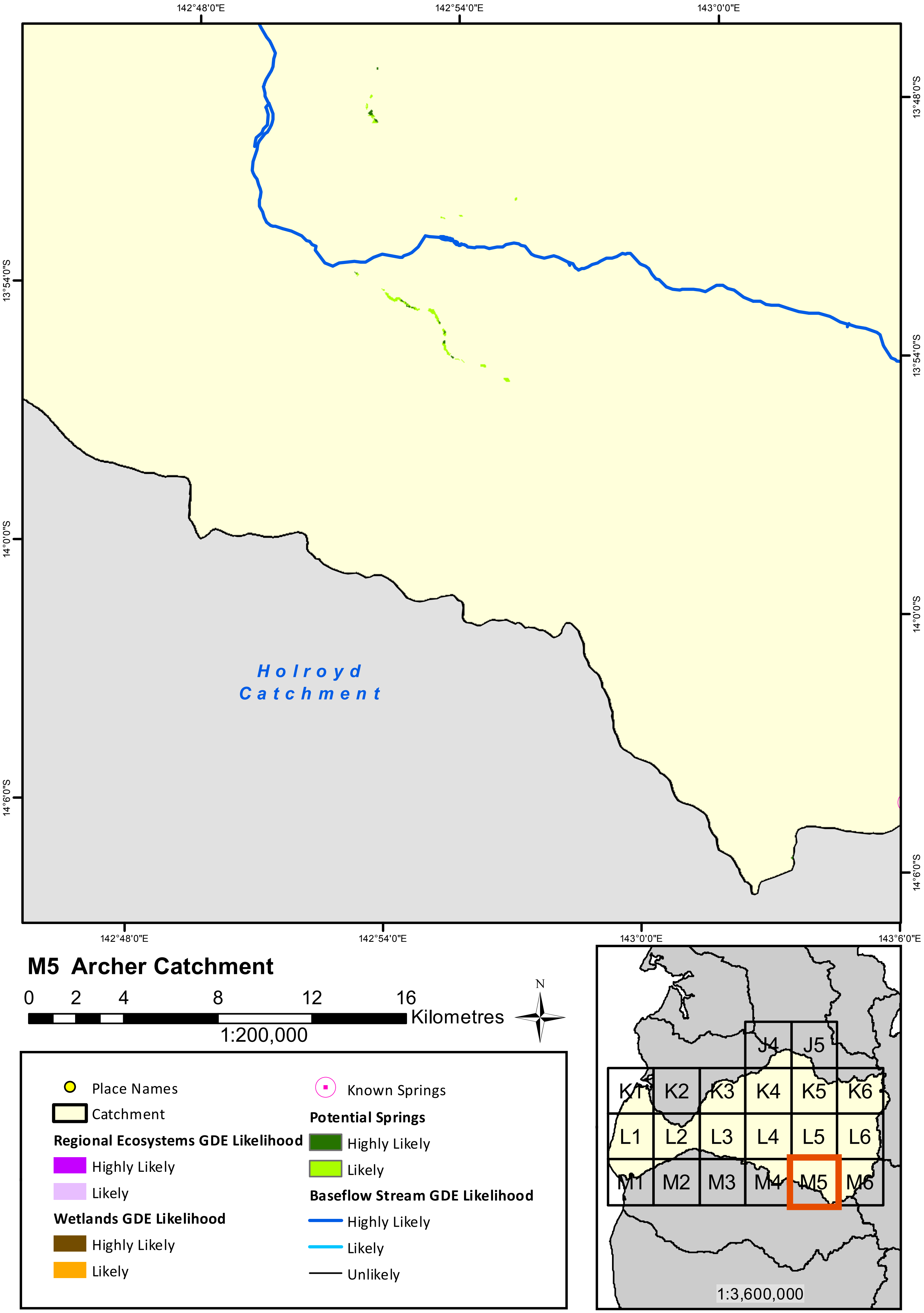
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely




142°48'0"E
142°54'0"E
143°0'0"E
143°6'0"E
13°48'0"S
13°54'0"S
14°0'0"S
14°6'0"S
Holroyd Catchment
M5 Archer Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
J4
J5
K1
K2
K3
K4
K5
K6
L1
L2
L3
L4
L5
L6
M1
M2
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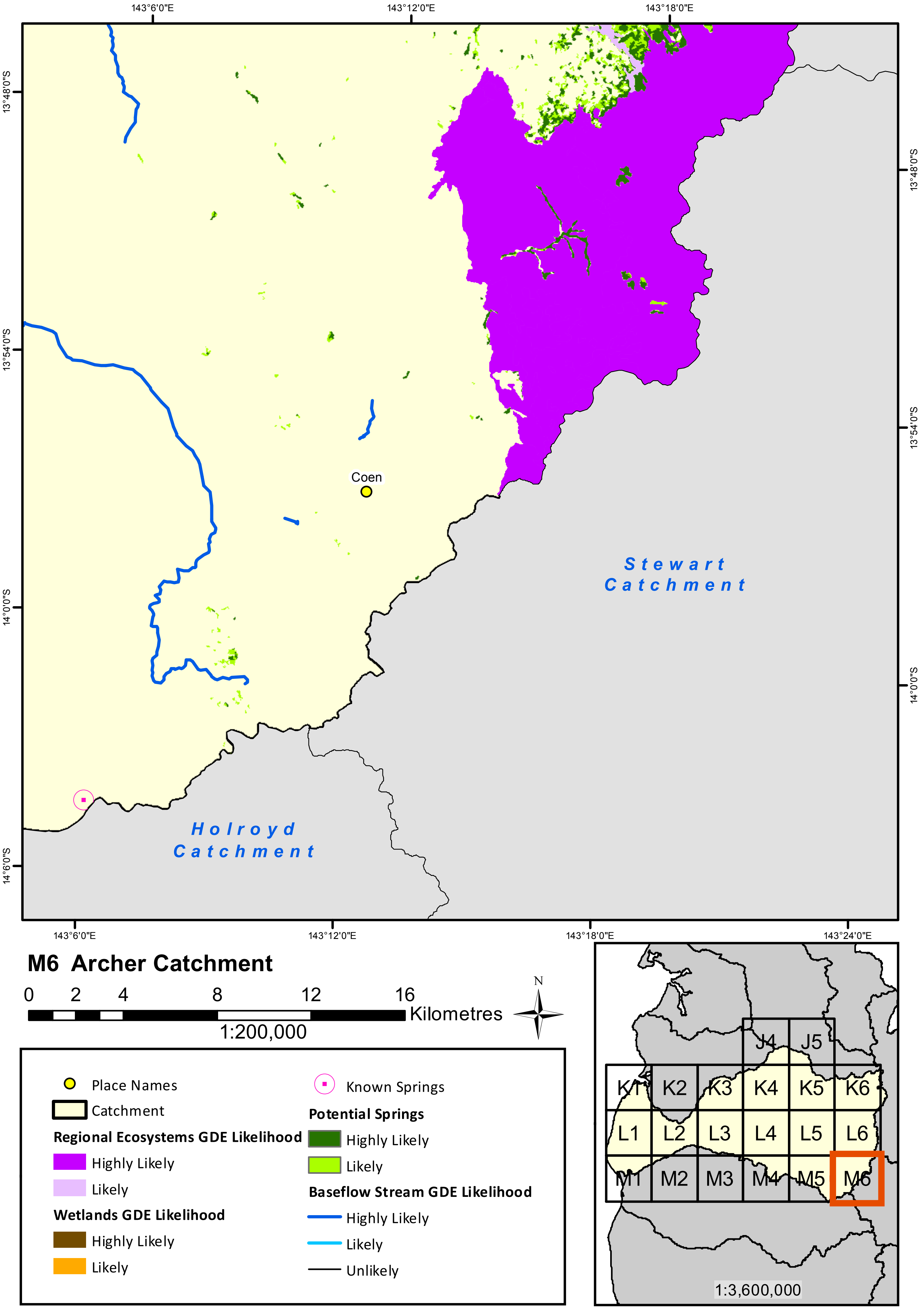
M4
M5
M6
1:3,600,000



143°6'0"E
143°12'0"E
143°18'0"E
143°24'0"E
13°48'0"S
13°54'0"S
14°0'0"S
14°6'0"S
Coen
Stewart Catchment
Holroyd Catchment
M6 Archer Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
J4
J5
K1
K2
K3
K4
K5
K6
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L4
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M1
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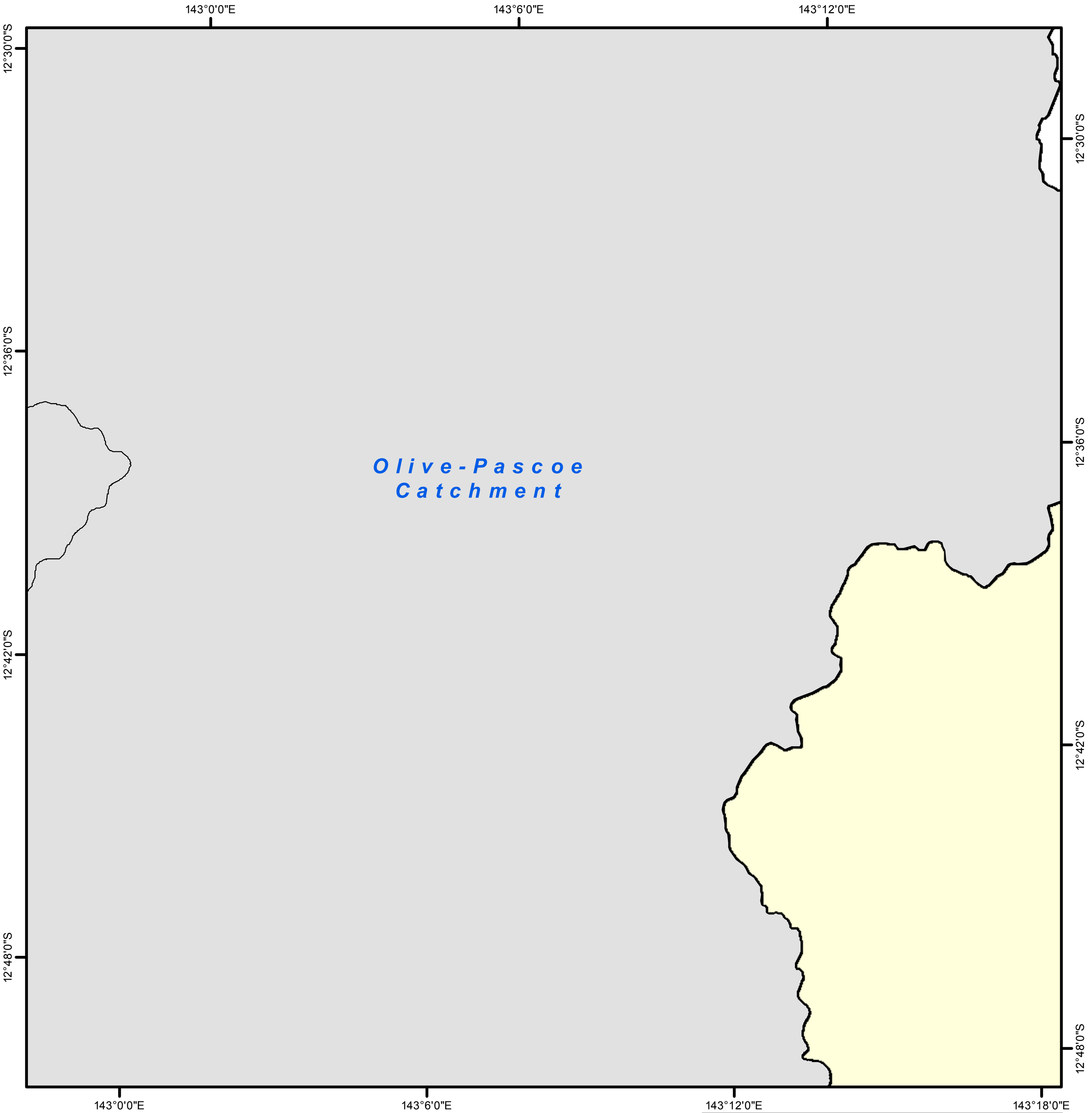
M4
M5
M6
1:3,600,000



I6 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

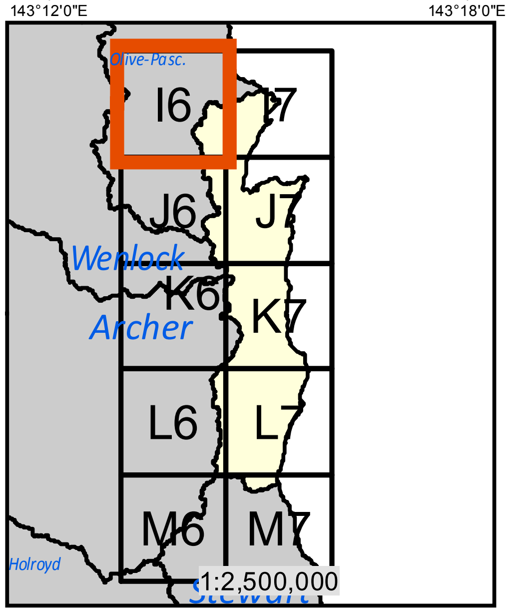
Likely

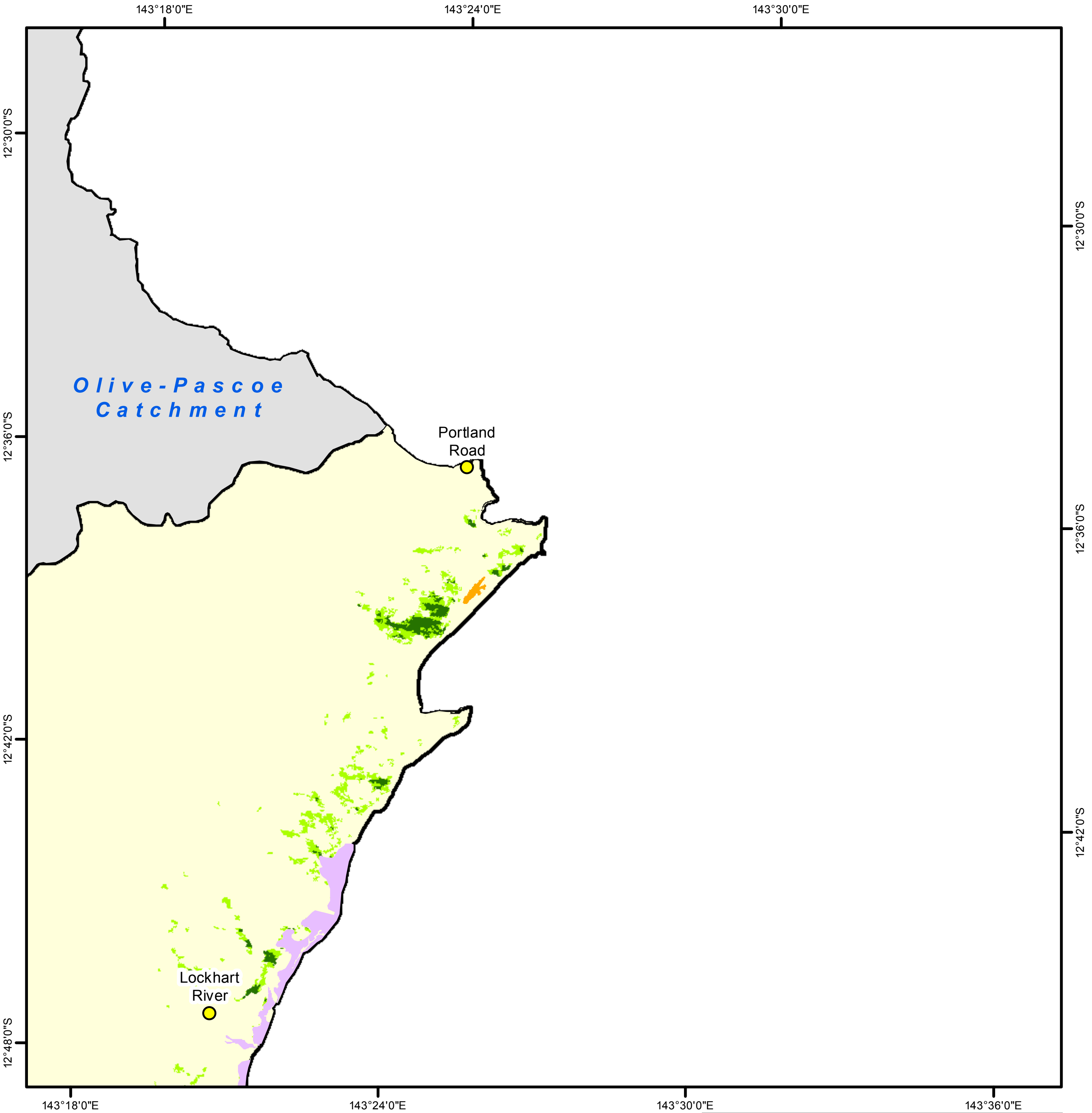
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



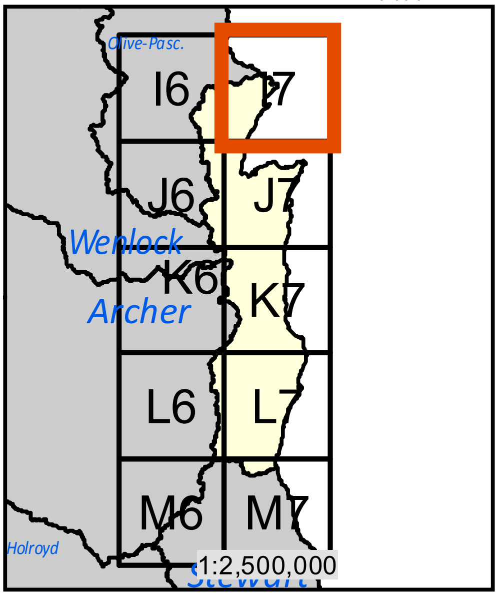


I7 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

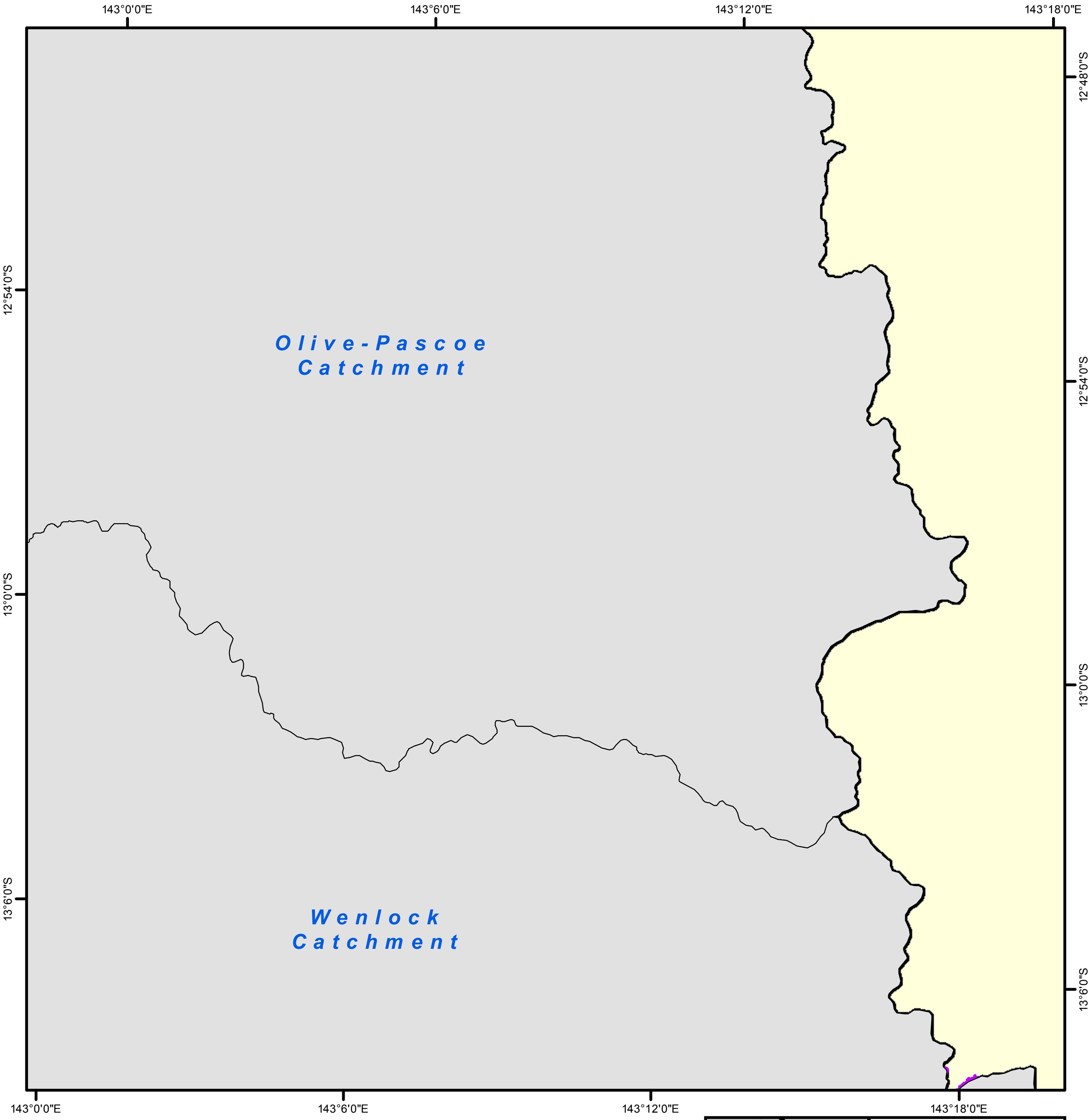
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



J6 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

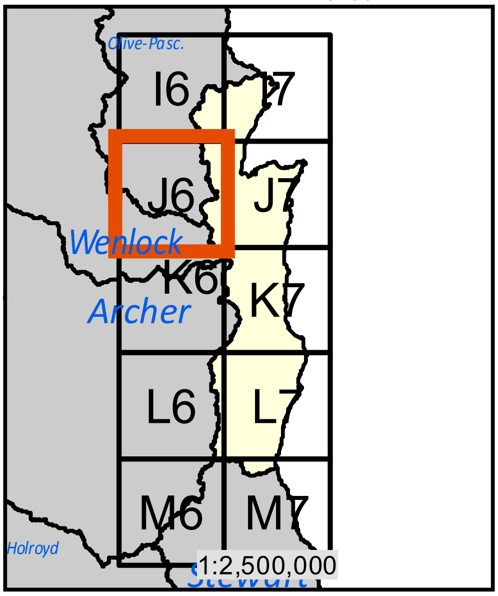
Likely

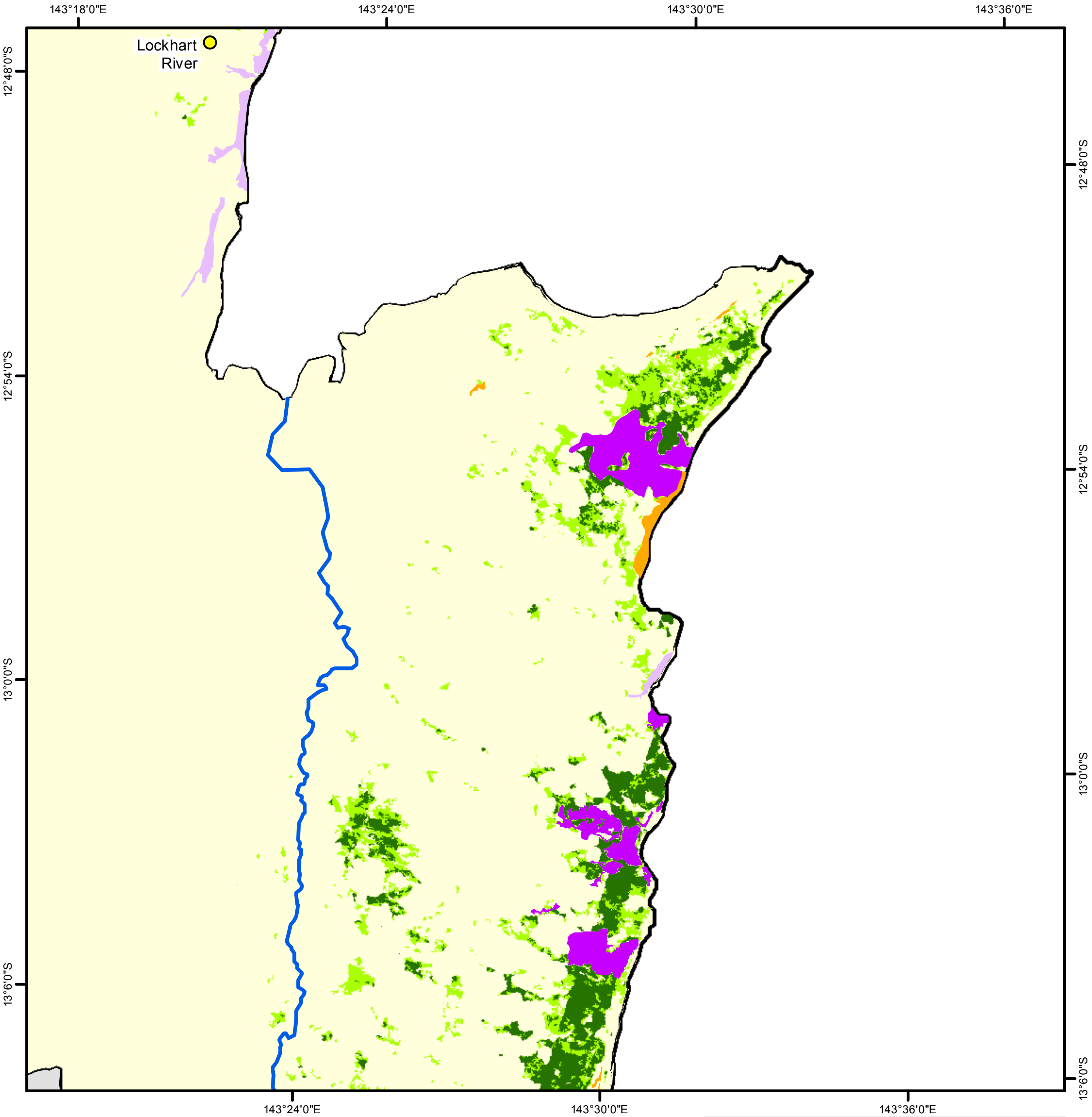
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





J7 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment

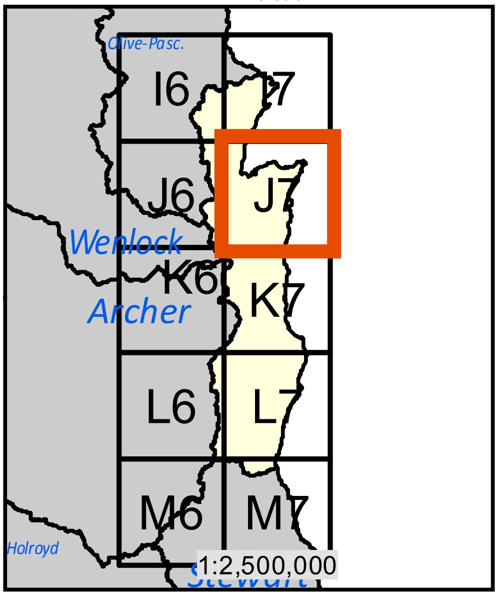
Regional Ecosystems GDE Likelihood
Highly Likely
Likely

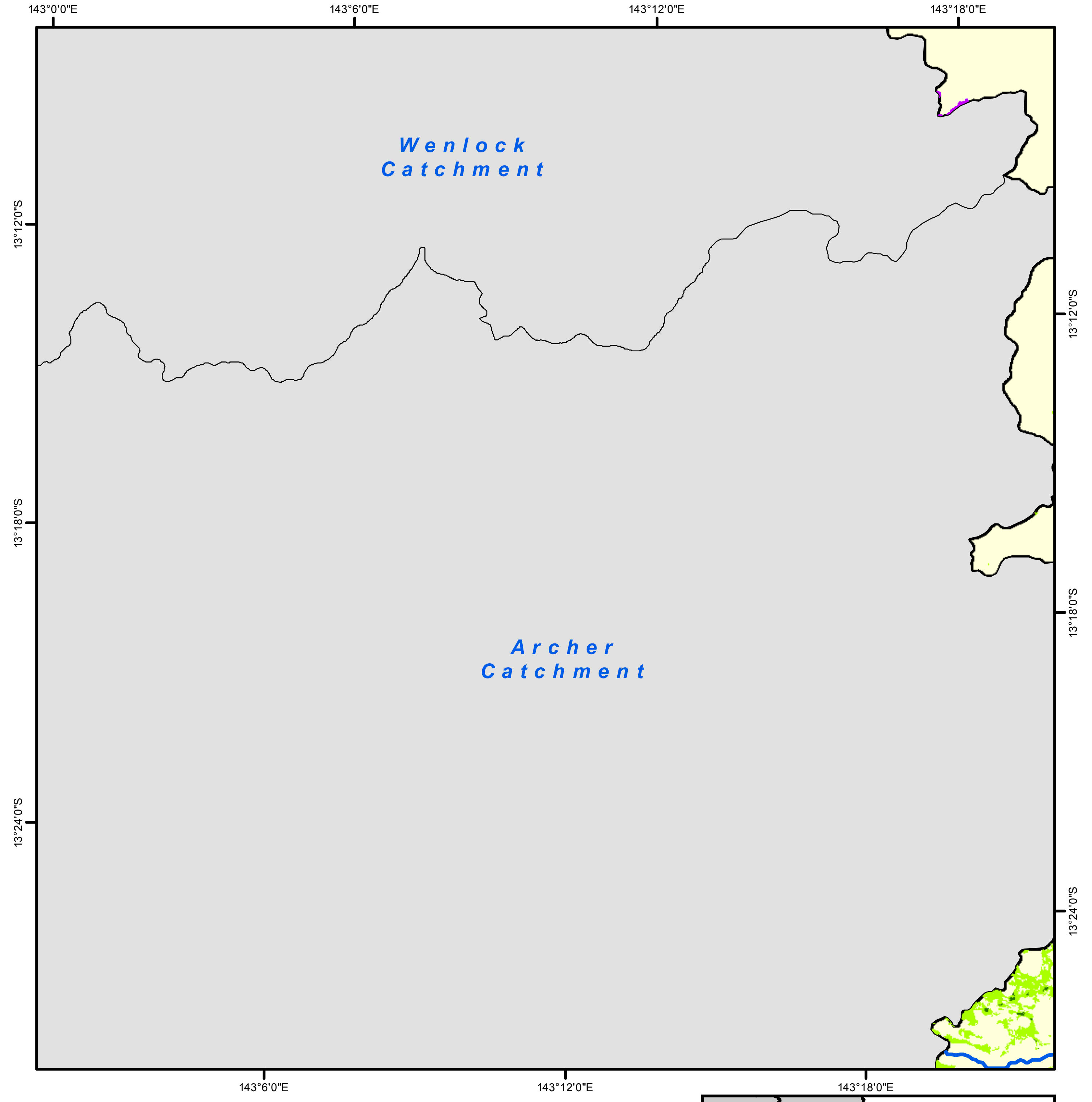
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs

Potential Springs
Highly Likely
Likely

Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





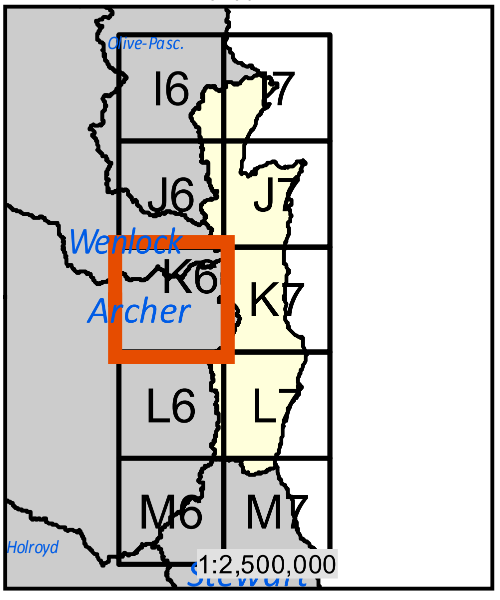
K6 Lockhart Catchment

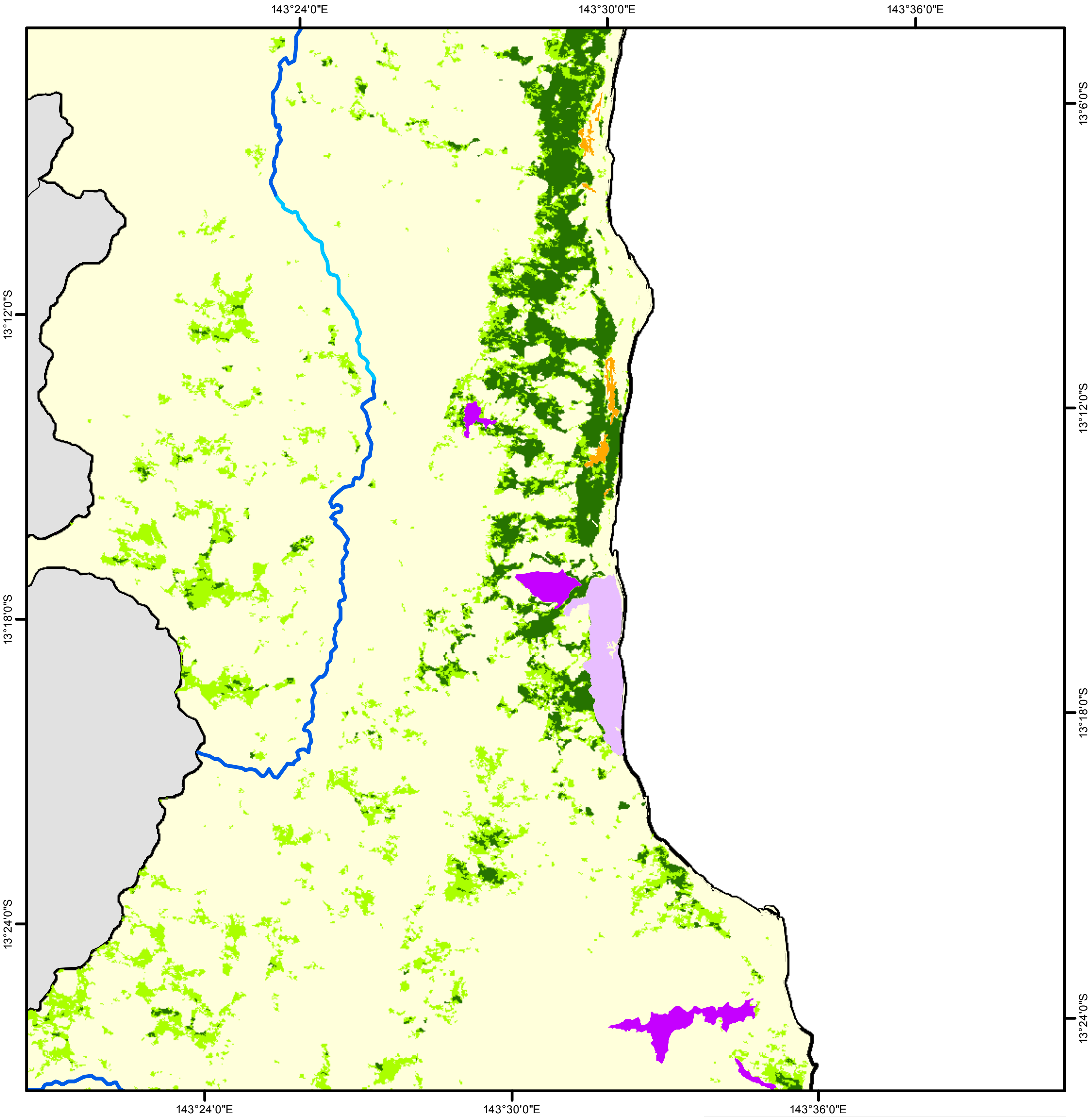
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



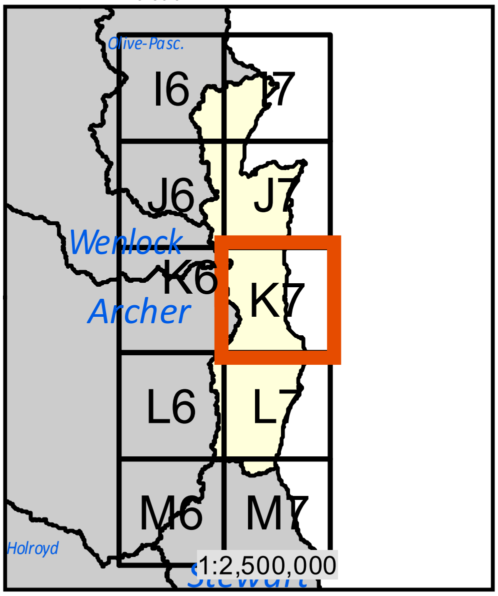


K7 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



- Place Names
- Catchment

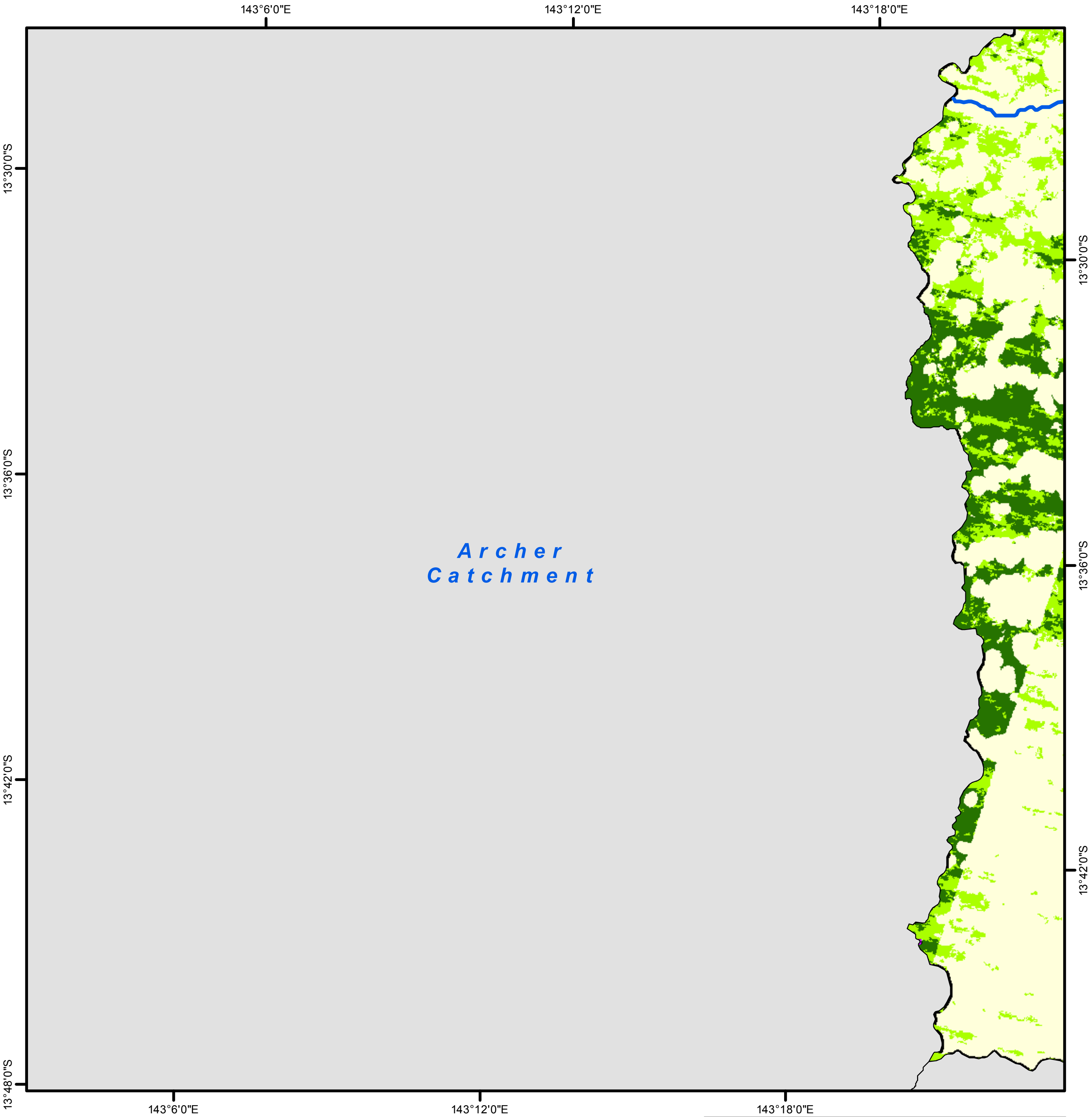
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely



L6 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

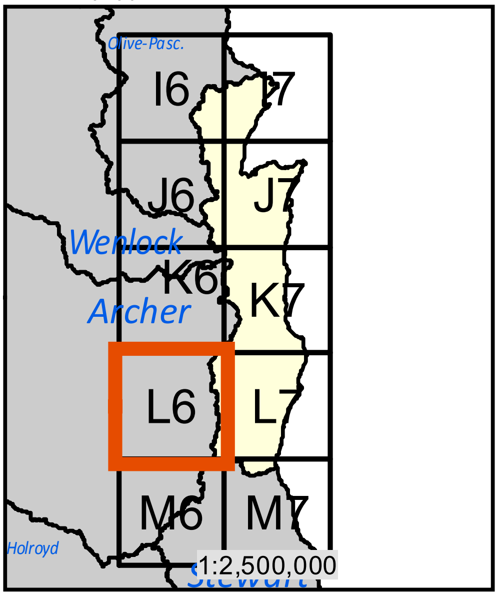
- Known Springs

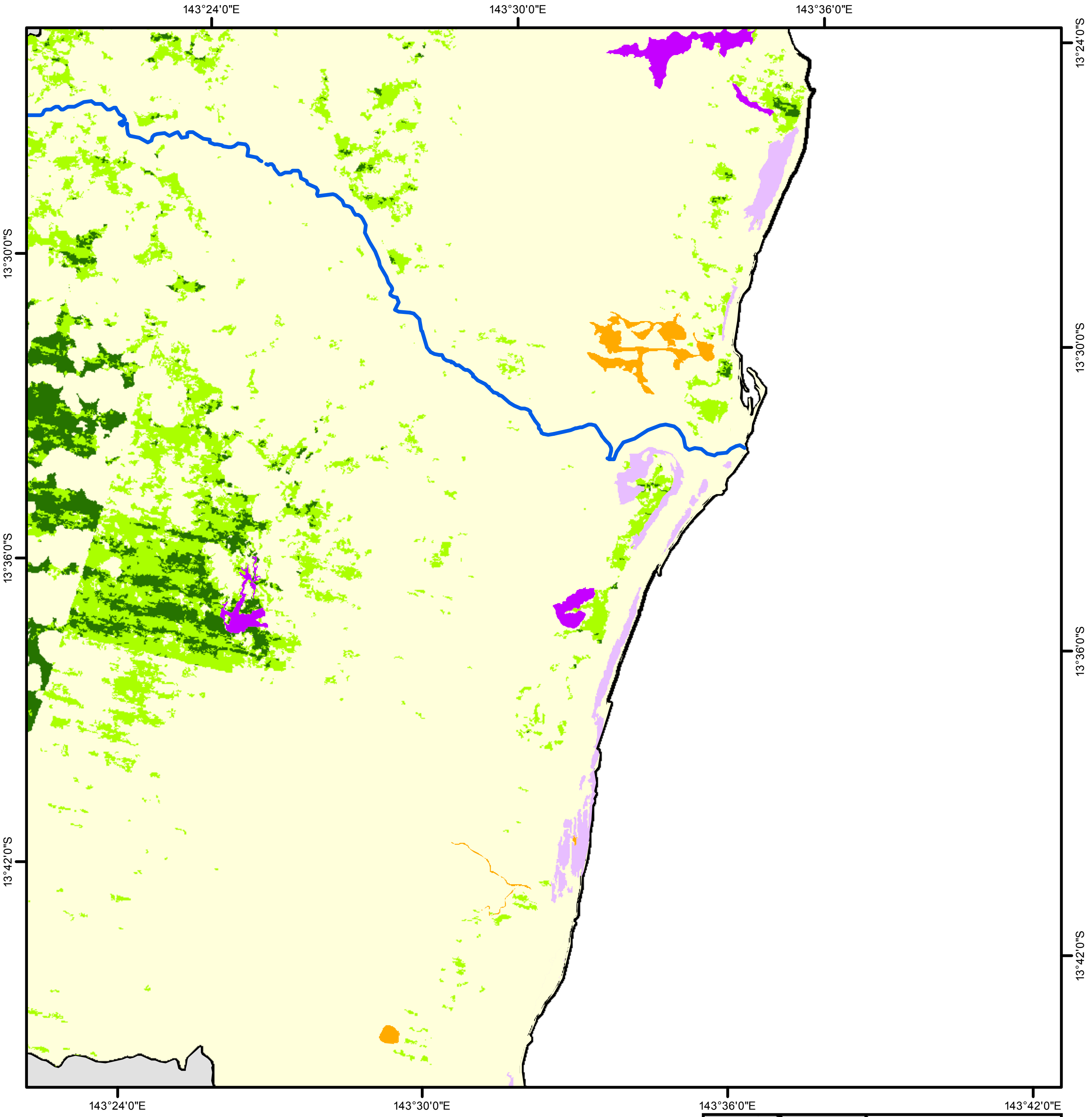
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





L7 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

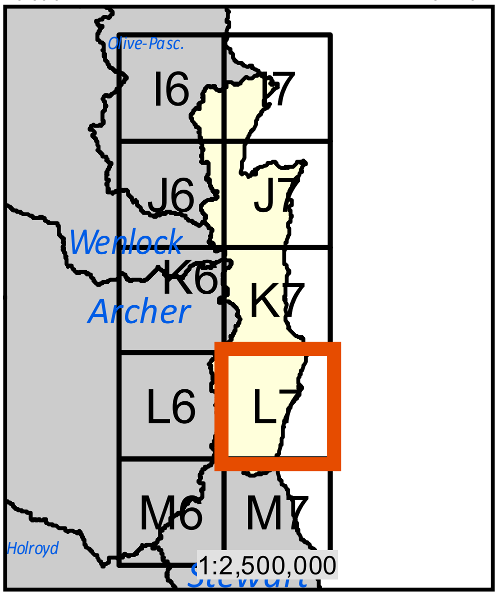
- Known Springs

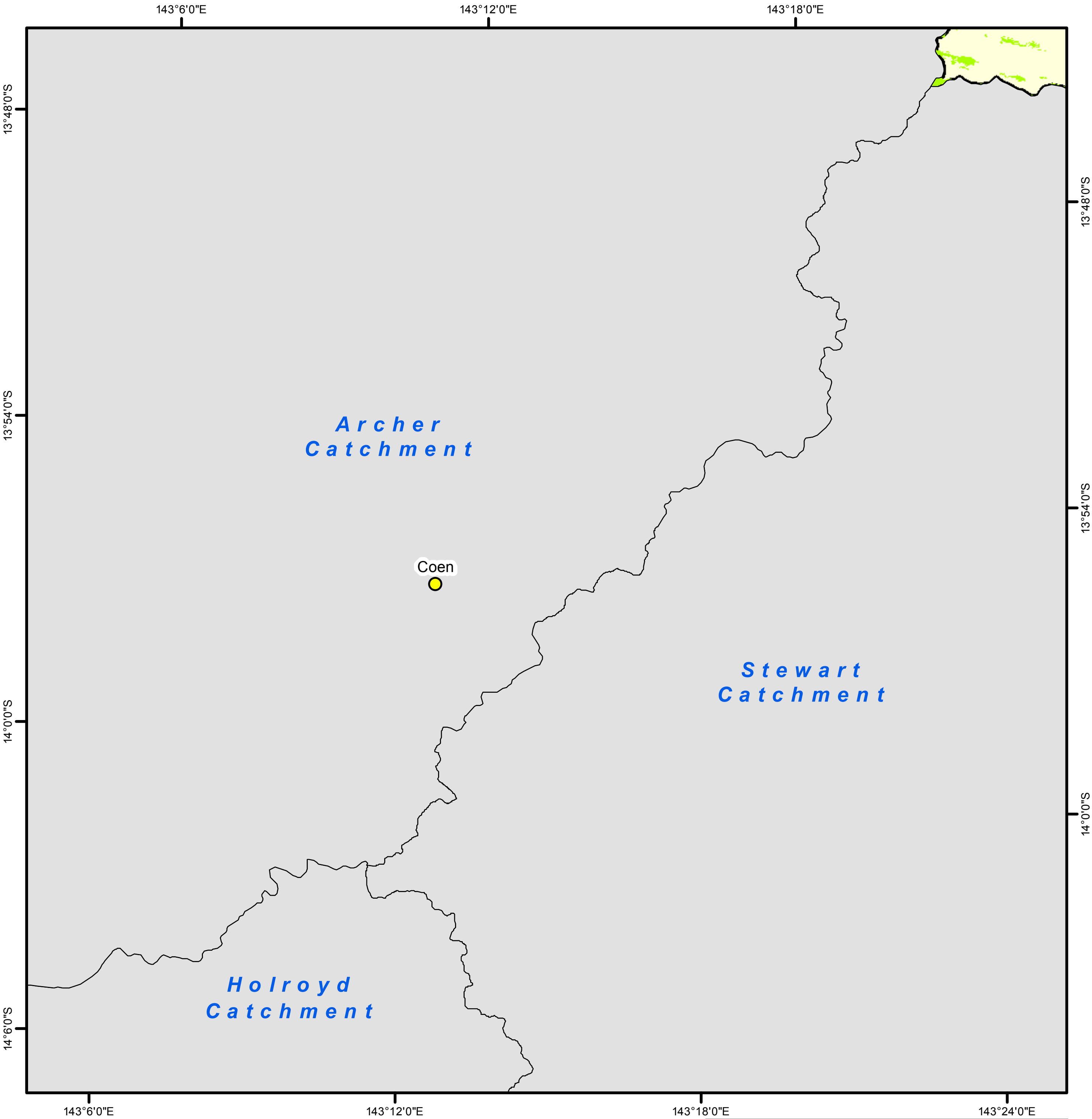
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely



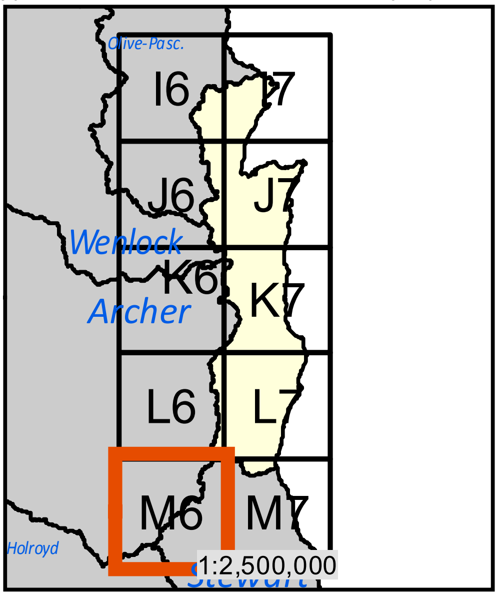


M6 Lockhart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names
Catchment

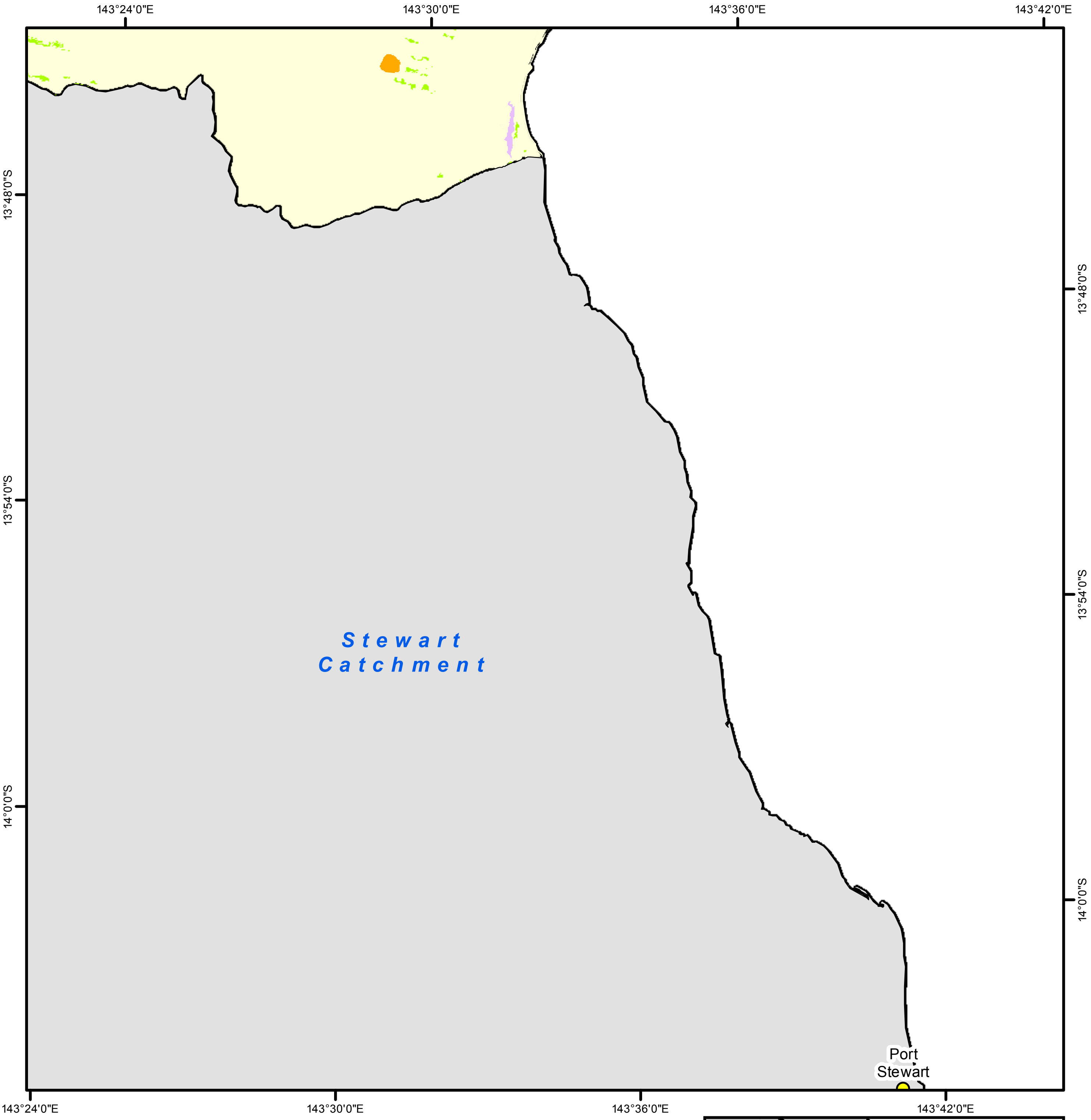
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

Wetlands GDE Likelihood
- Highly Likely
- Likely

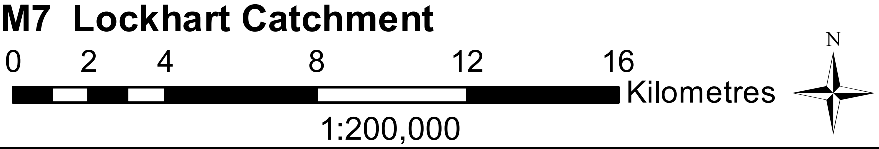
Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely



M7 Lockhart Catchment



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

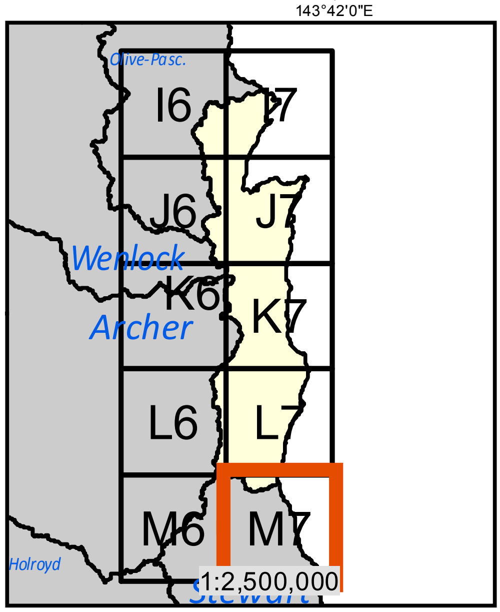
- Known Springs

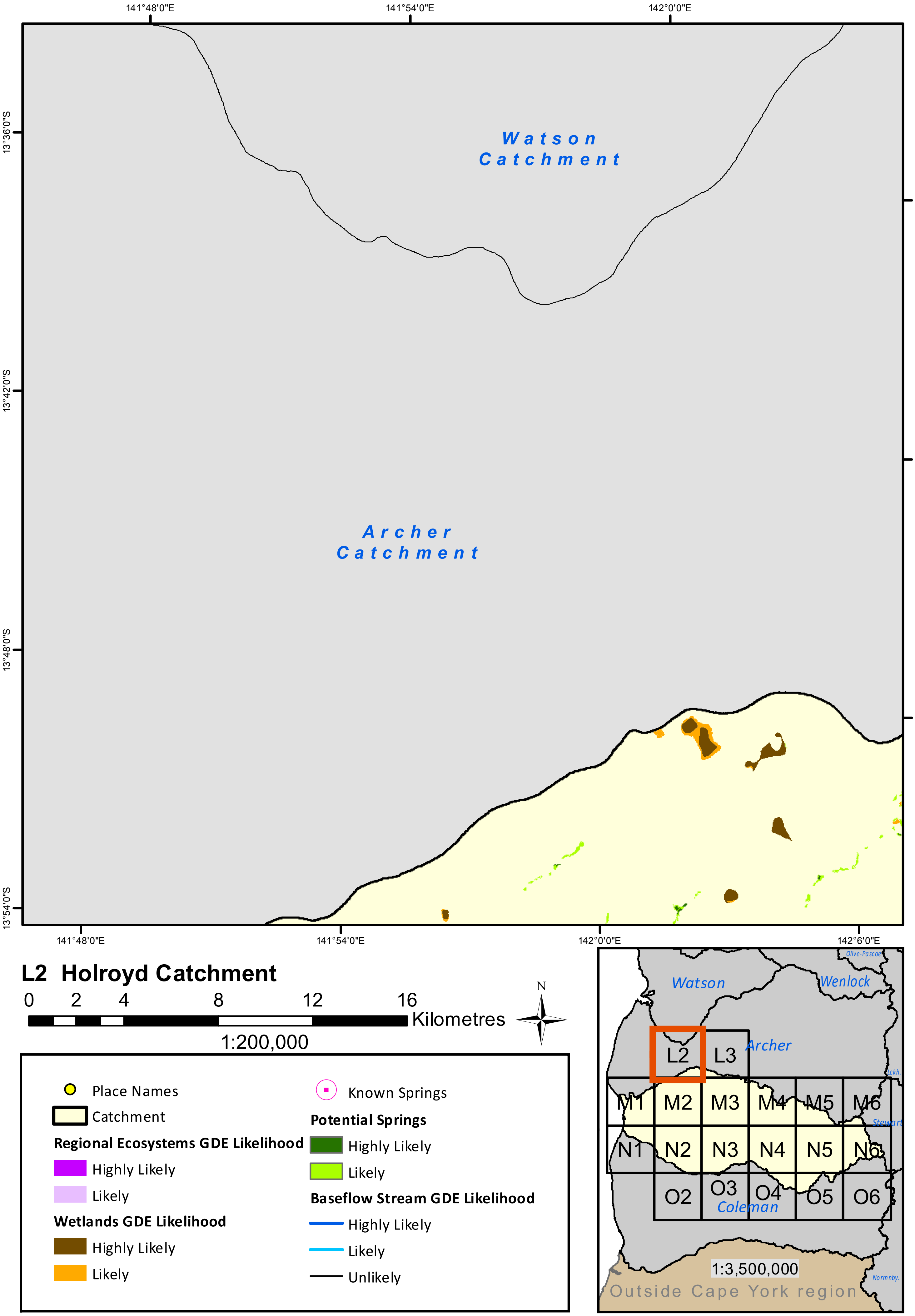
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely

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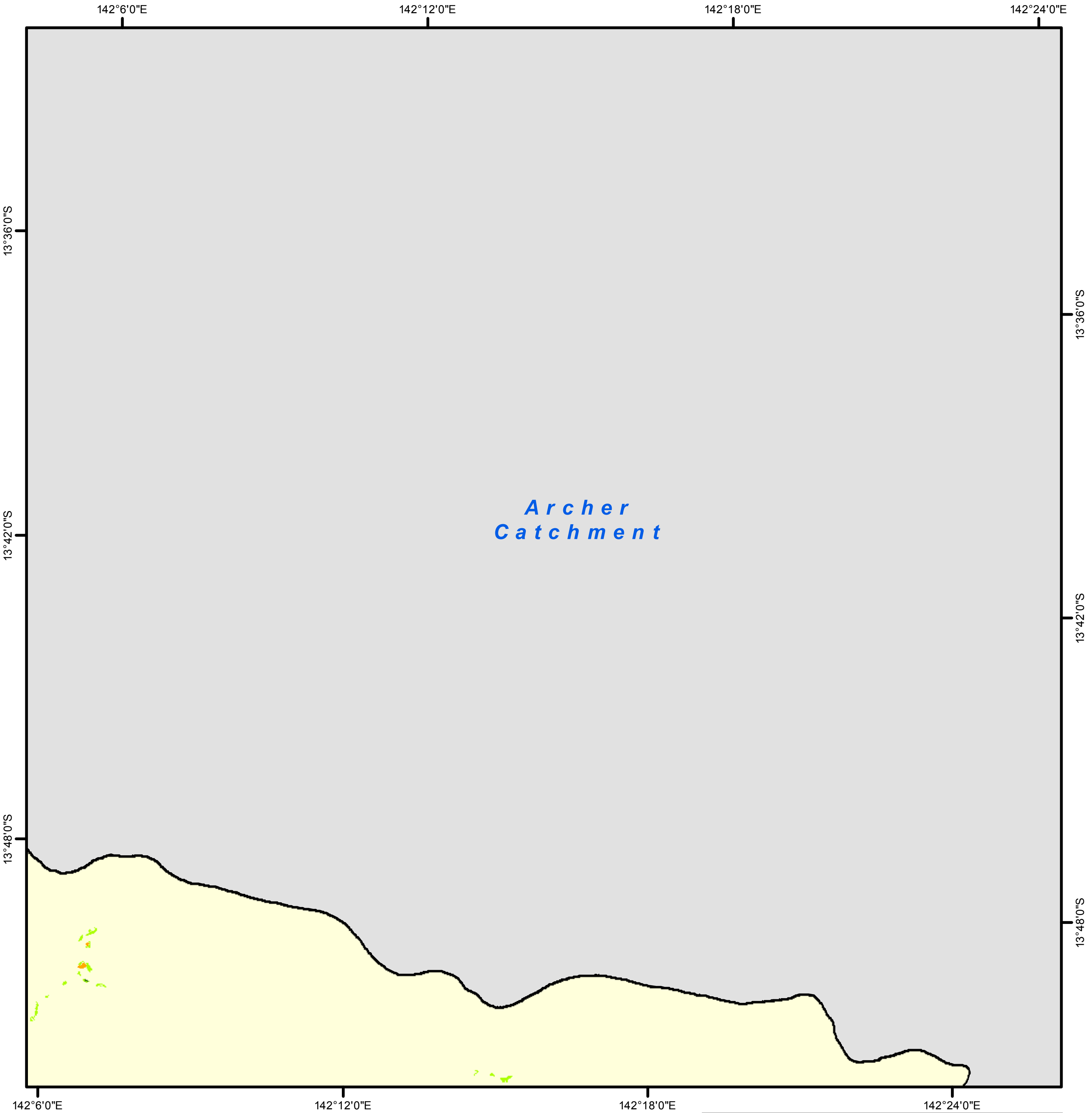
13°36'0"S
13°42'0"S
13°48'0"S
13°54'0"S
Watson Catchment
Archer Catchment
L2 Holroyd Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Watson
Wenlock
Archer
L2
L3
M1
M2
M3
M4
M5
M6
N1
N2
N3
N4
N5
N6
O2
O3
O4
O5
O6
Coleman
1:3,500,000
Outside Cape York region



L3 Holroyd Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

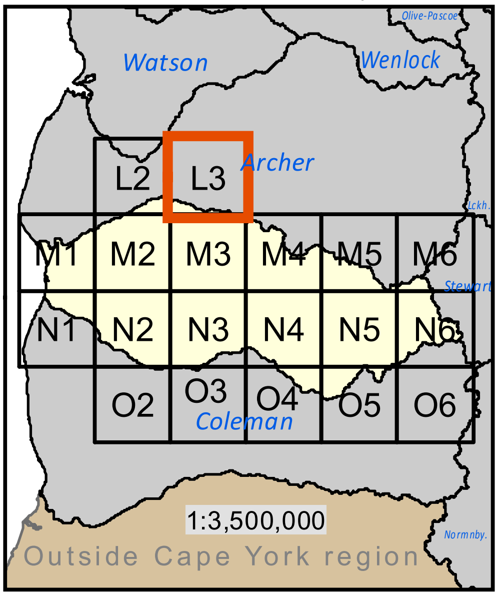
Likely

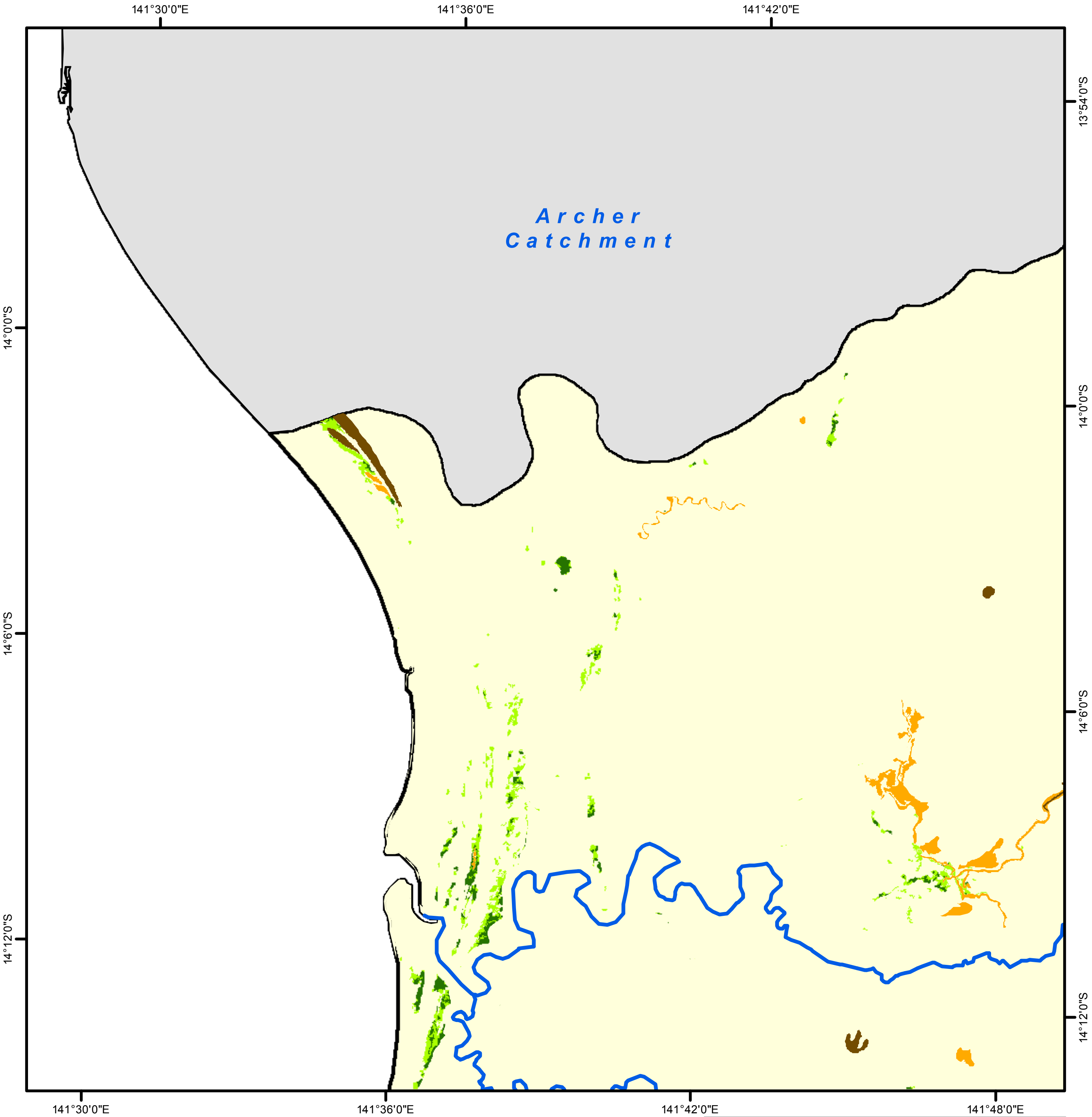
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





M1 Holroyd Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

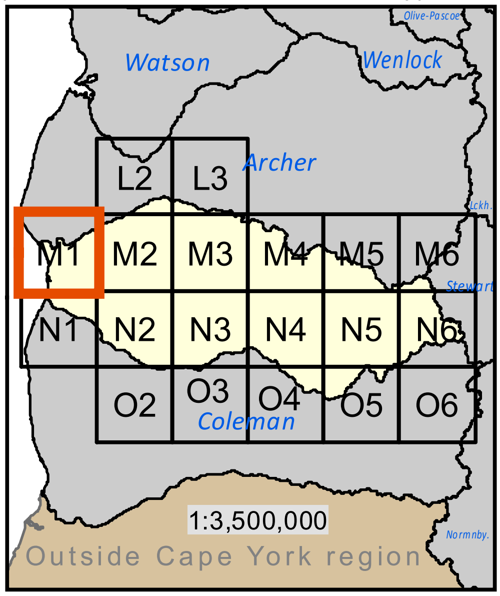
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

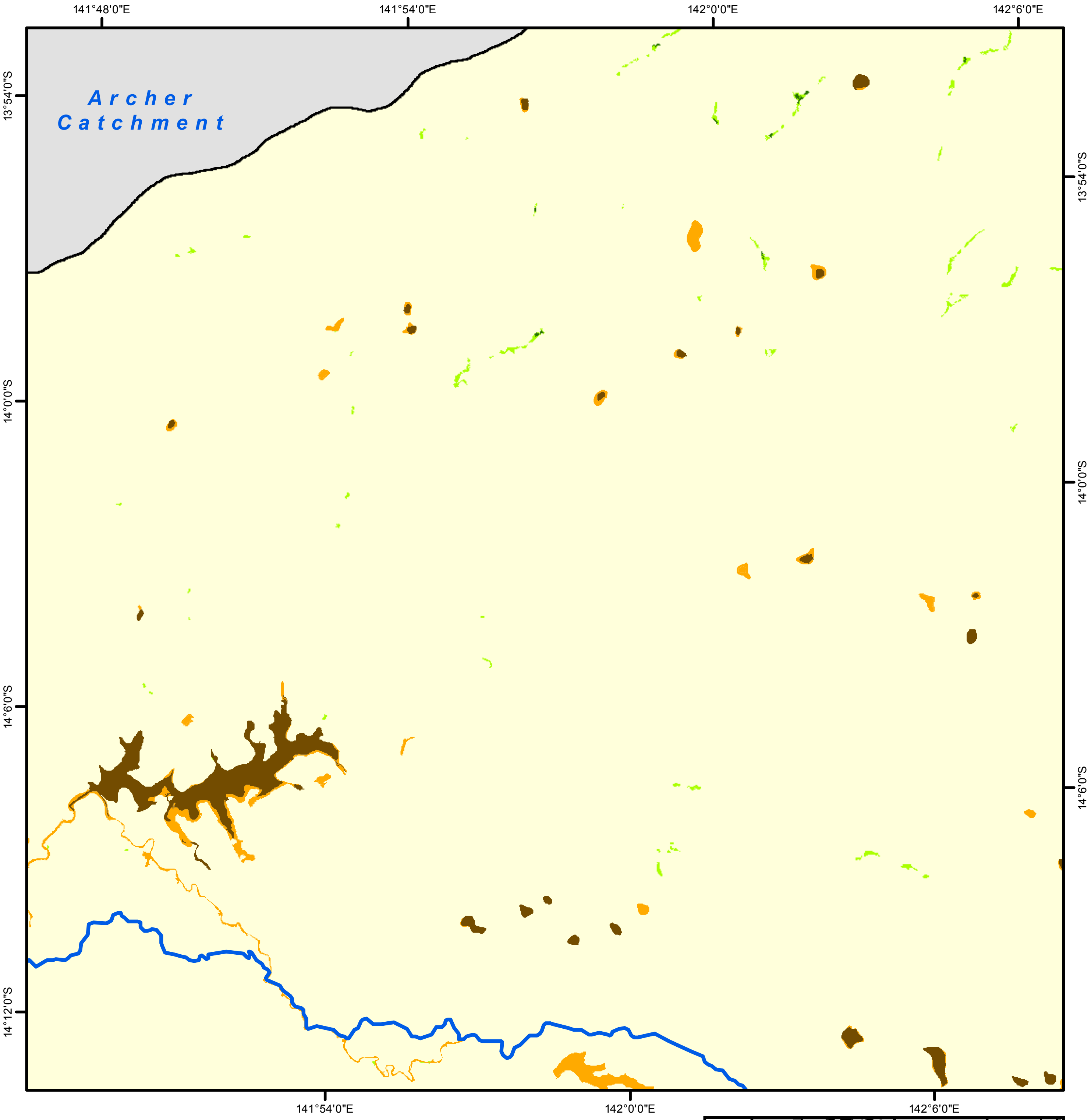
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





M2 Holroyd Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

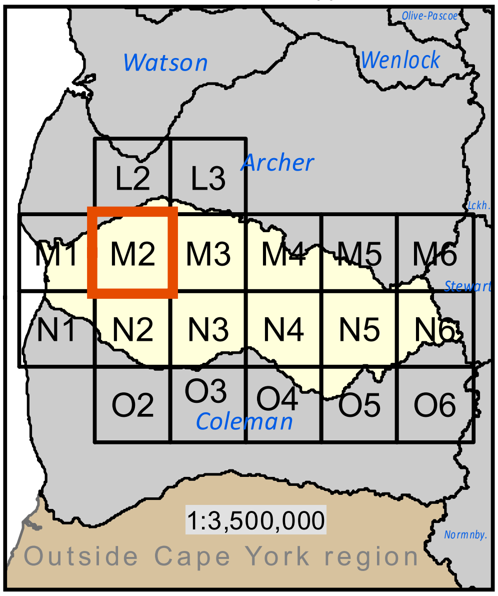
- Known Springs

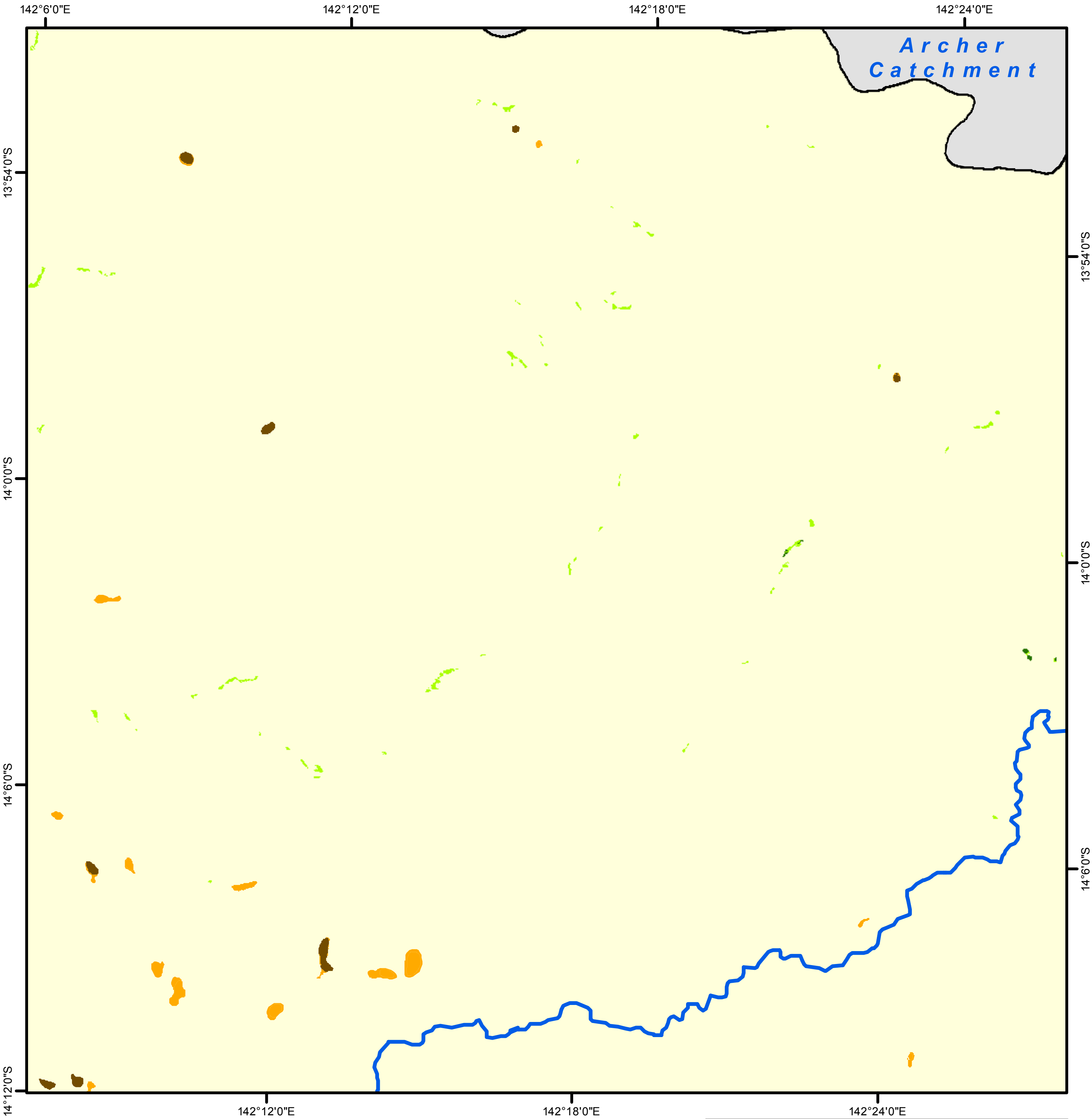
Potential Springs

- Highly Likely
- Likely

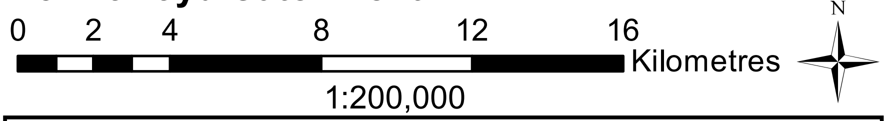
Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





M3 Holroyd Catchment



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

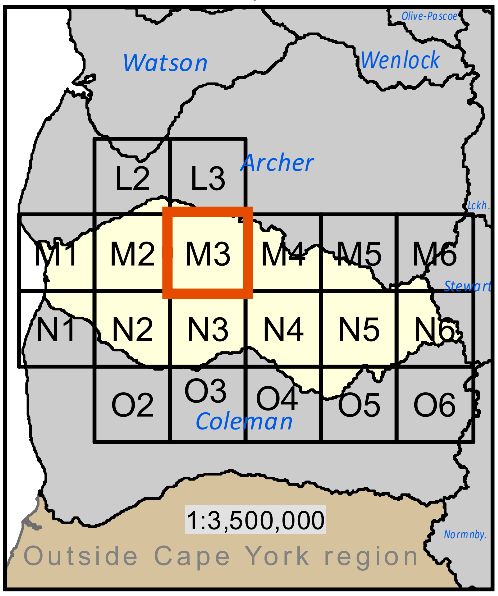
- Known Springs

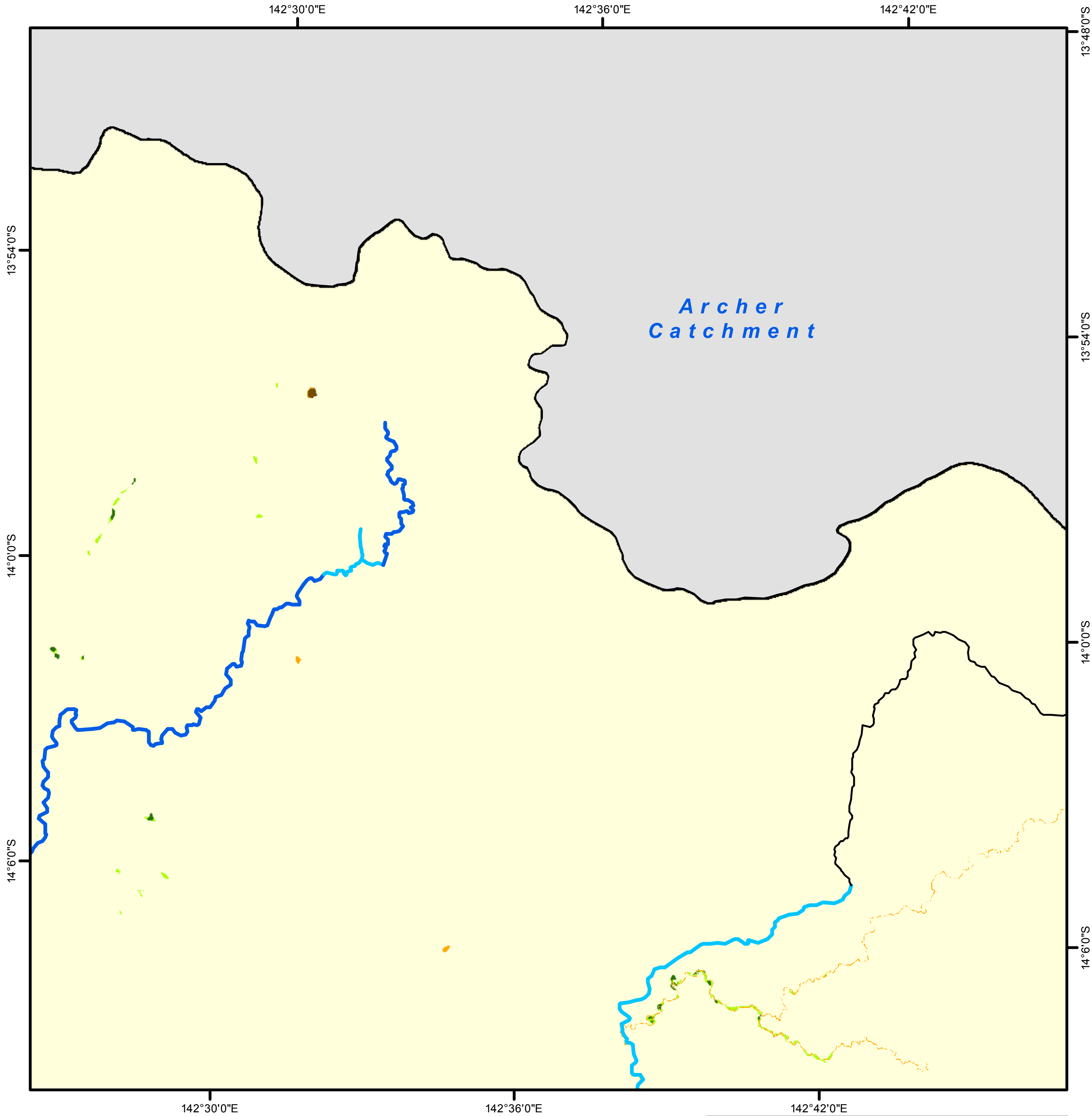
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





M4 Holroyd Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment

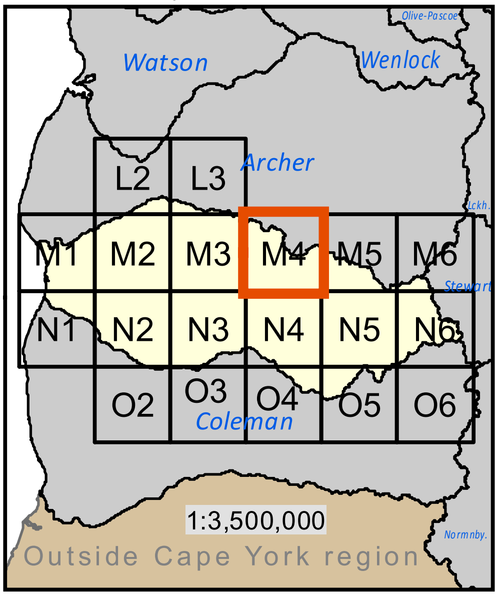
Regional Ecosystems GDE Likelihood
Highly Likely
Likely

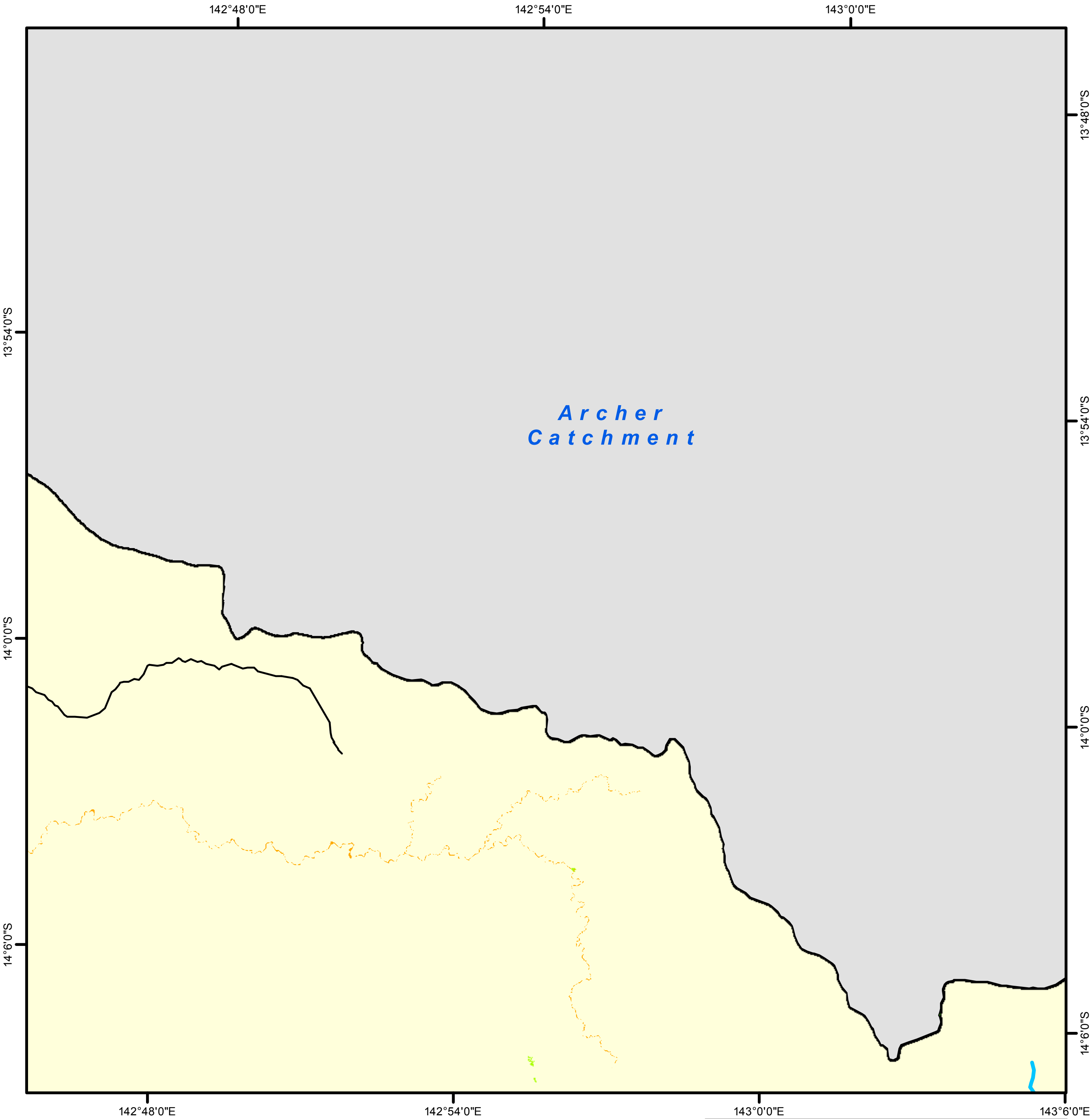
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs

Potential Springs
Highly Likely
Likely

Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





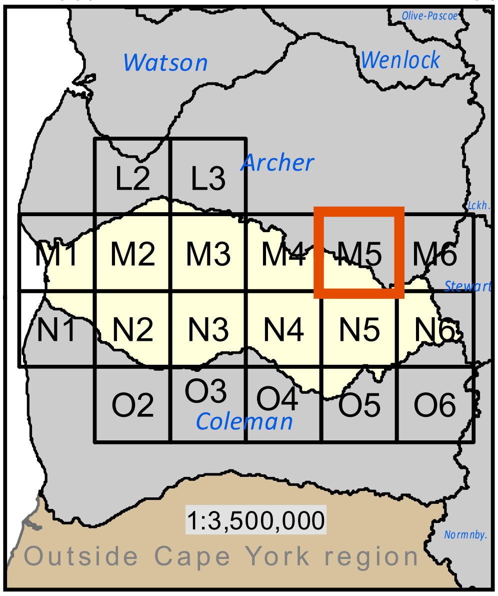
M5 Holroyd Catchment

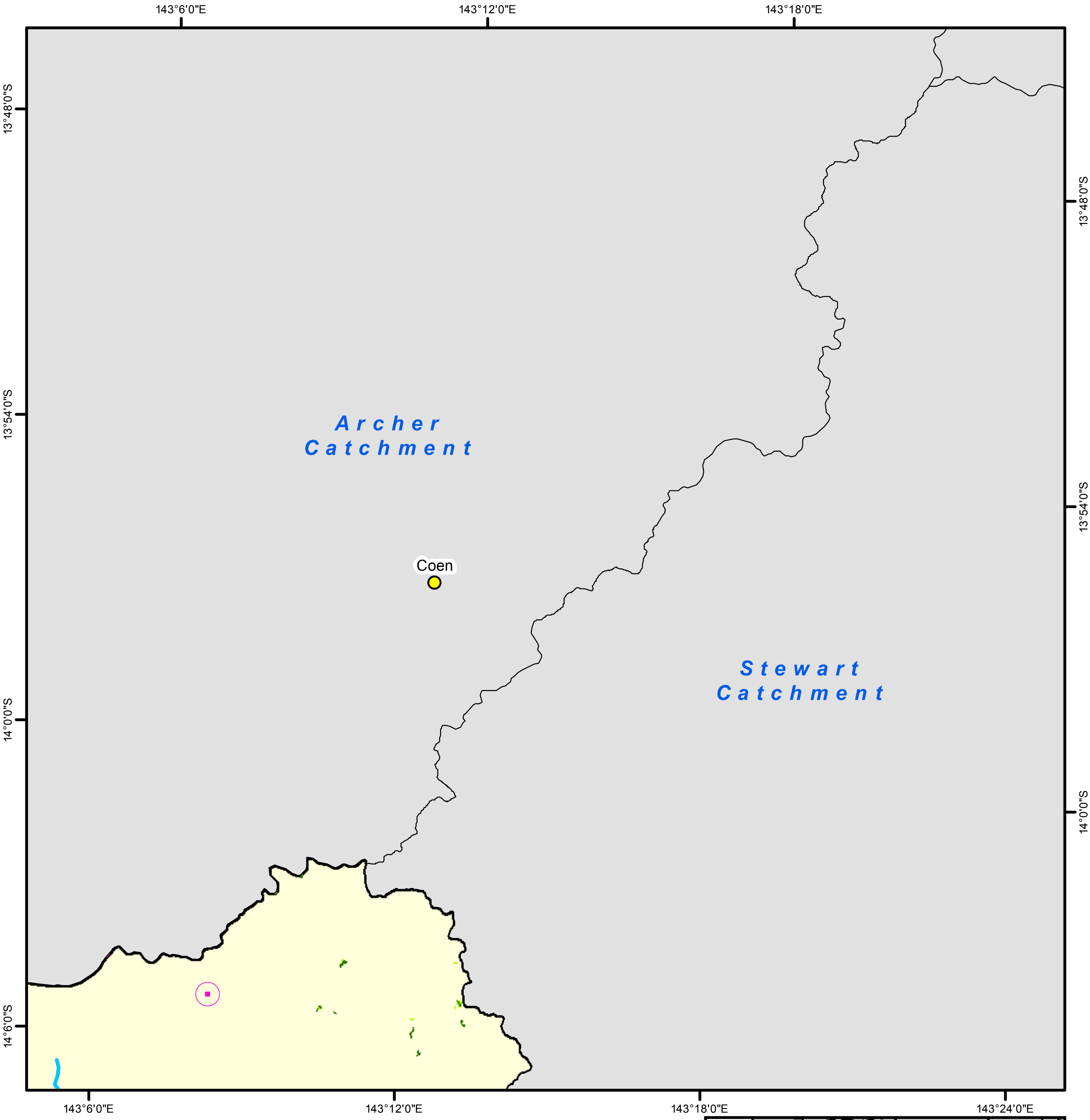
0 2 4 8 12 16 Kilometres

1:200,000

N

Legend	
Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





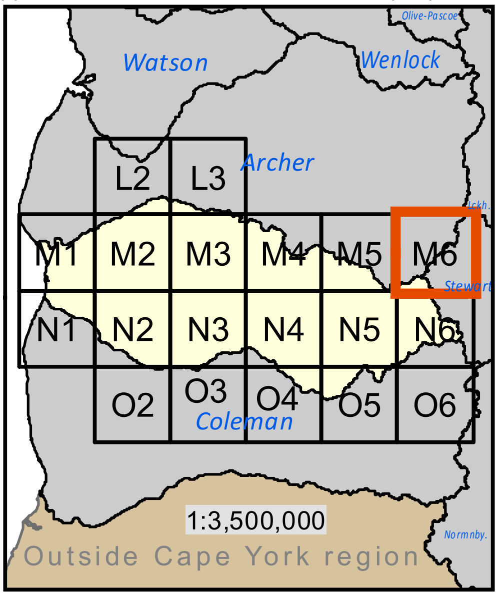
M6 Holroyd Catchment

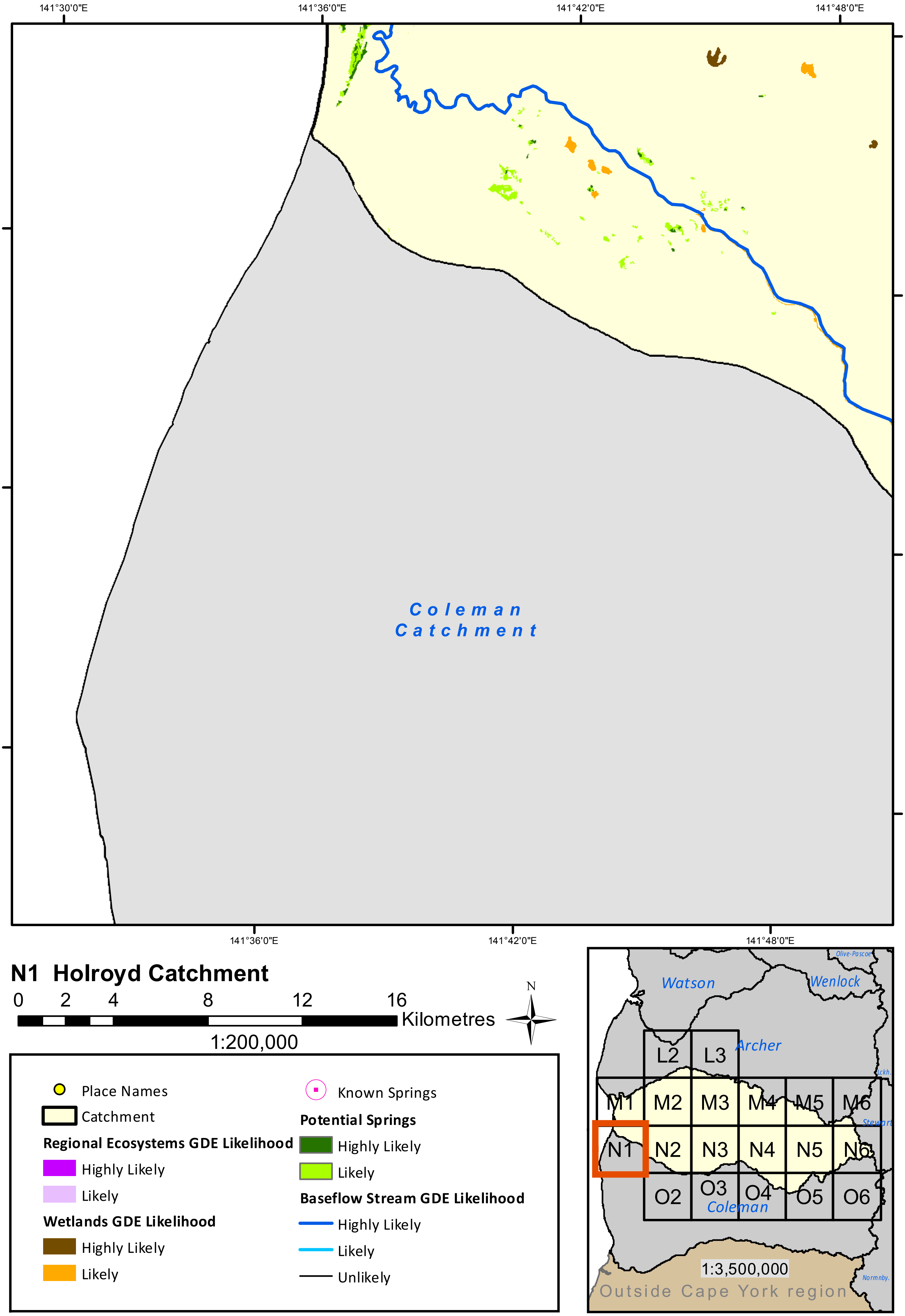
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely

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141°36'0"E
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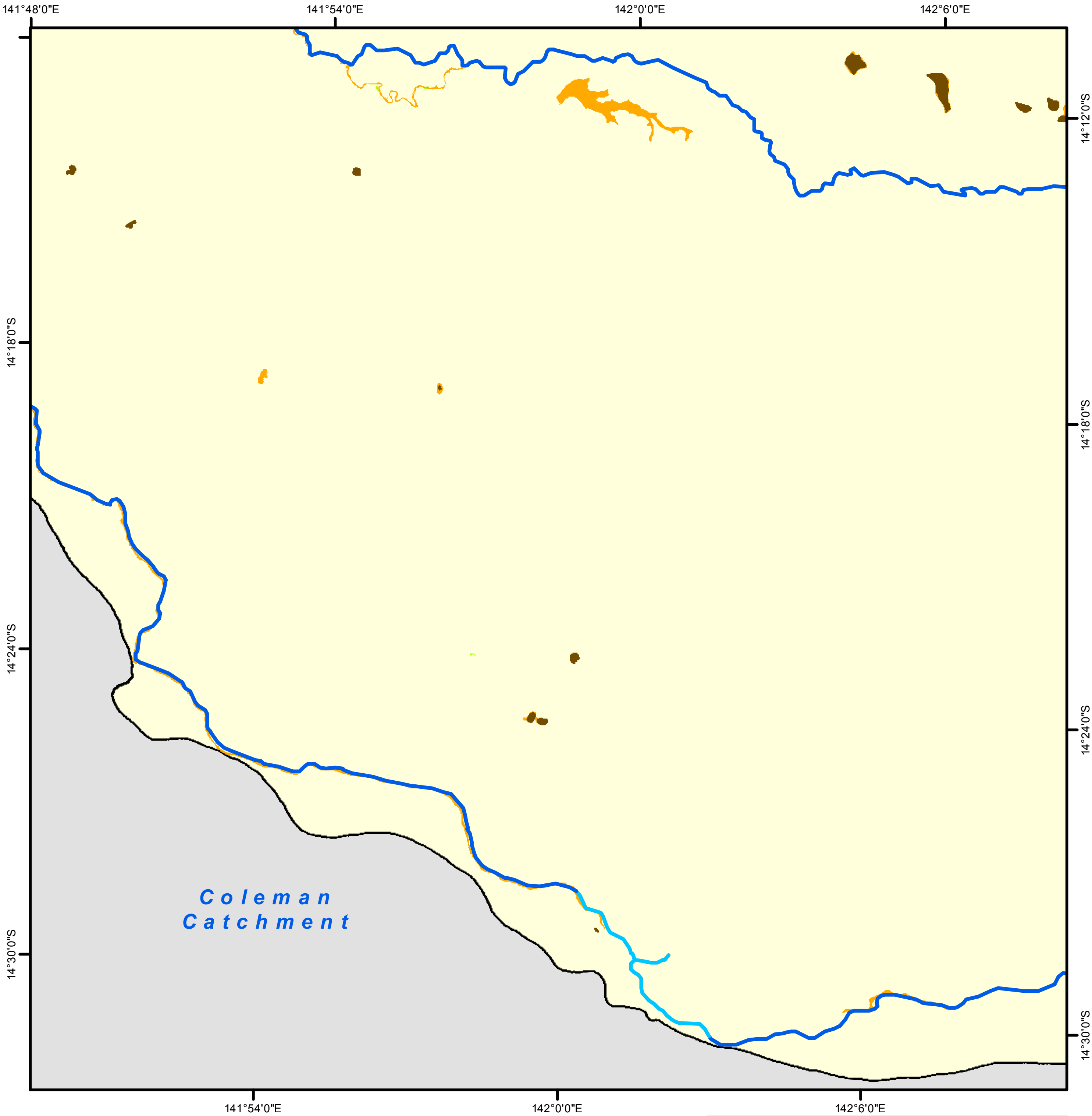
14°12'0"S
14°18'0"S
14°24'0"S
14°30'0"S
Coleman Catchment
N1 Holroyd Catchment
0 2 4 8 12 16 Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Watson
Wenlock
Archer
Coleman
L2 L3
M1 M2 M3 M4 M5 M6
N1 N2 N3 N4 N5 N6
O2 O3 O4 O5 O6
1:3,500,000
Outside Cape York region



N2 Holroyd Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

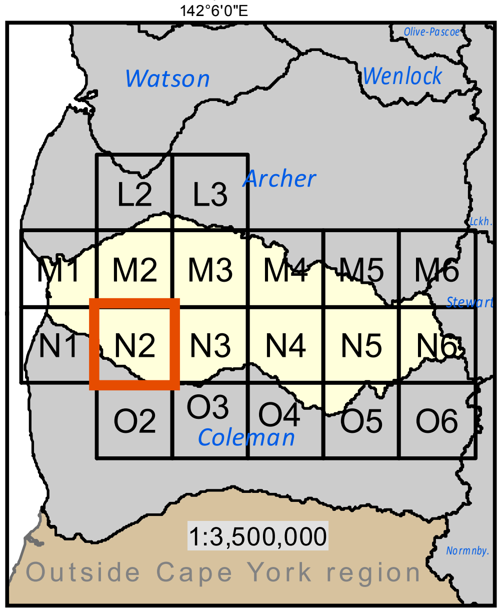
- Known Springs

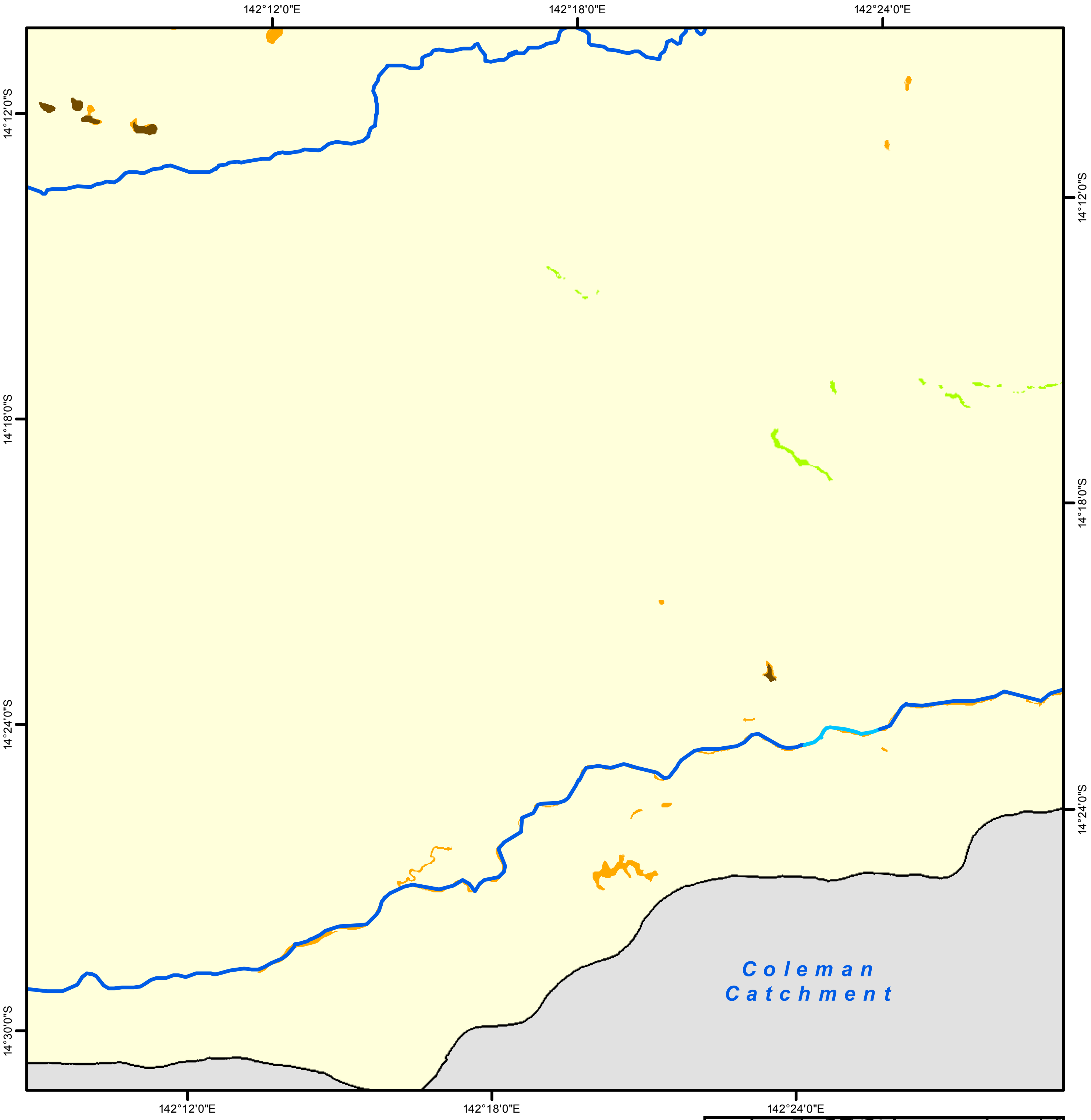
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely



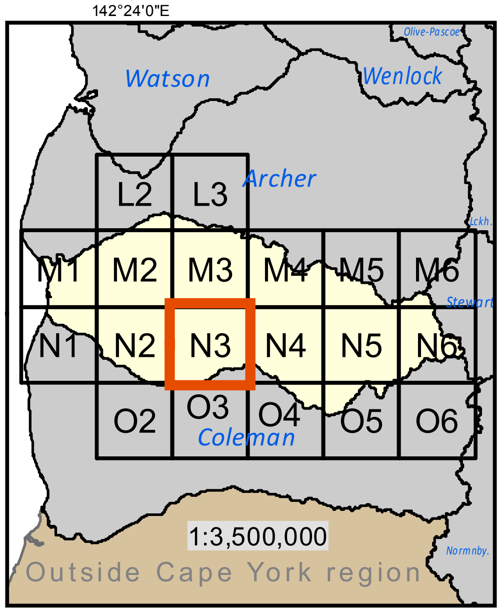


N3 Holroyd Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

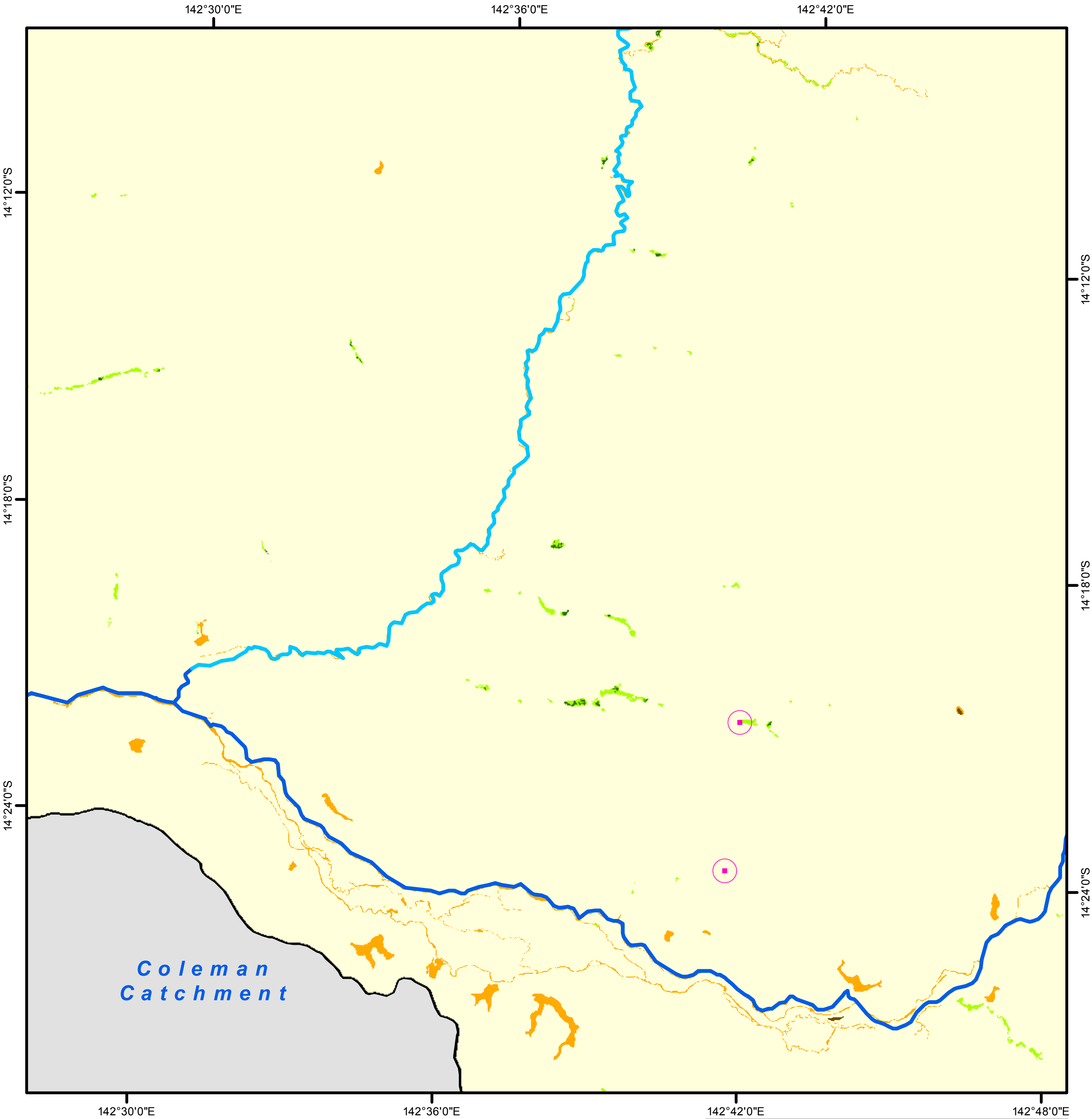
Likely

Baseflow Stream GDE Likelihood

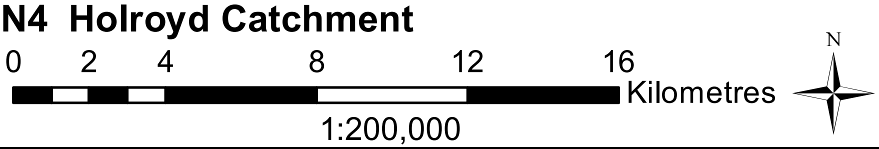
Highly Likely

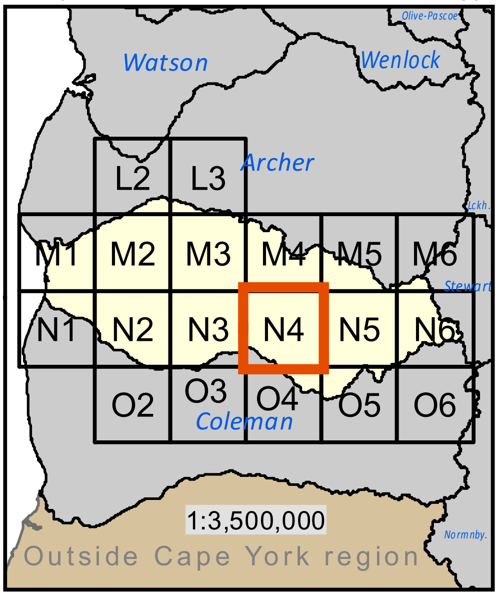
Likely

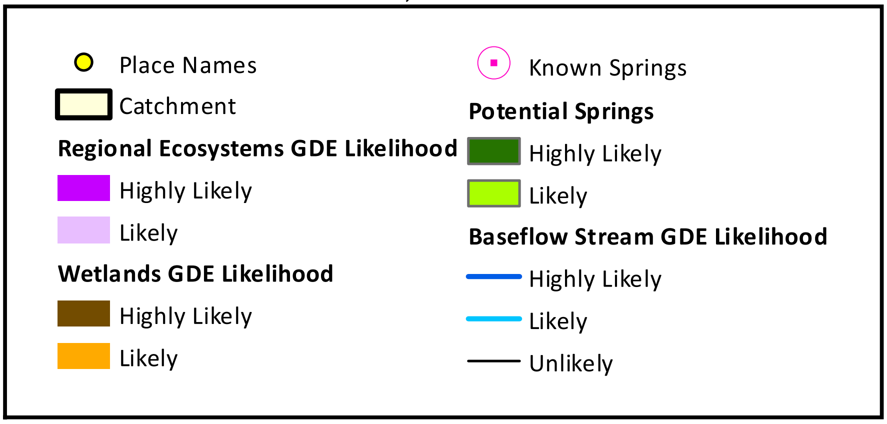
Unlikely

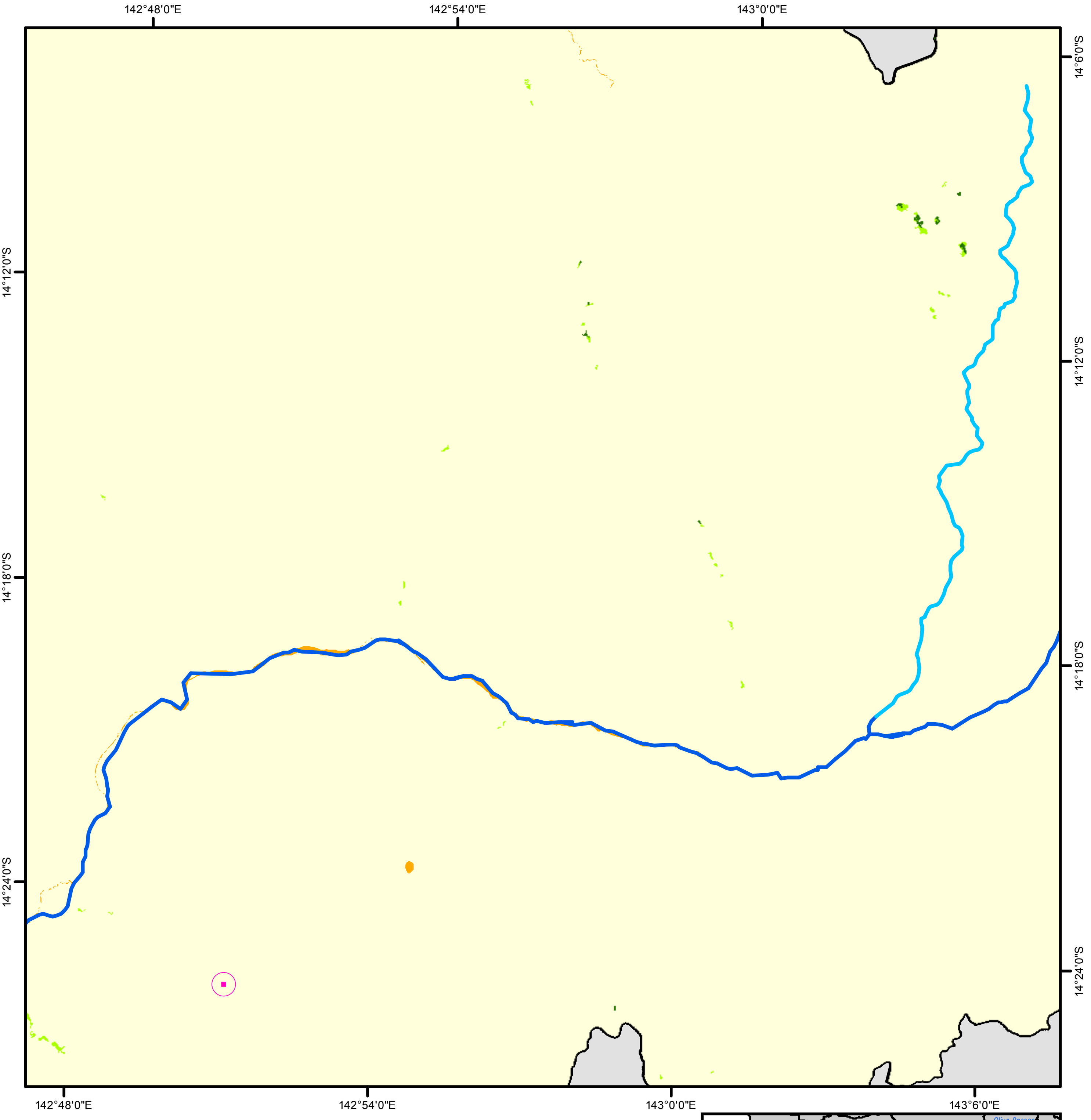


N4 Holroyd Catchment

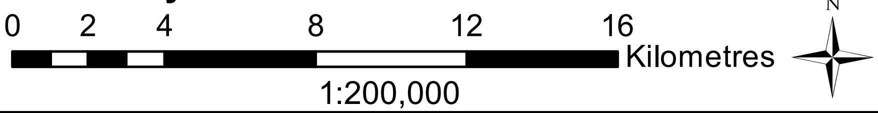








N5 Holroyd Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

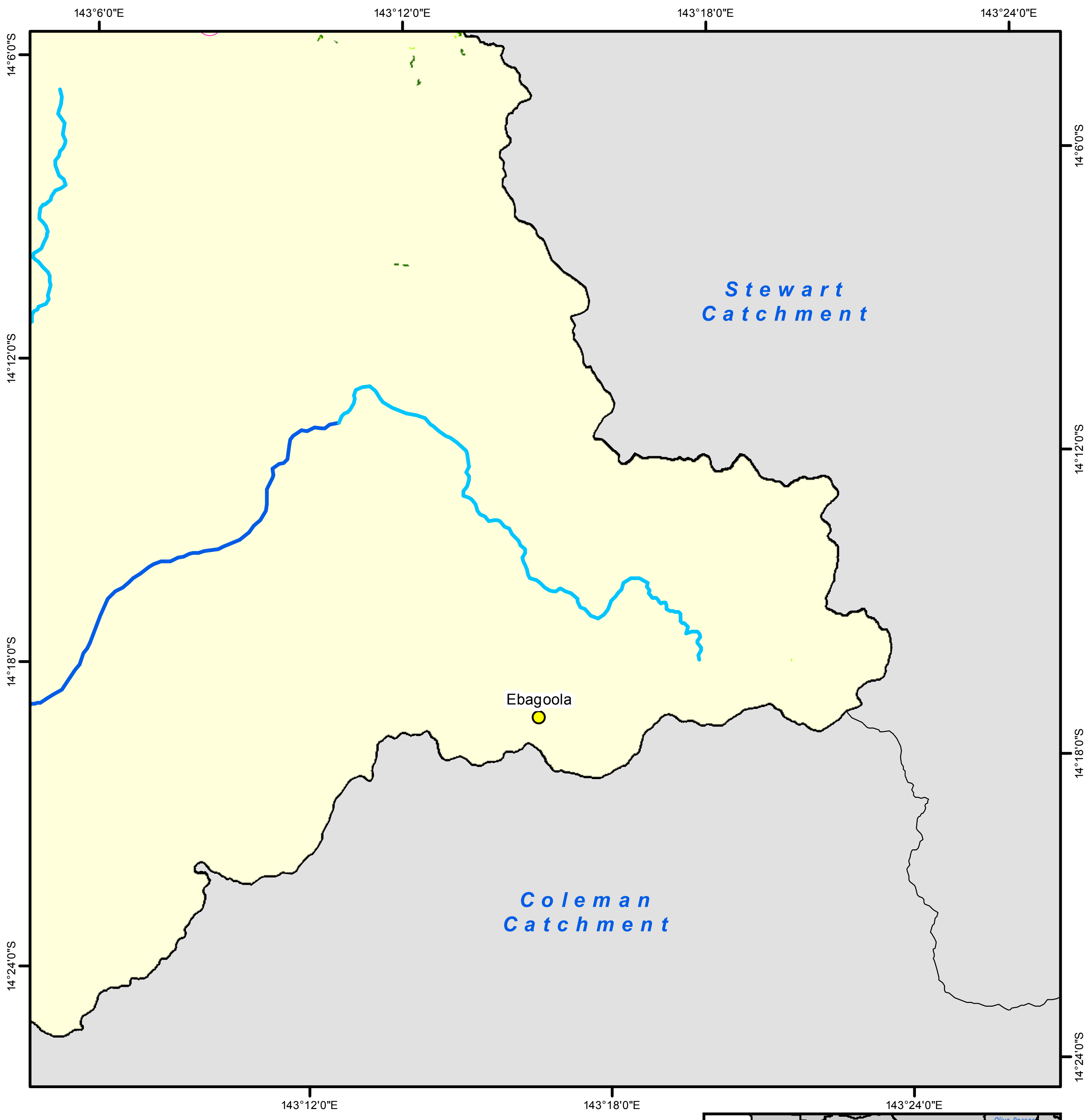
Likely

Baseflow Stream GDE Likelihood

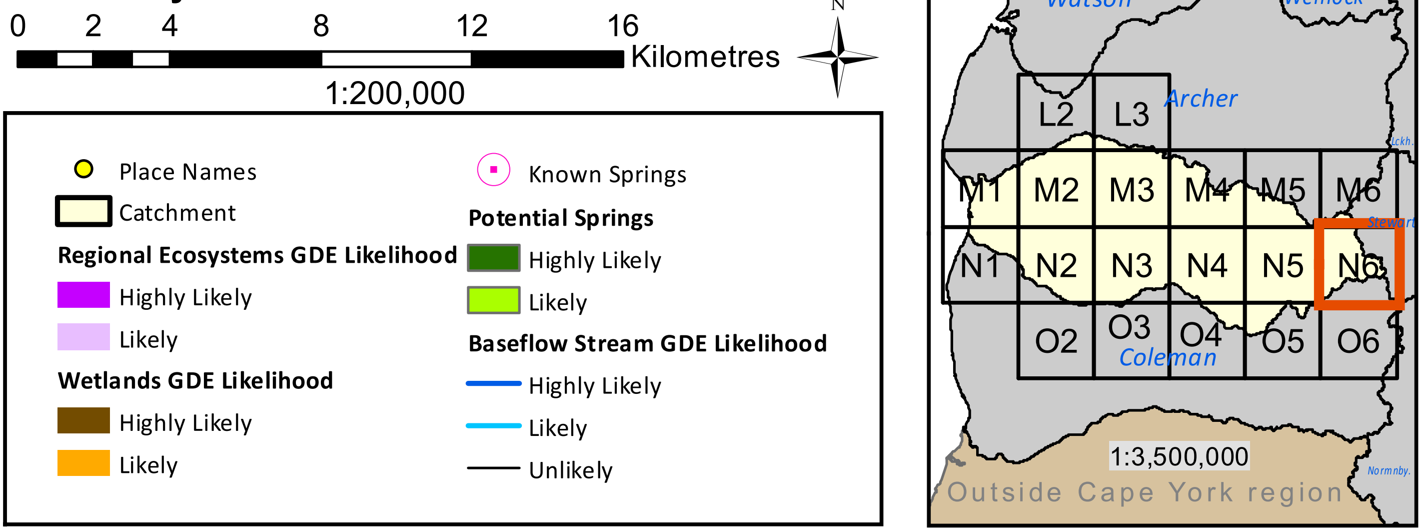
Highly Likely

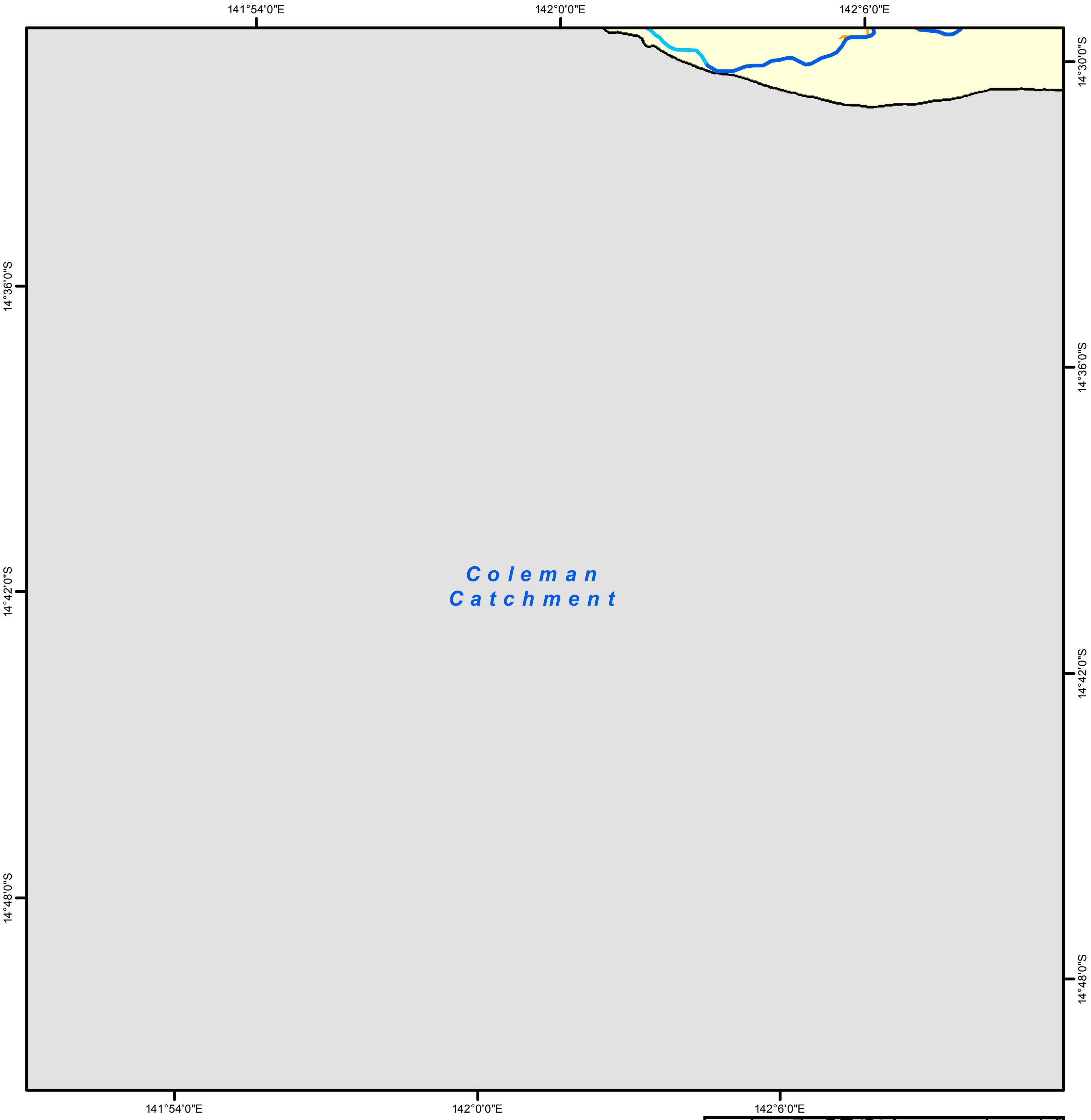
Likely

Unlikely



N6 Holroyd Catchment





O2 Holroyd Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

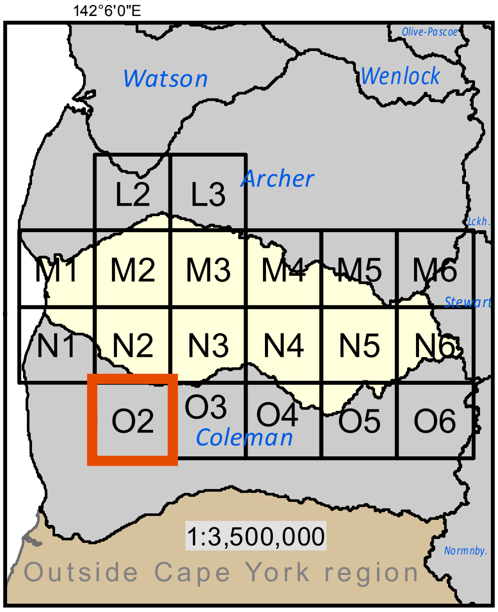
- Known Springs

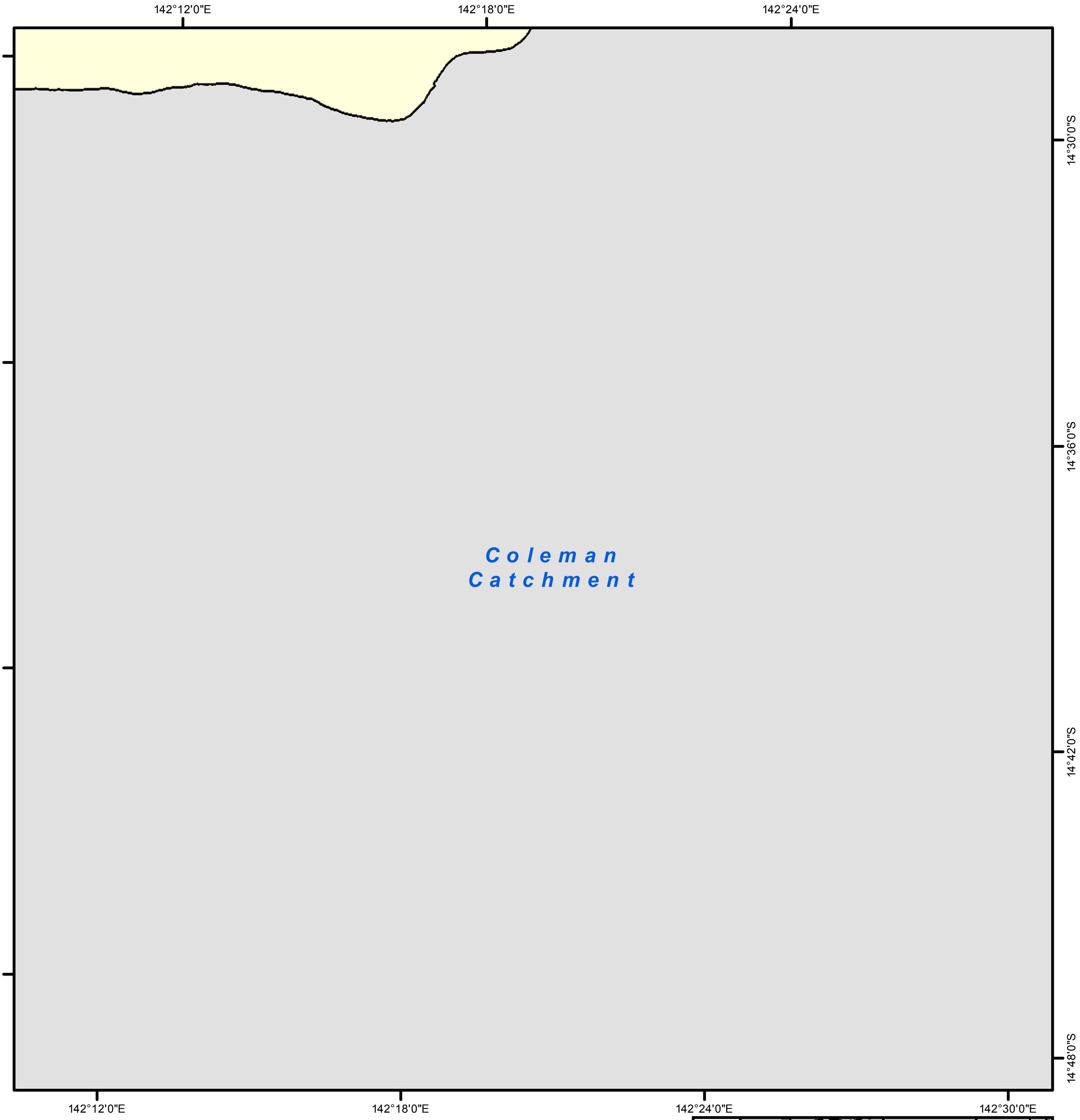
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





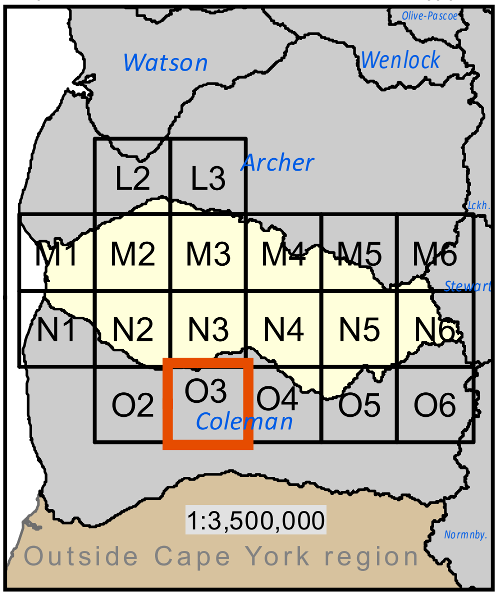
O3 Holroyd Catchment

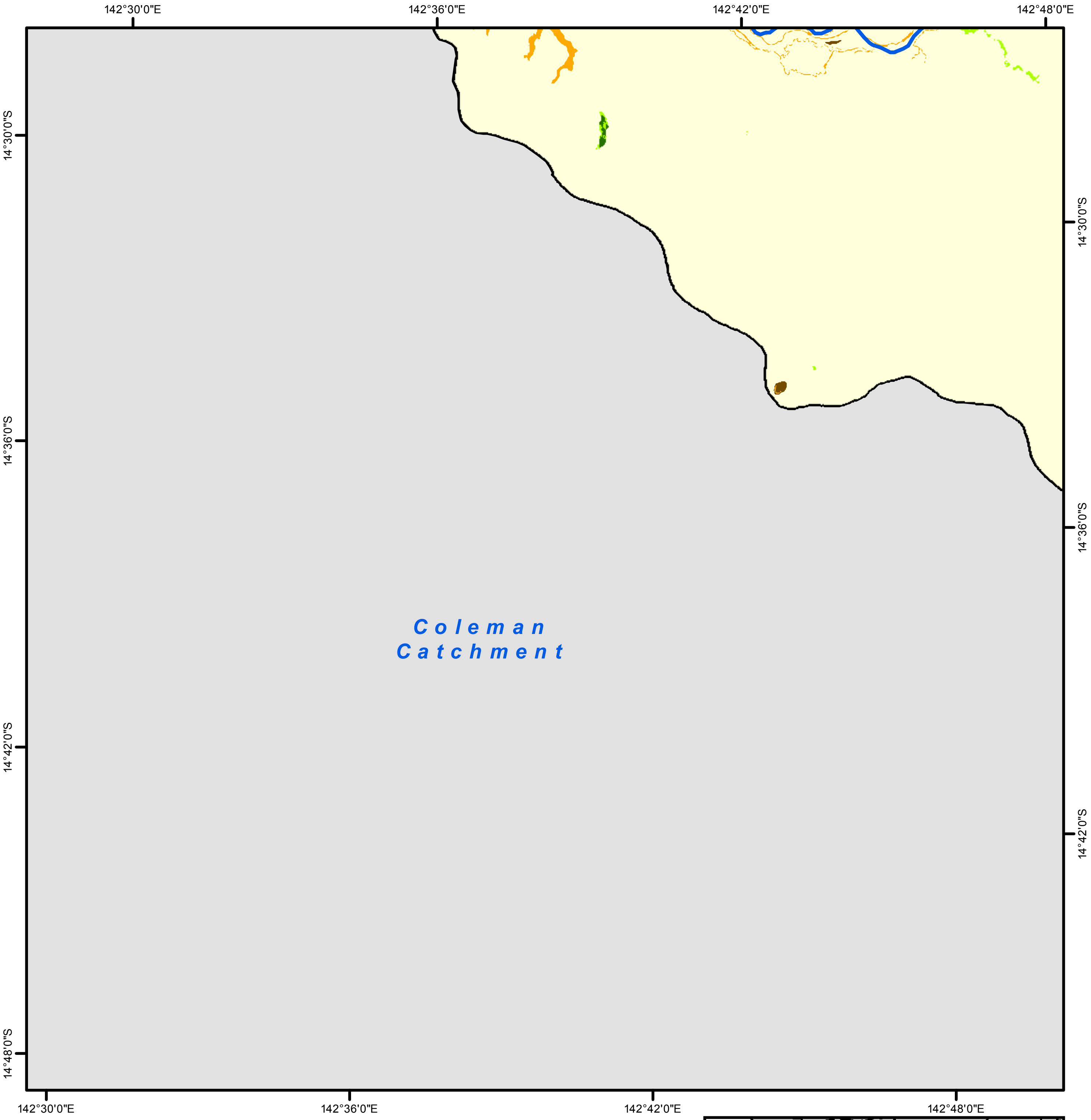
0 2 4 8 12 16 Kilometres

1:200,000

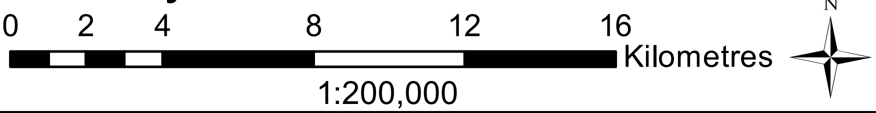
N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





O4 Holroyd Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

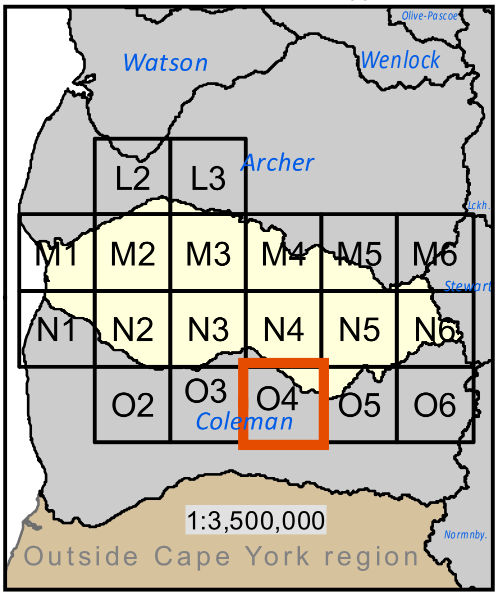
Likely

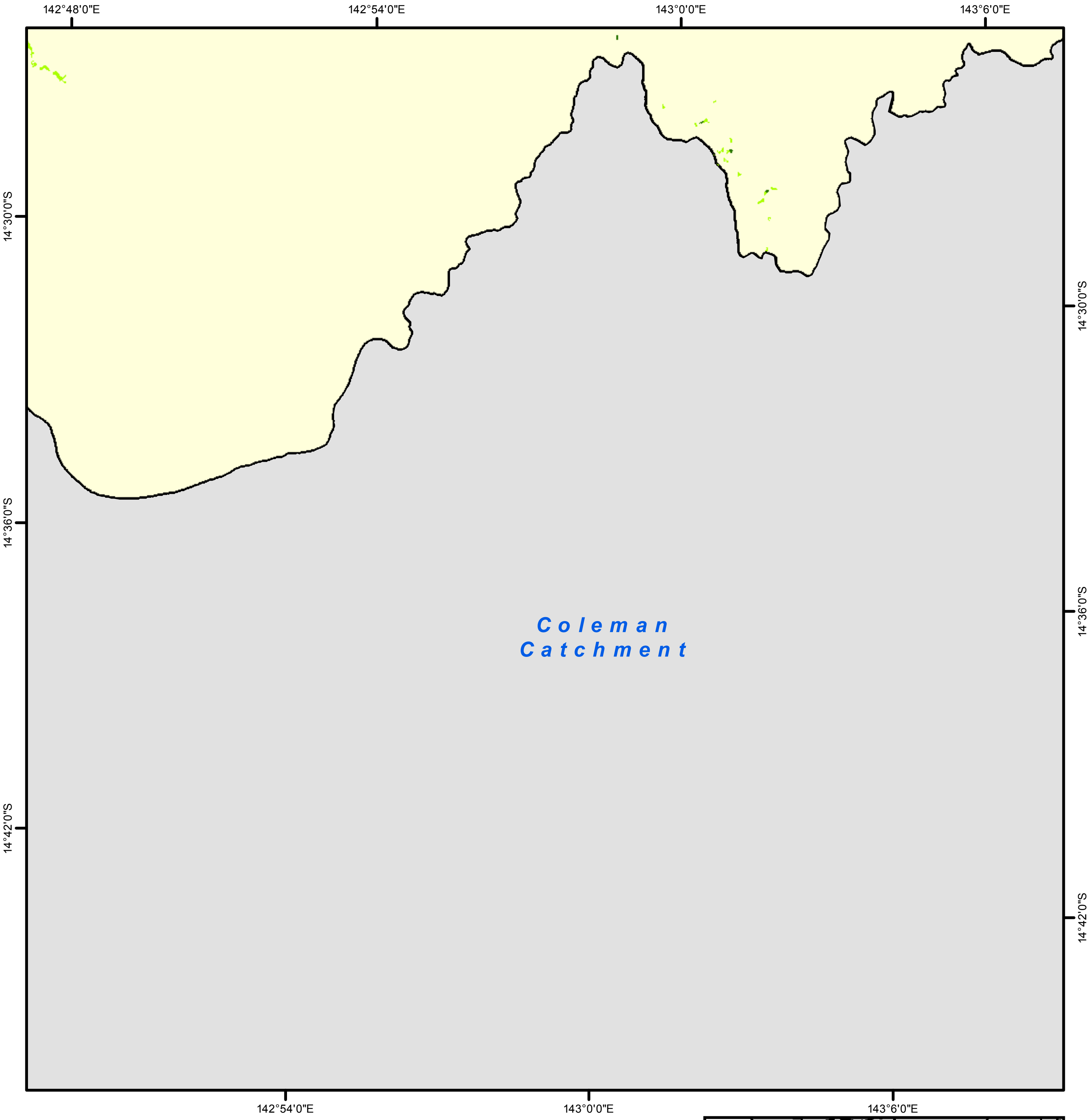
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



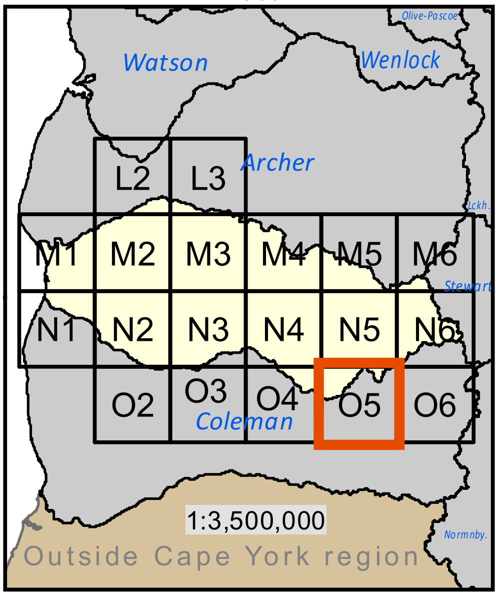


O5 Holroyd Catchment

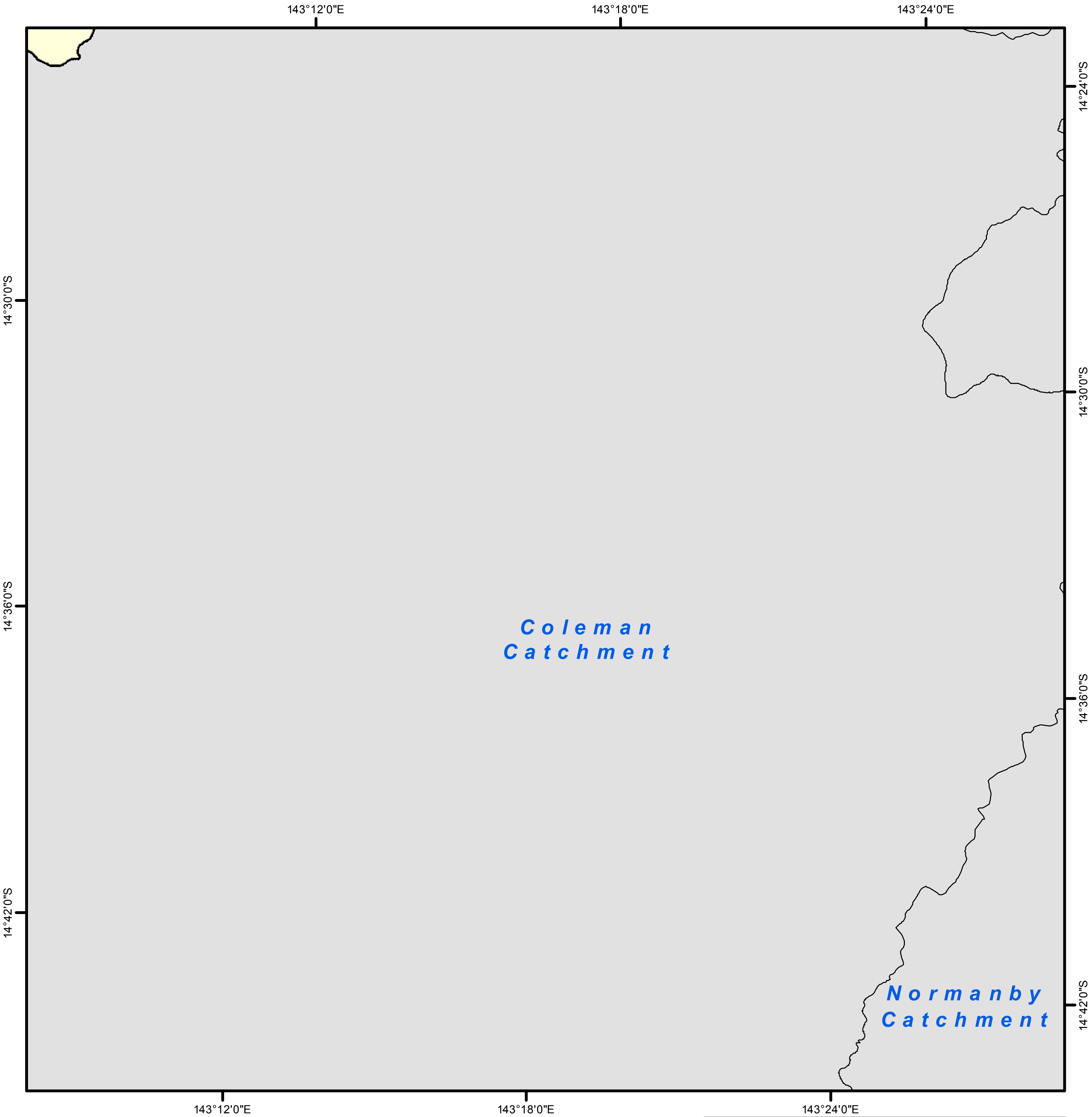
0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



O6 Holroyd Catchment

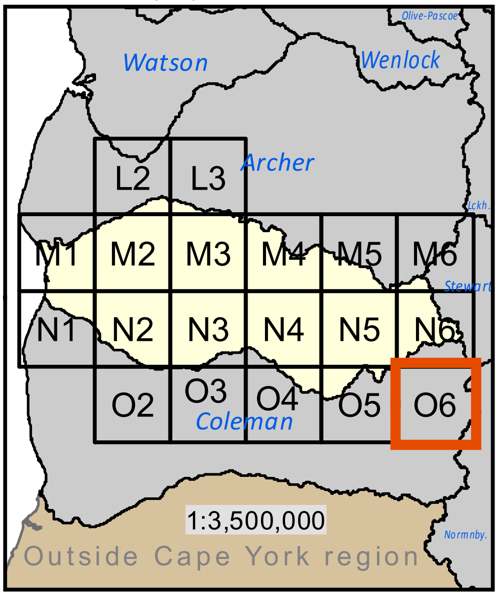
0 2 4 8 12 16 Kilometres

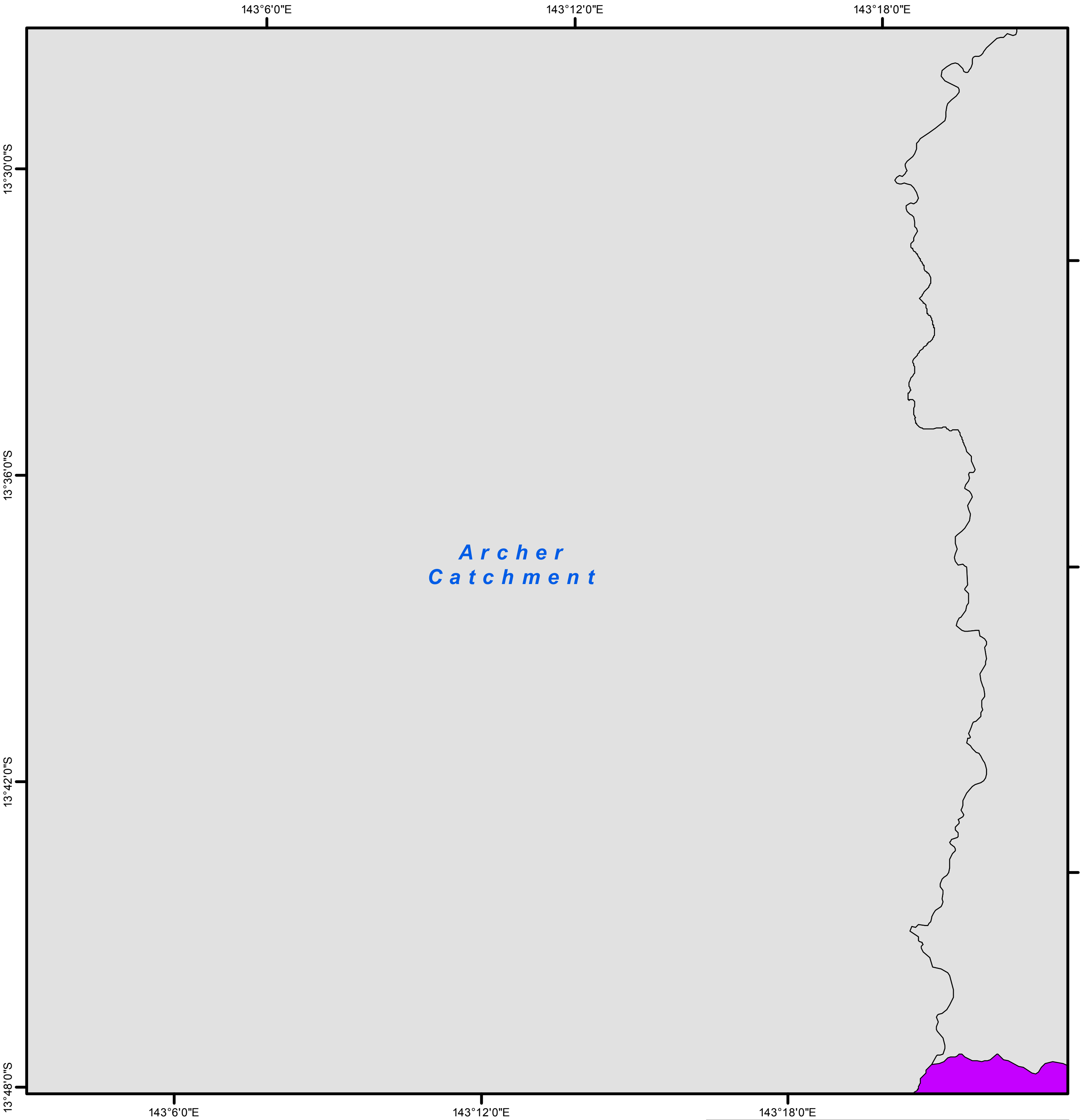
1:200,000

N

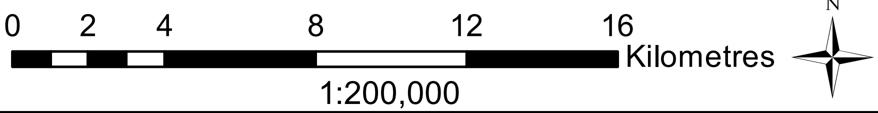
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

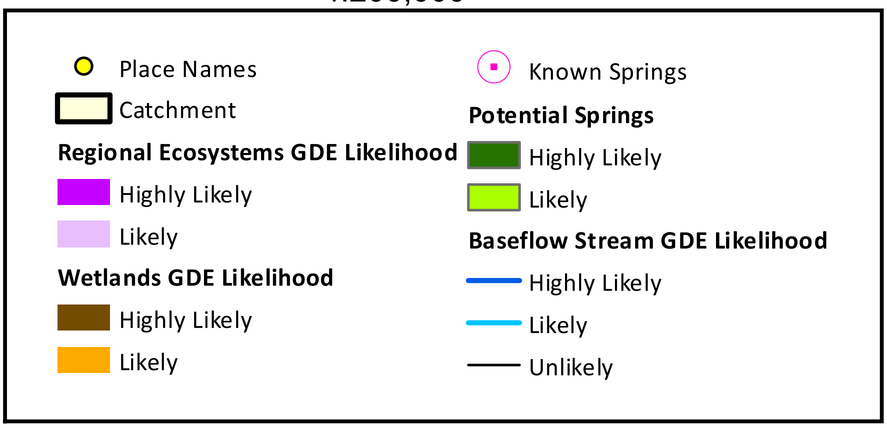
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely

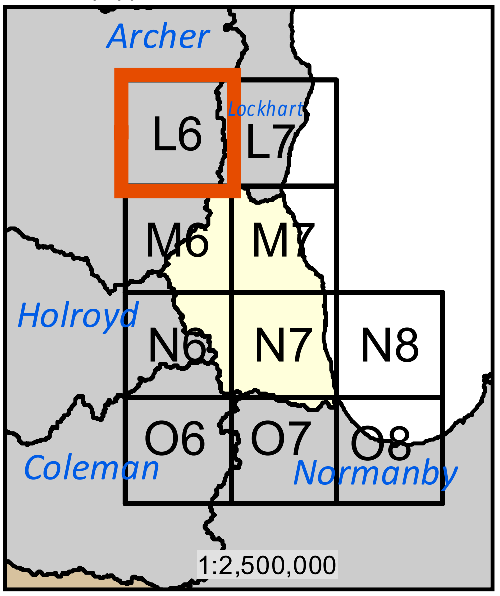


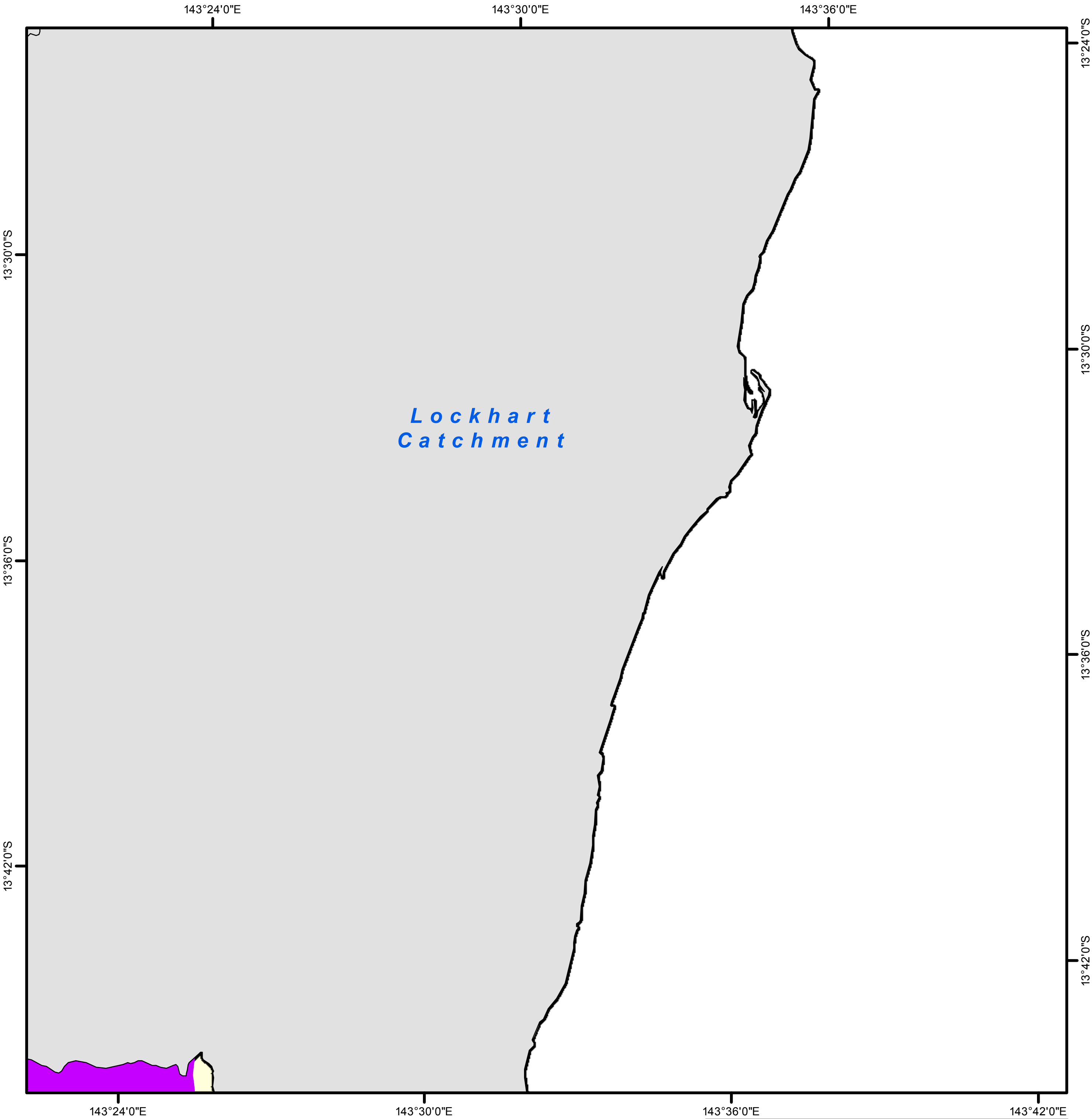


L6 Stewart Catchment









L7 Stewart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment

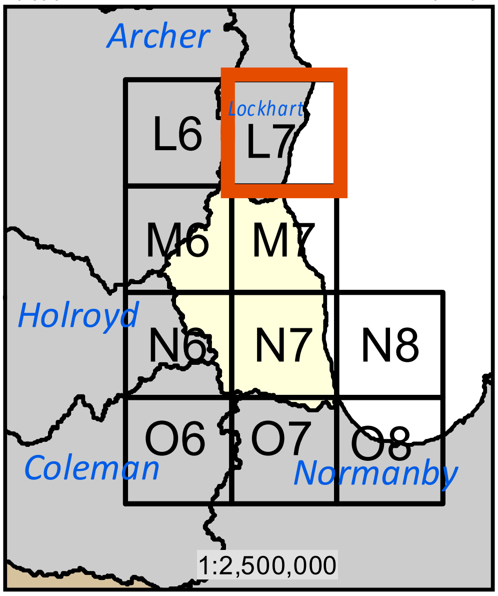
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

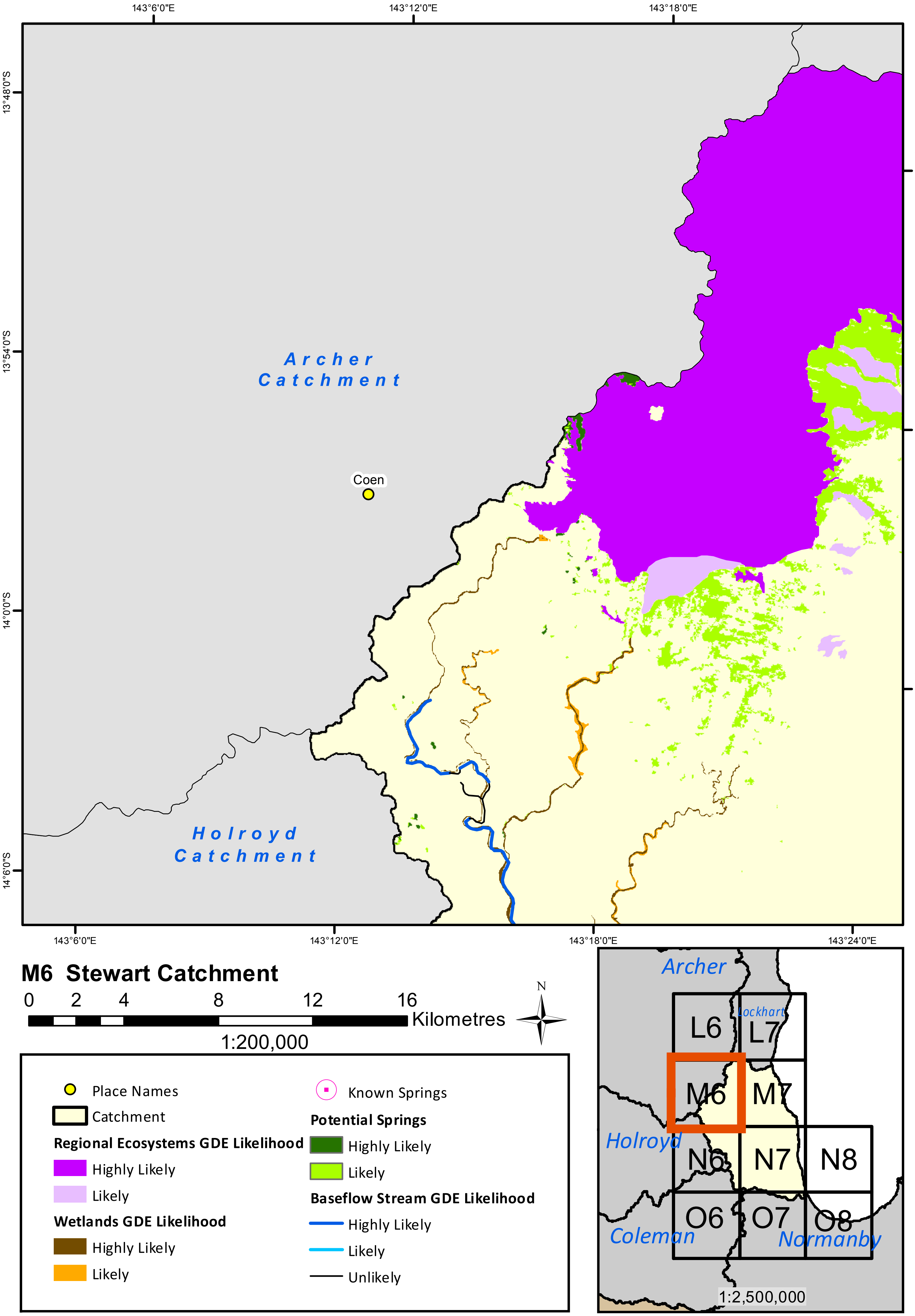
Wetlands GDE Likelihood
- Highly Likely
- Likely

Known Springs

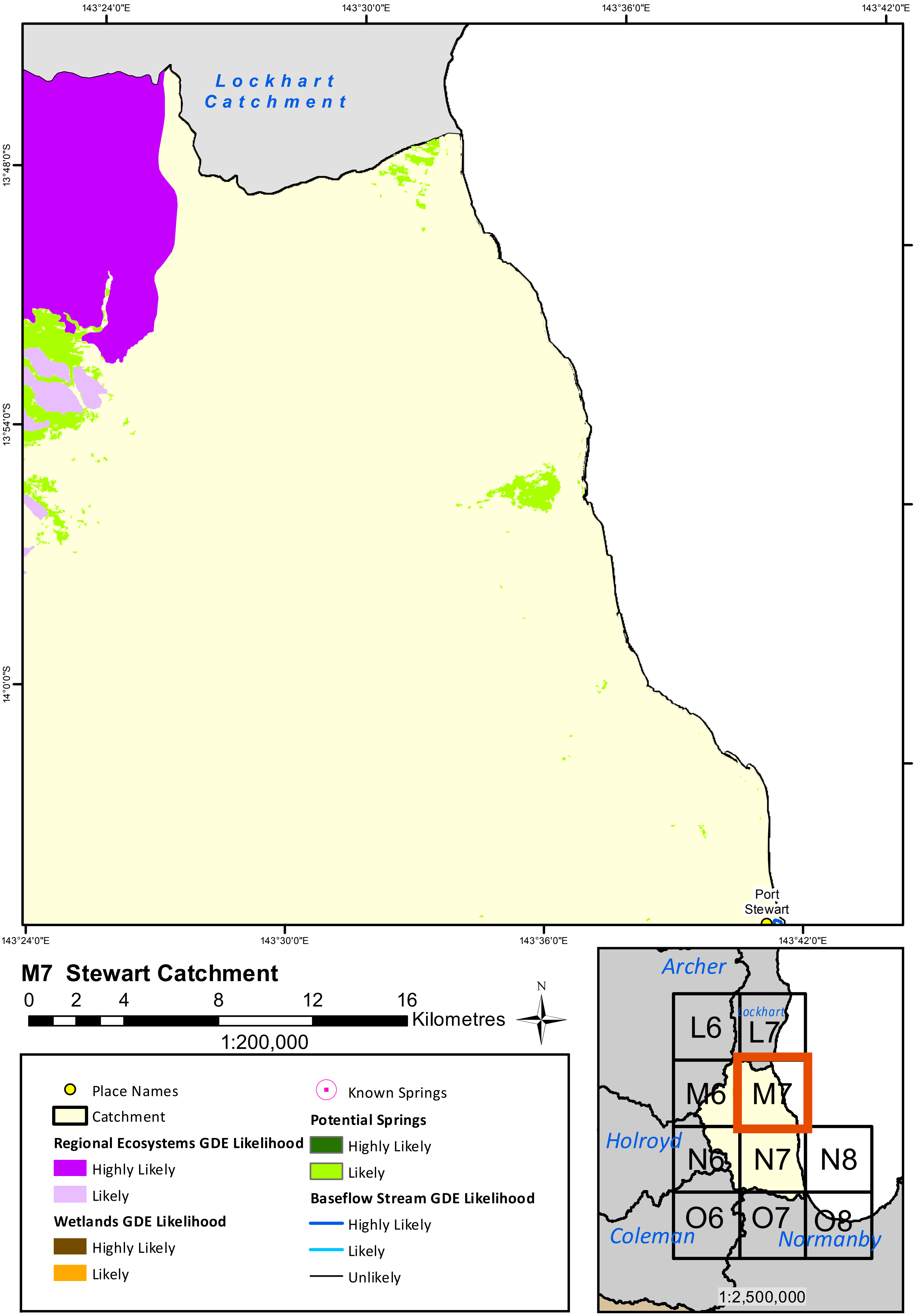
Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





143°6'0"E
143°12'0"E
143°18'0"E
143°24'0"E
13°48'0"S
13°54'0"S
14°0'0"S
14°6'0"S
Archer Catchment
Holroyd Catchment
Coen
M6 Stewart Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Archer
Lockhart
L6
L7
M6
M7
Holroyd
N6
N7
N8
O6
O7
O8
Coleman
Normanby
1:2,500,000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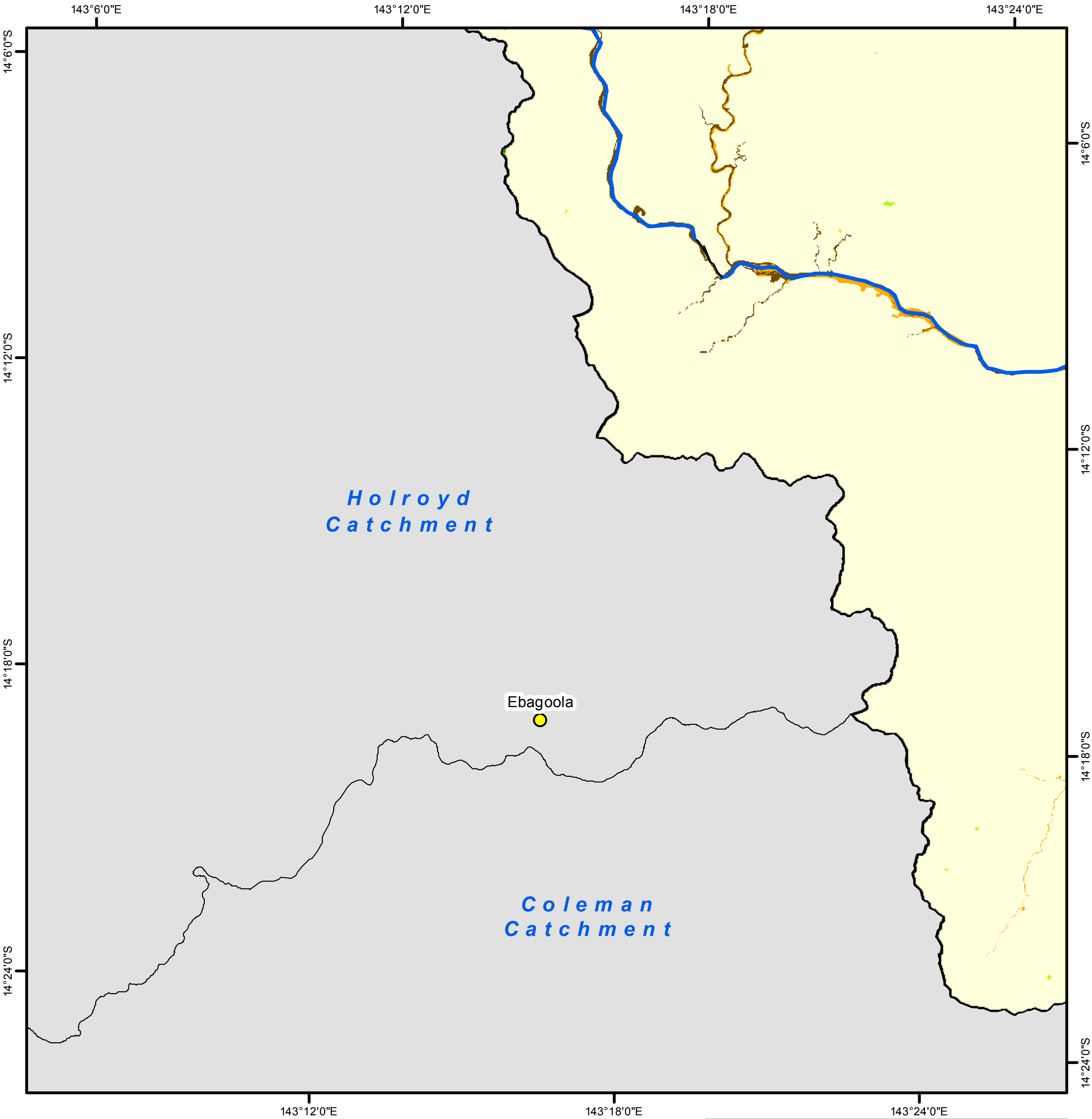
13°48'0"S
13°54'0"S
14°0'0"S
Lockhart
Catchment
Port
Stewart
M7 Stewart Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Archer
Lockhart
L6
L7
M6
M7
Holroyd
N6
N7
N8
O6
O7
O8
Coleman
Normanby
1:2,500,000



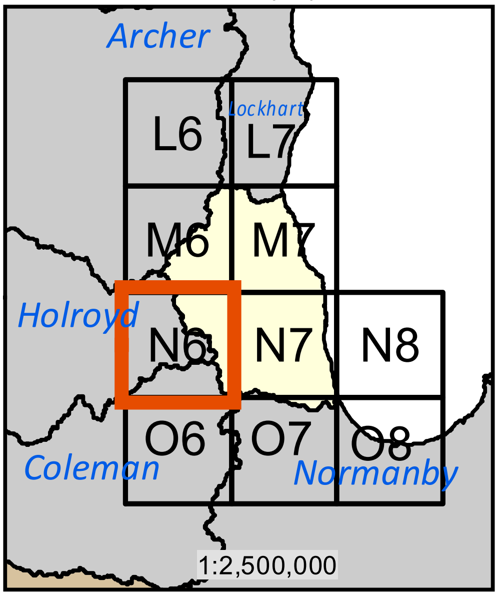
N6 Stewart Catchment

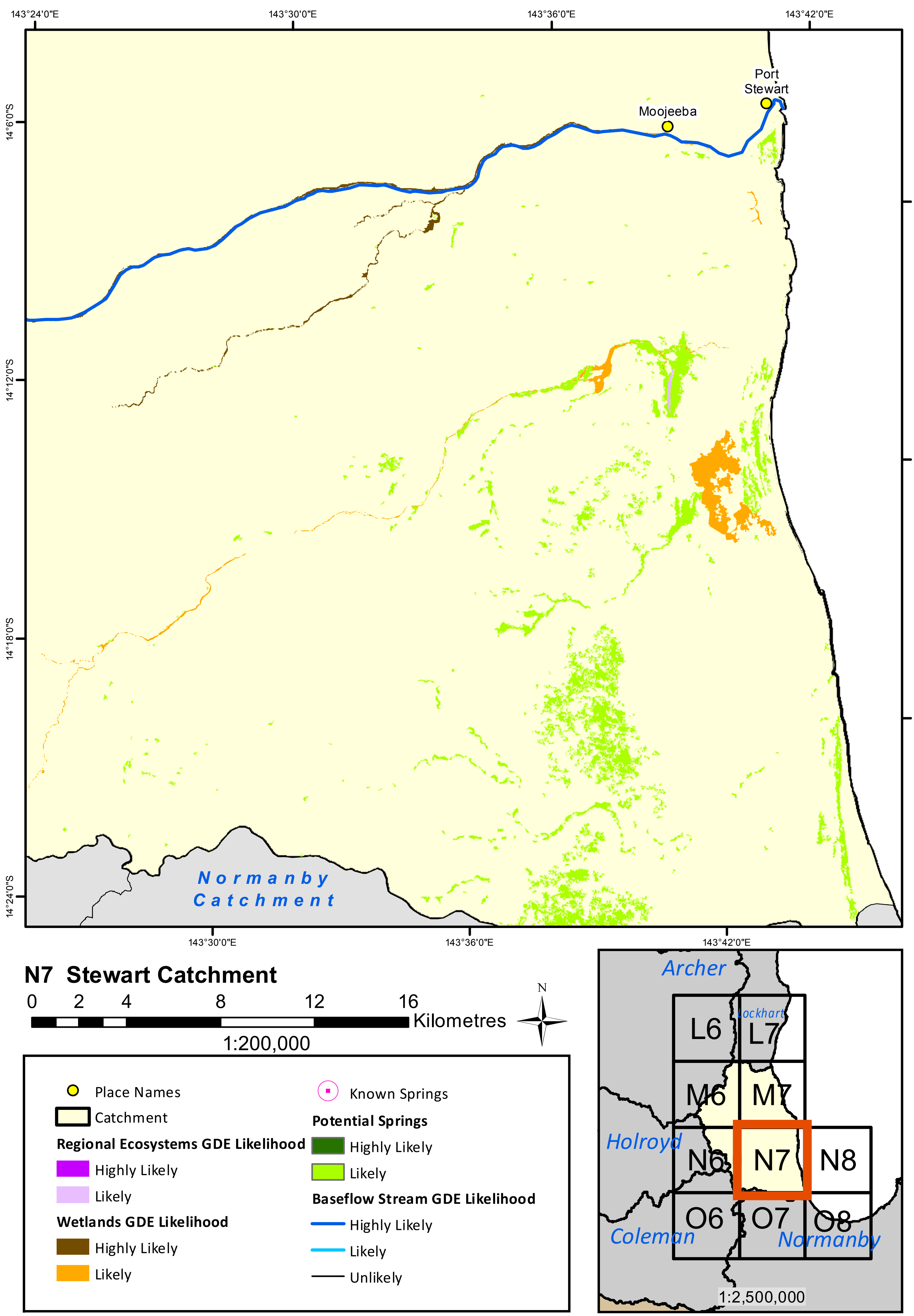
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely

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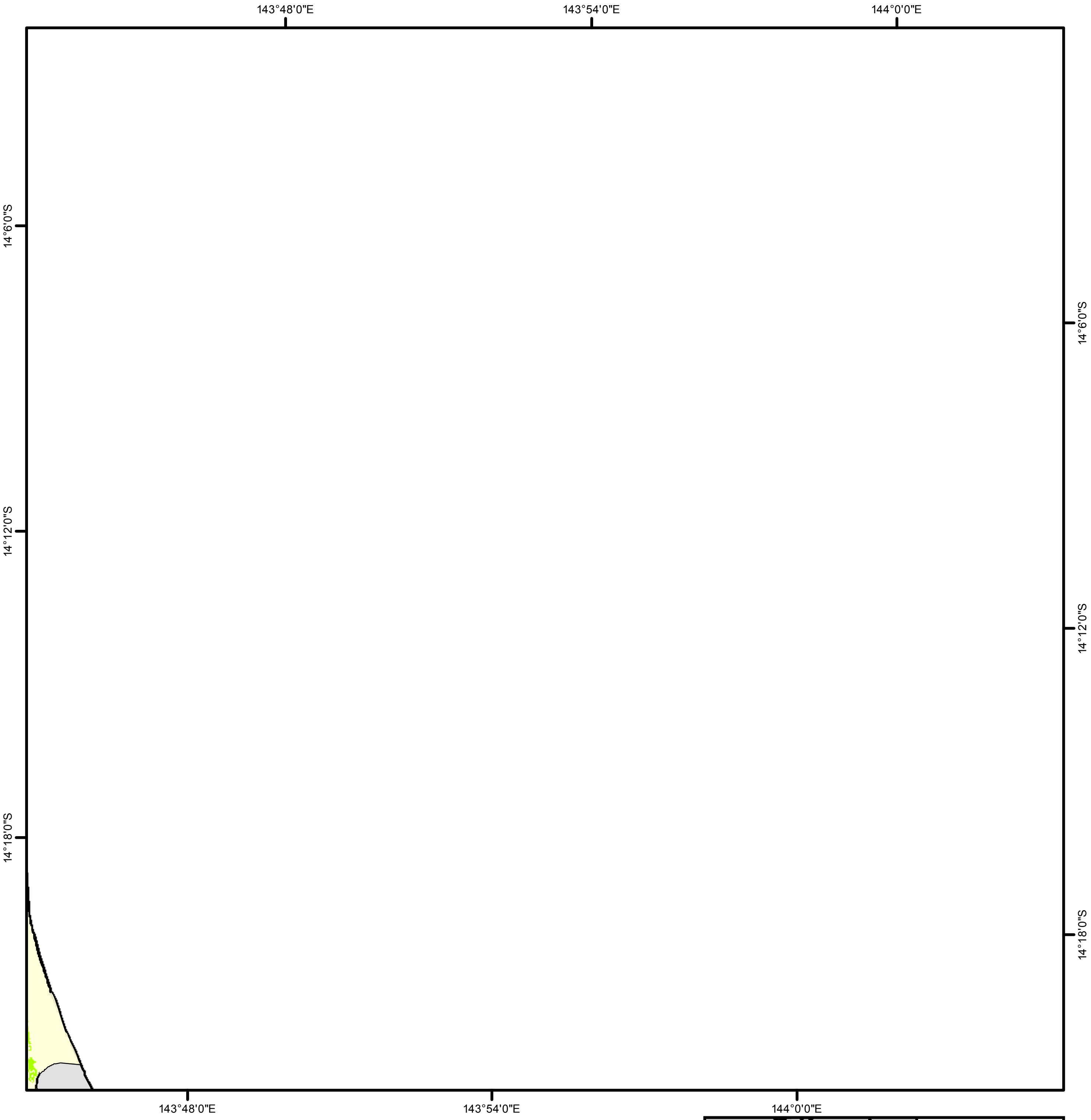
14°18'0"S
14°24'0"S
Port Stewart
Moojeeba
Normanby Catchment
N7 Stewart Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Archer
Lockhart
L6
L7
M6
M7
Holroyd
N6
N7
N8
O6
O7
O8
Coleman
Normanby
1:2,500,000



N8 Stewart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

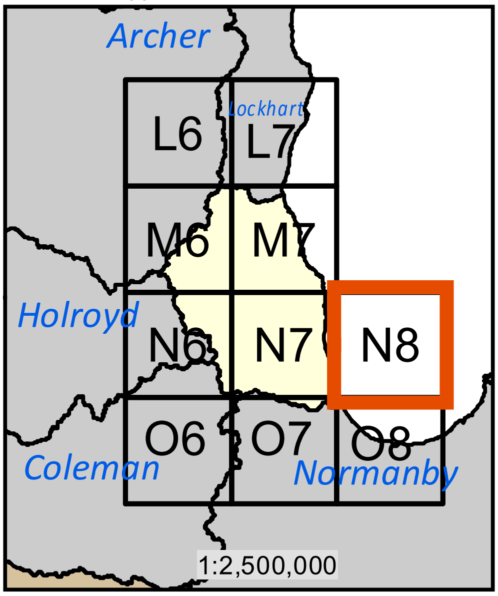
Likely

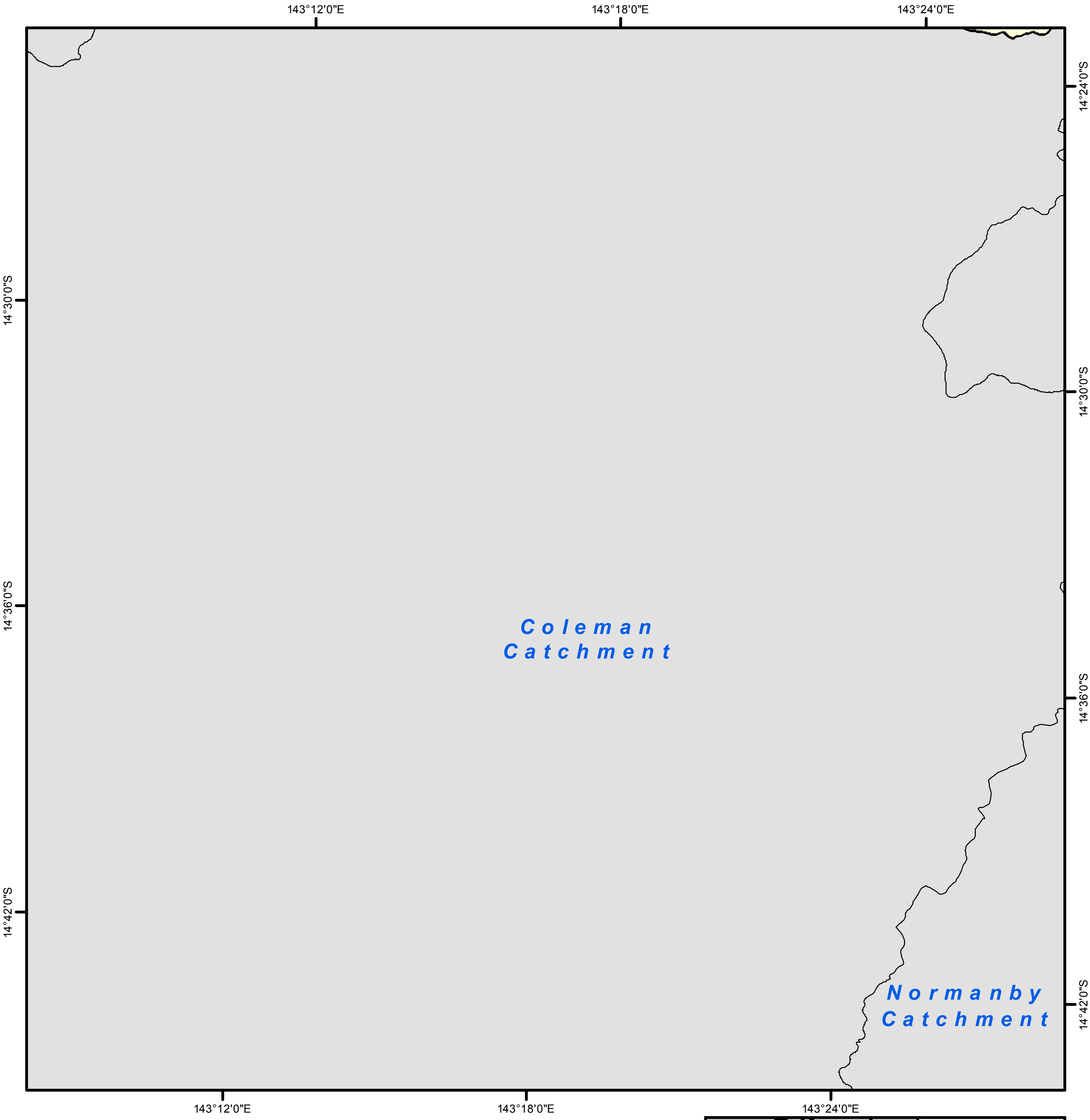
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





O6 Stewart Catchment

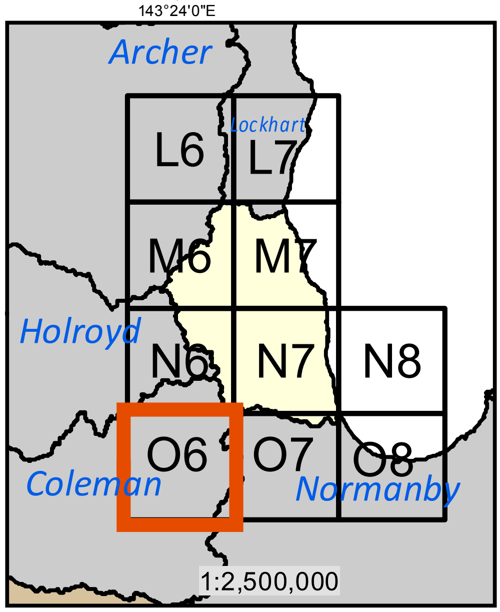
0 2 4 8 12 16 Kilometres

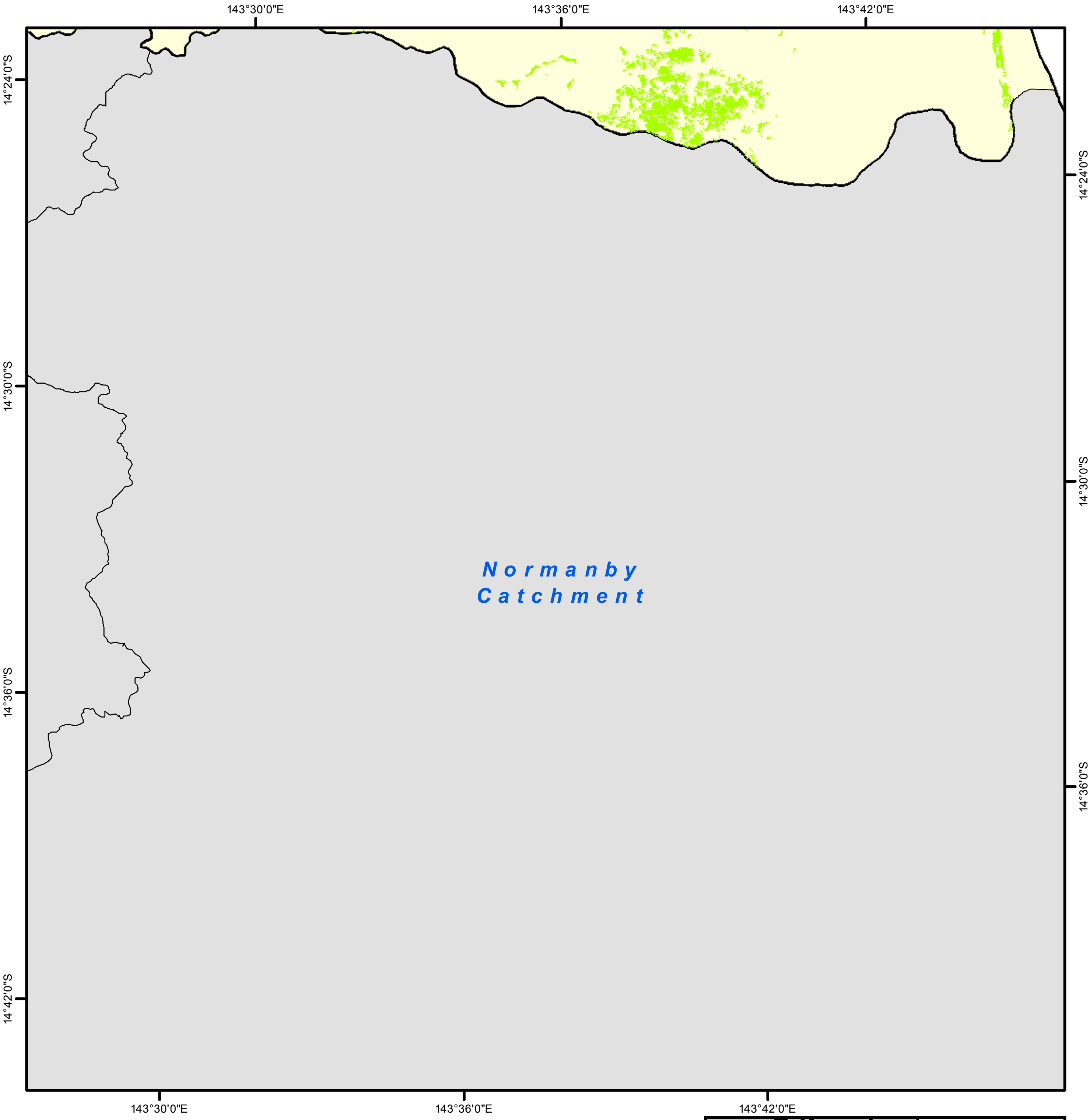
1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





O7 Stewart Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

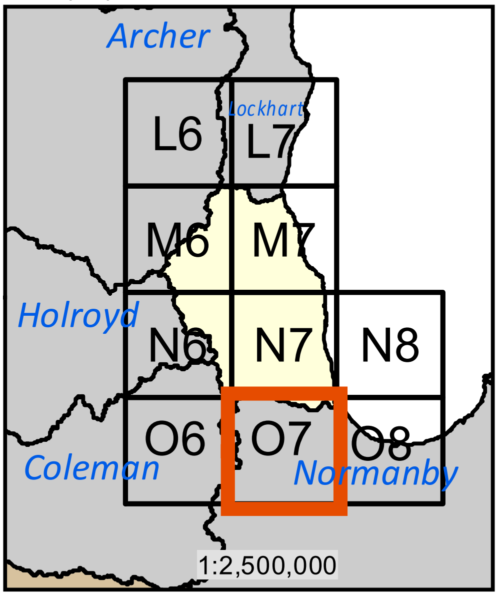
- Known Springs

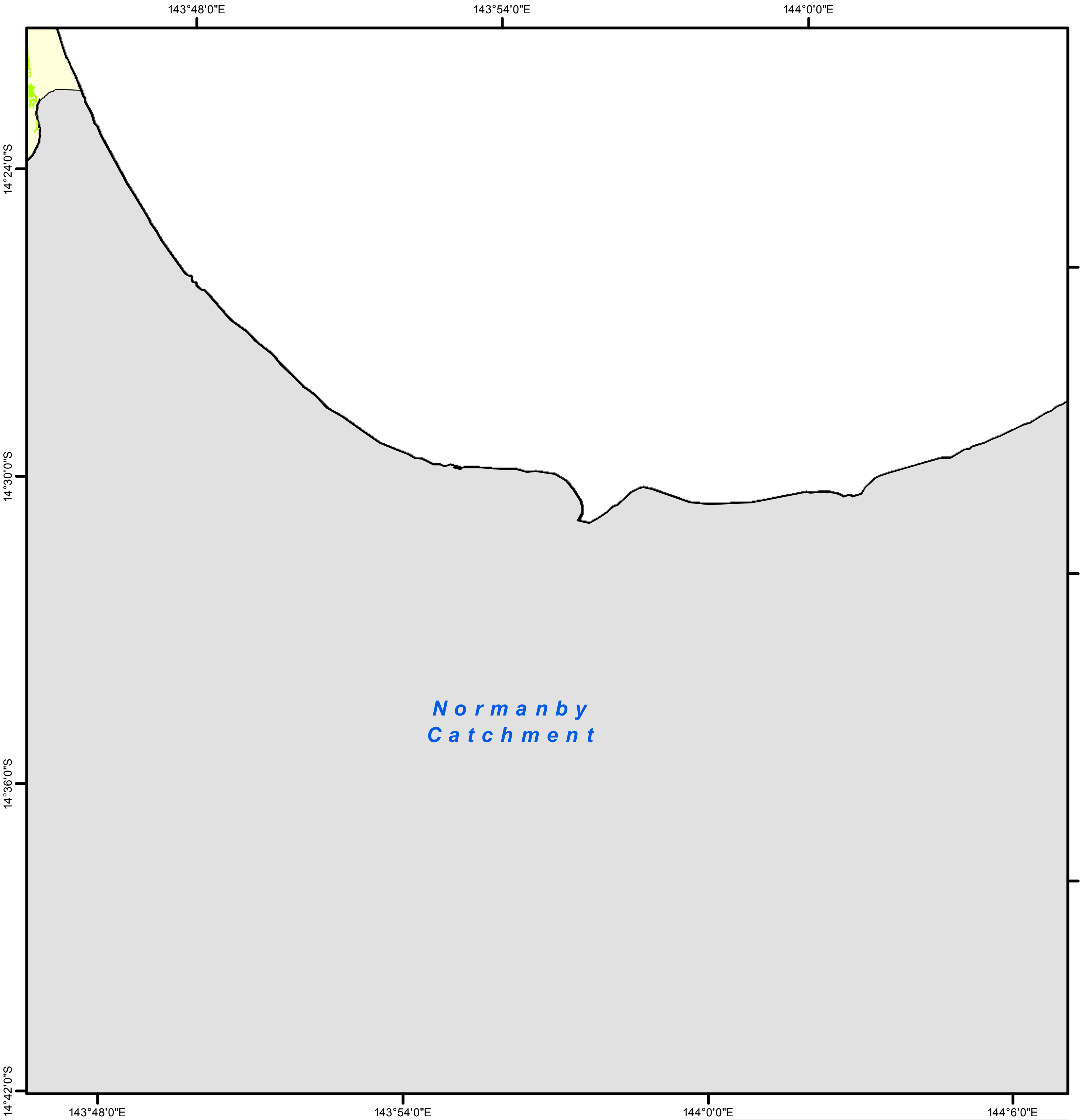
Potential Springs

- Highly Likely
- Likely

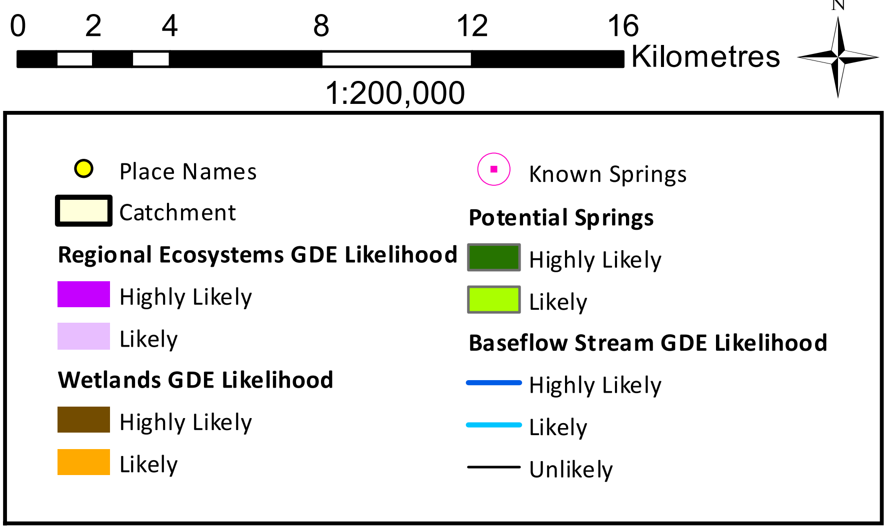
Baseflow Stream GDE Likelihood

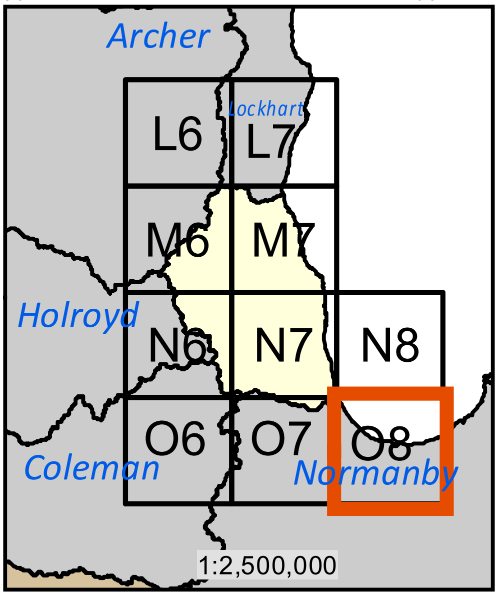
- Highly Likely
- Likely
- Unlikely

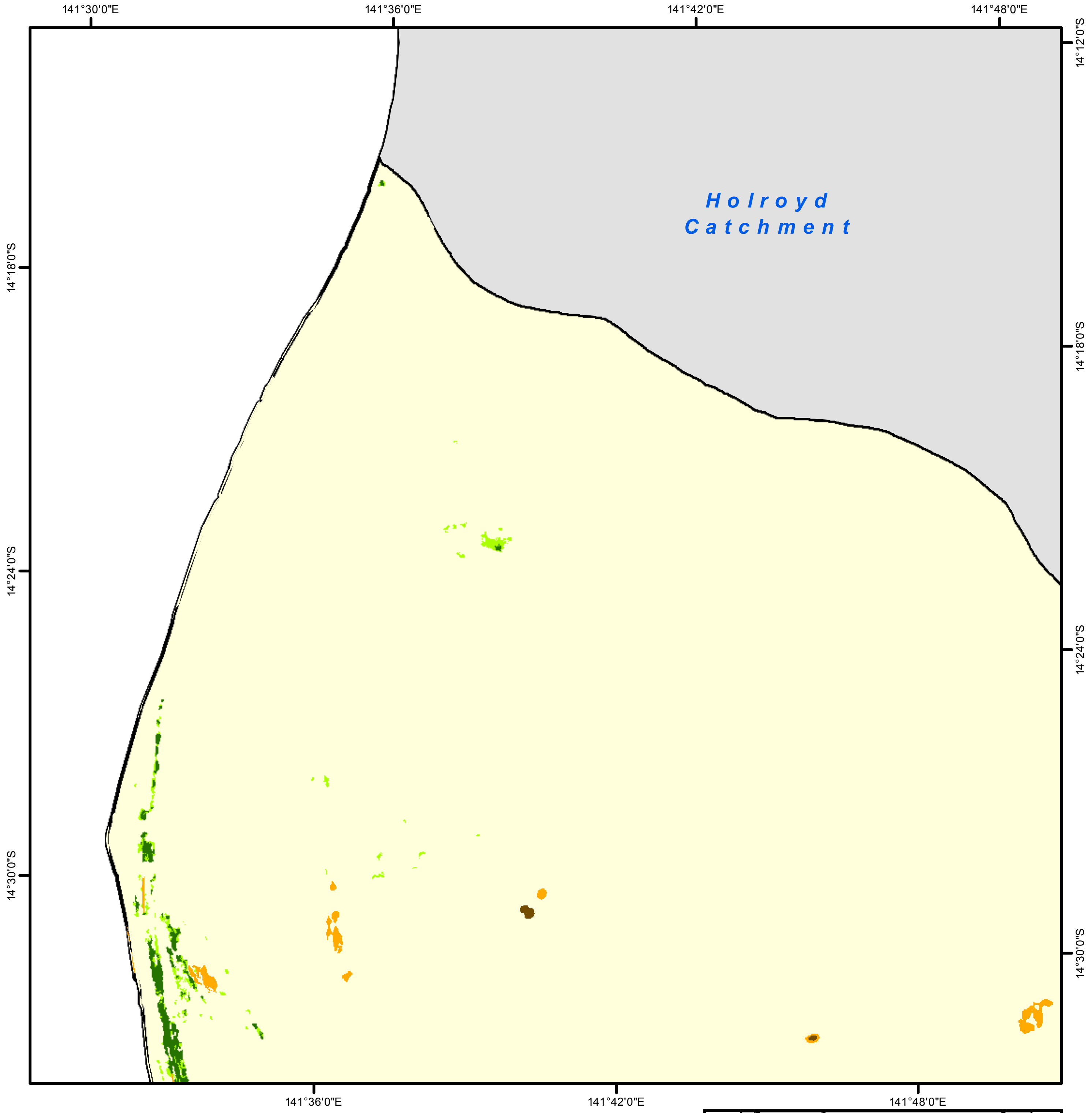




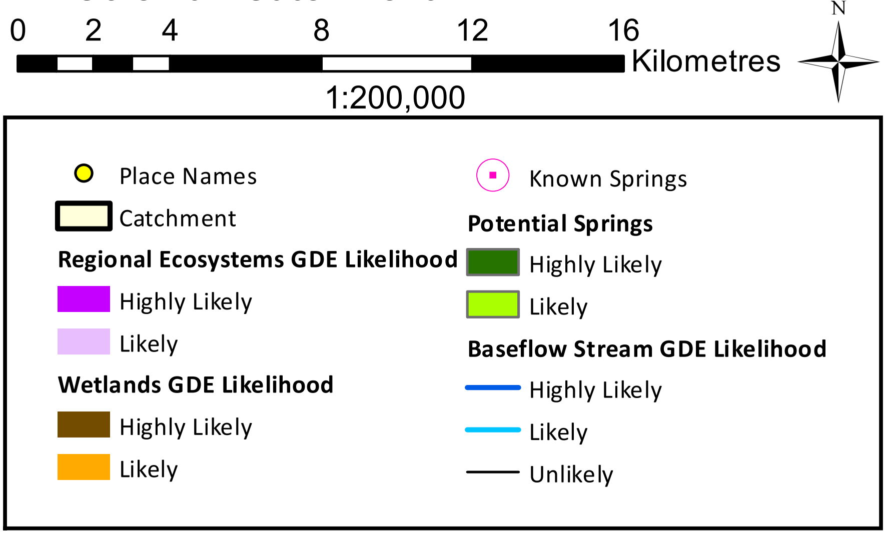
O8 Stewart Catchment

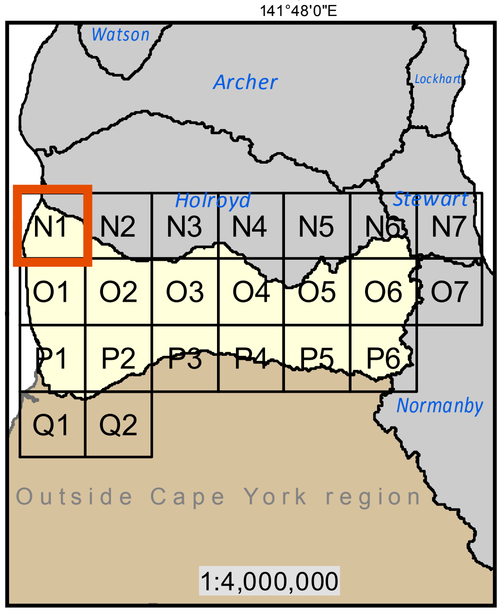


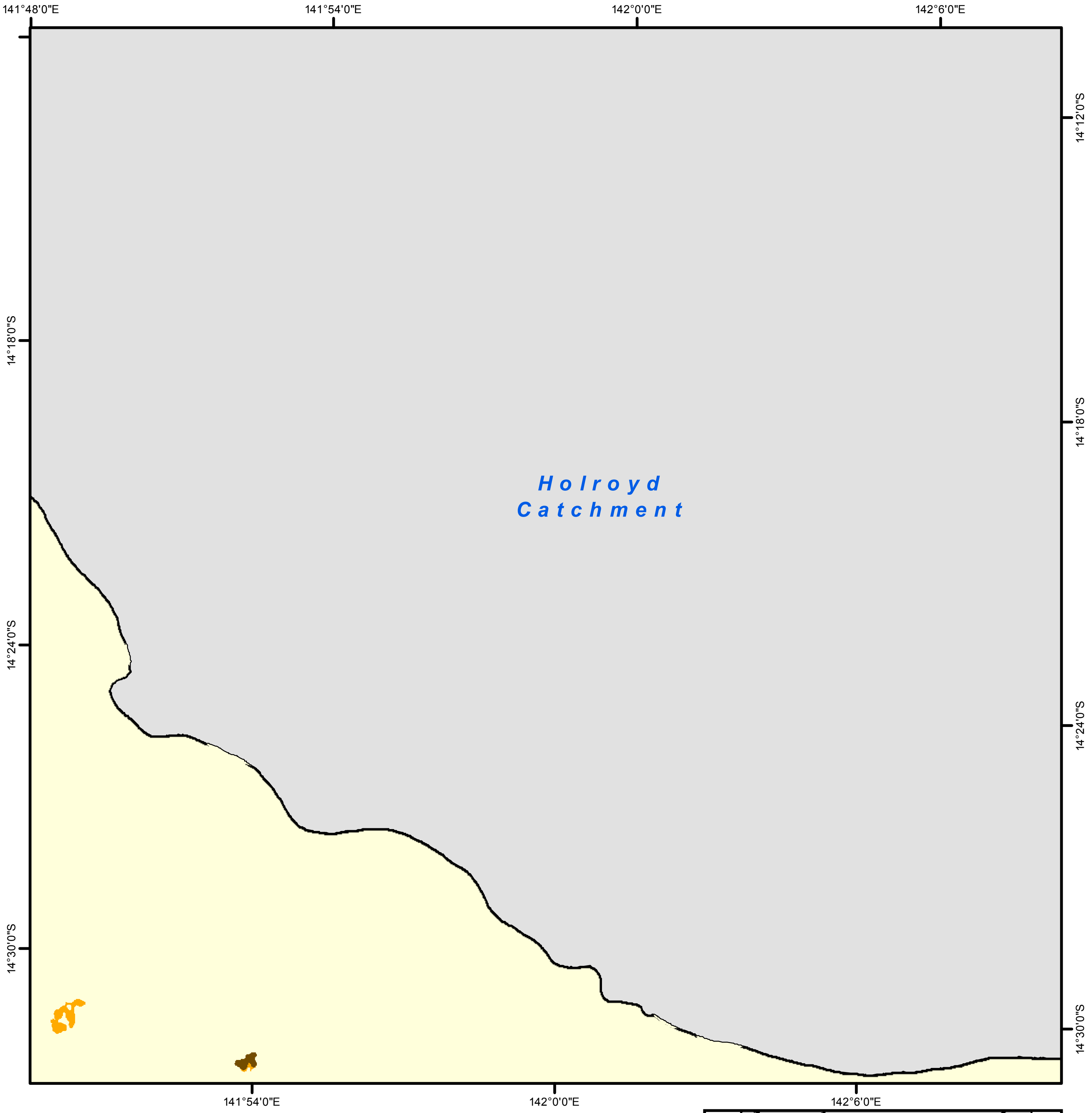




N1 Coleman Catchment







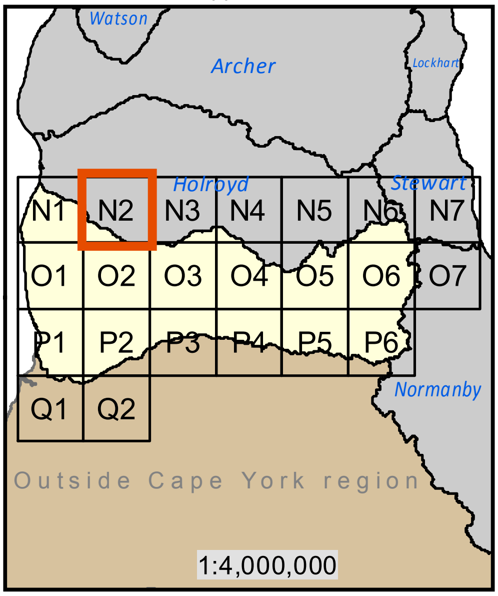
N2 Coleman Catchment

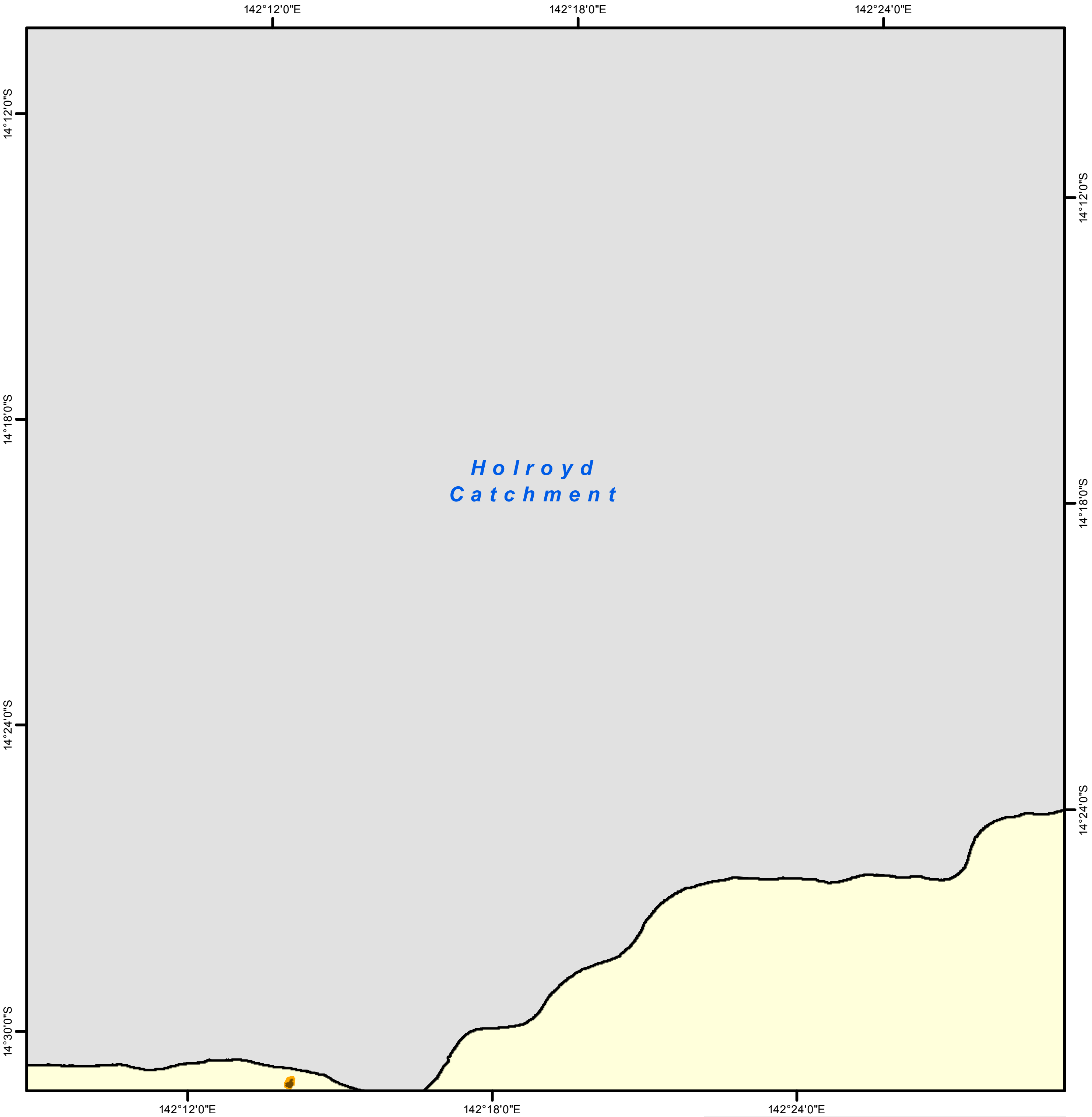
0 2 4 8 12 16 Kilometres

1:200,000

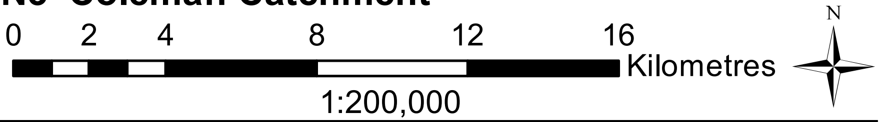
N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely



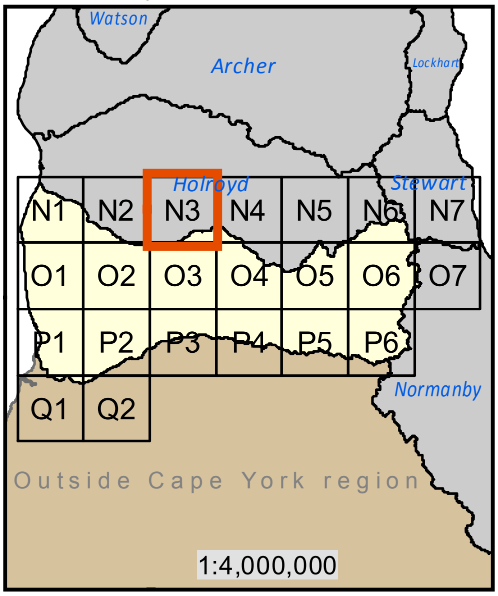


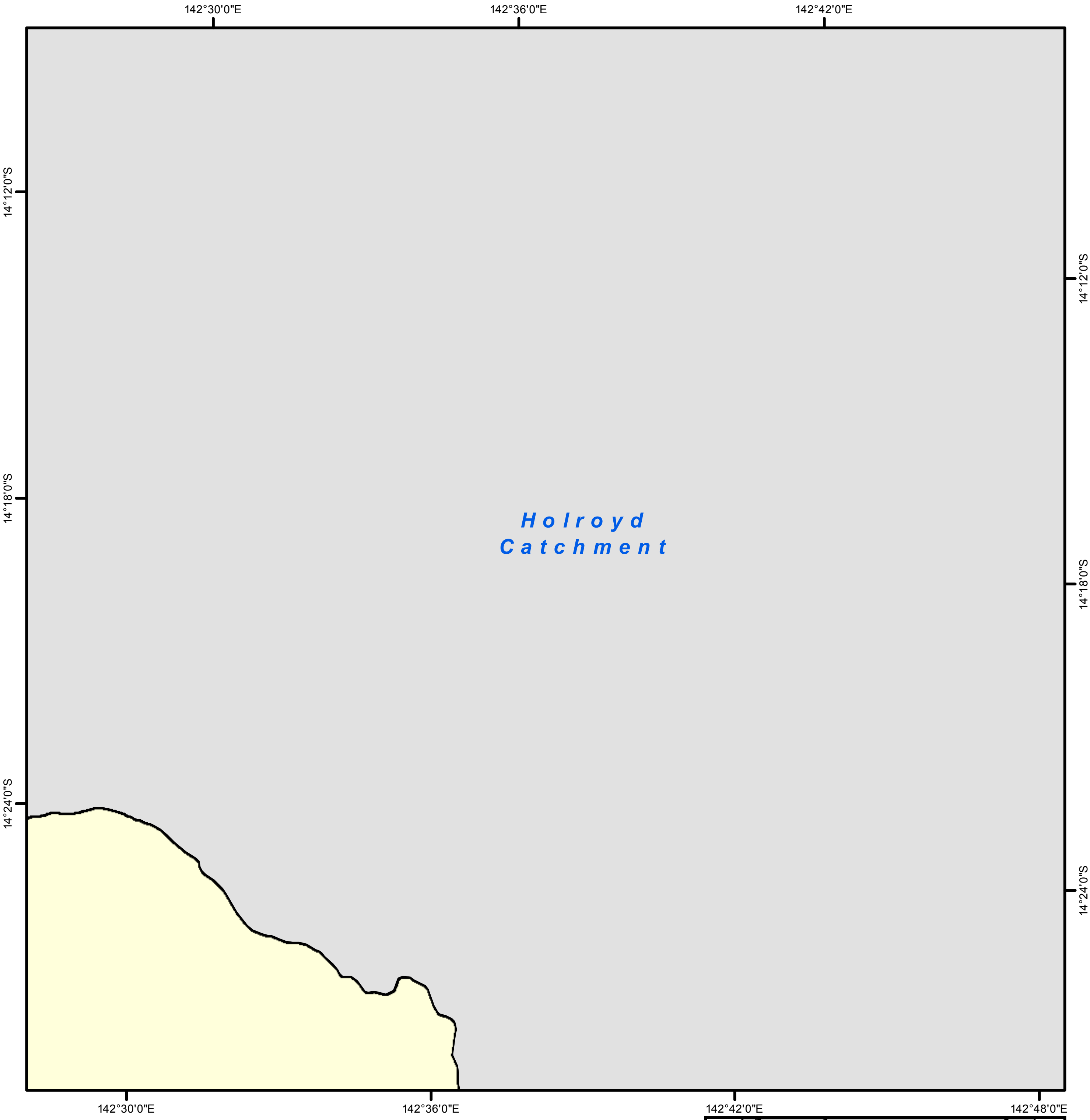
N3 Coleman Catchment



Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



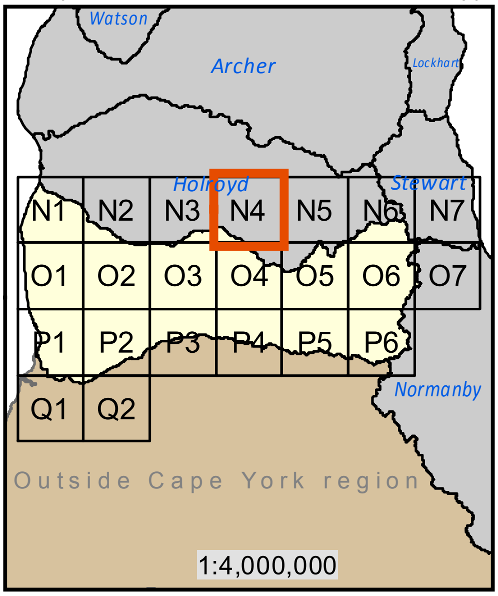


N4 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

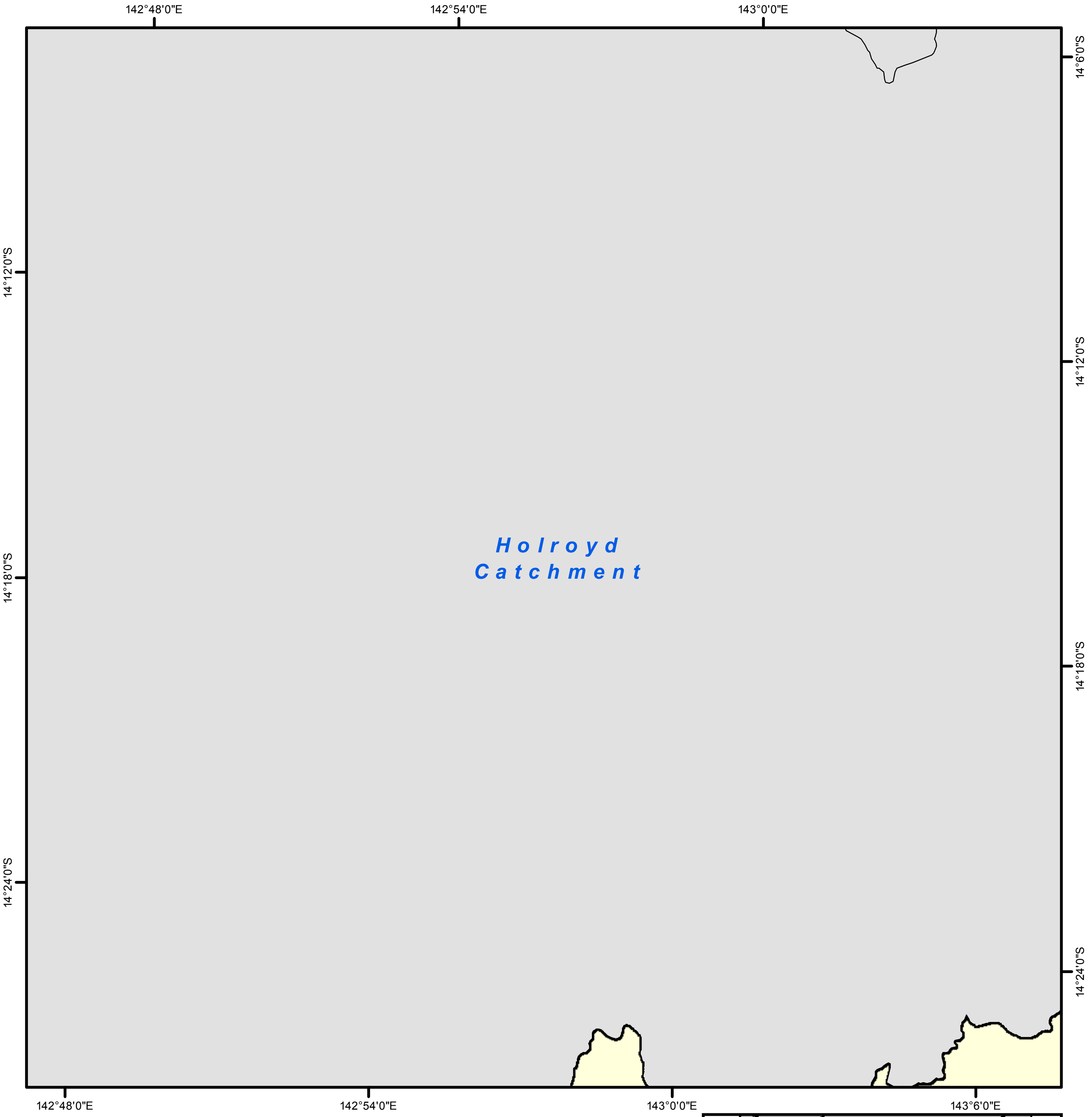
Likely

Baseflow Stream GDE Likelihood

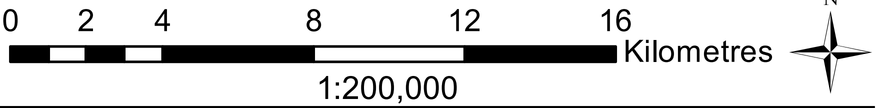
Highly Likely

Likely

Unlikely



N5 Coleman Catchment



- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

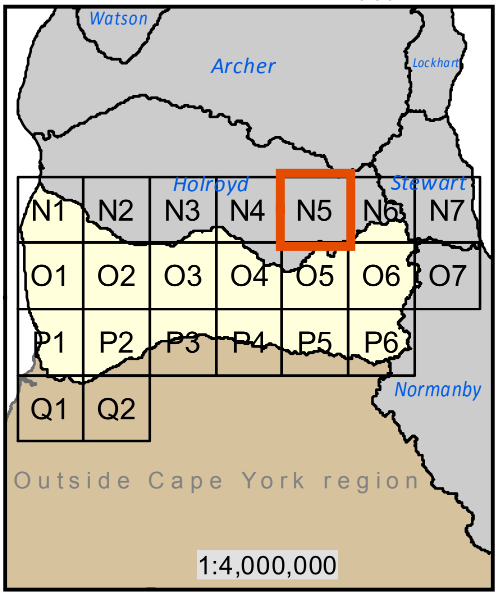
- Known Springs

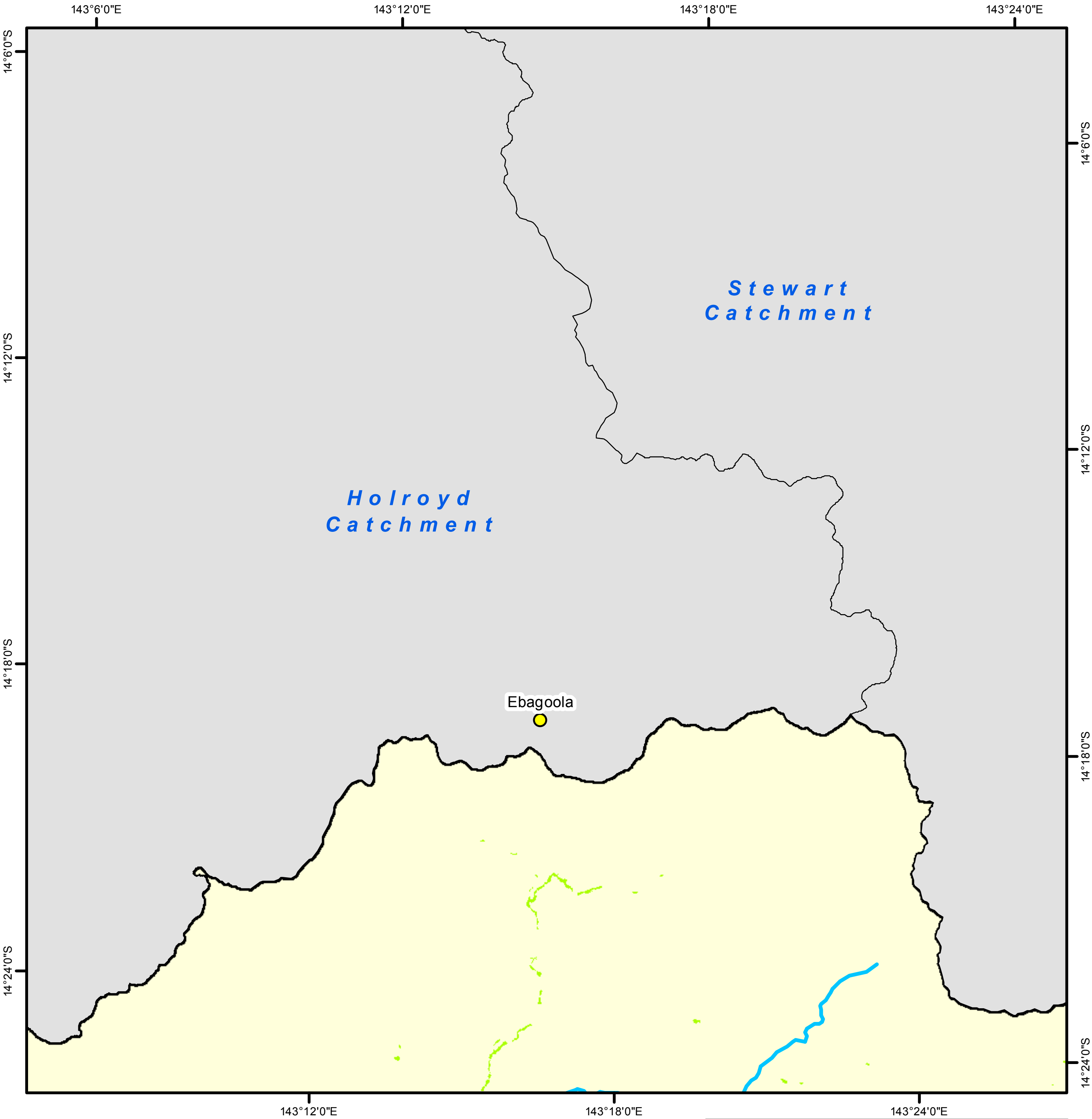
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





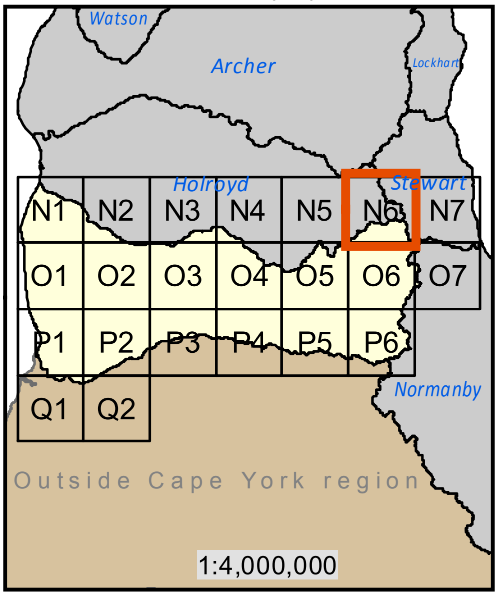
N6 Coleman Catchment

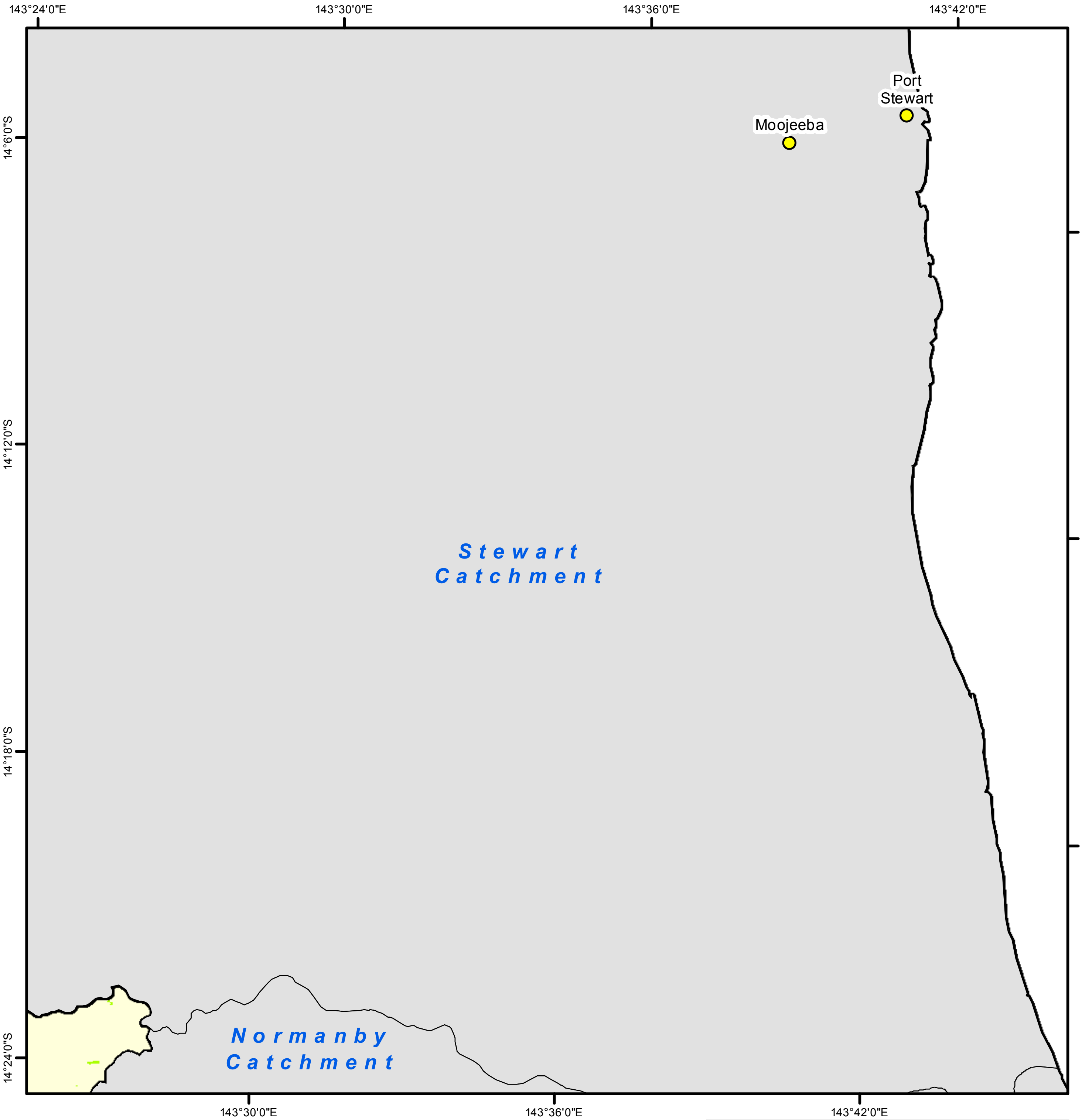
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely



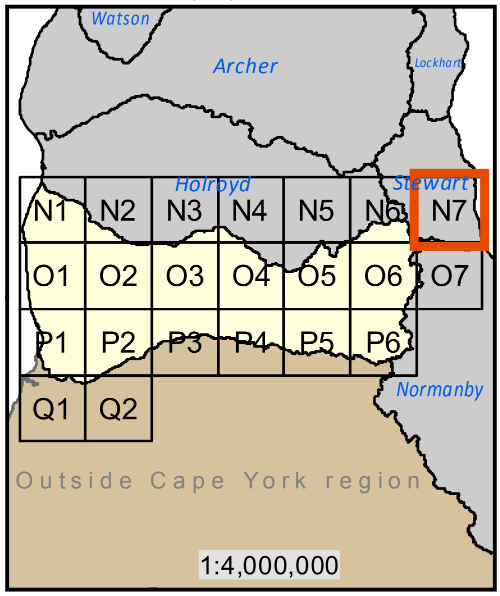


N7 Coleman Catchment

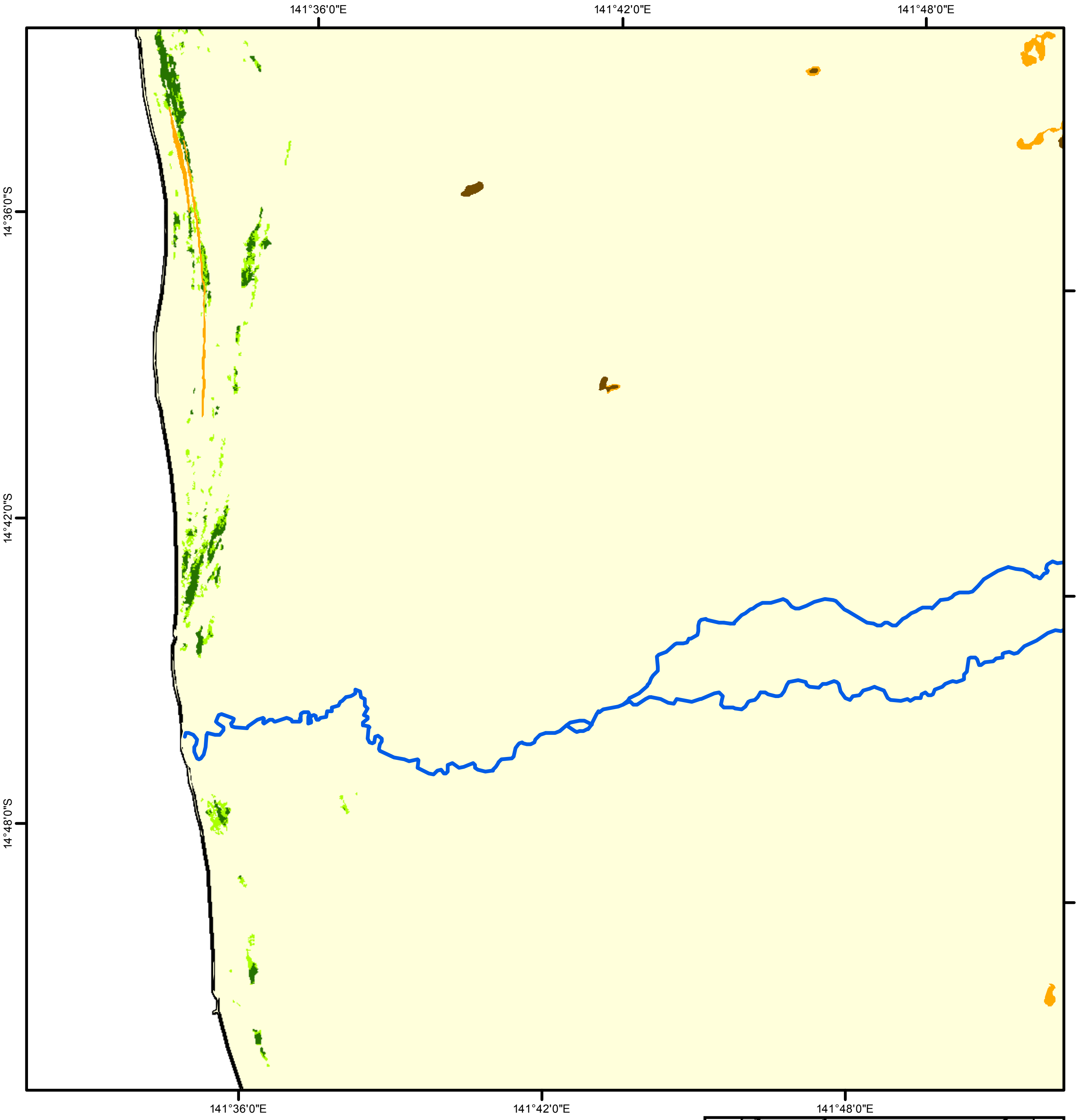
0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



O1 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

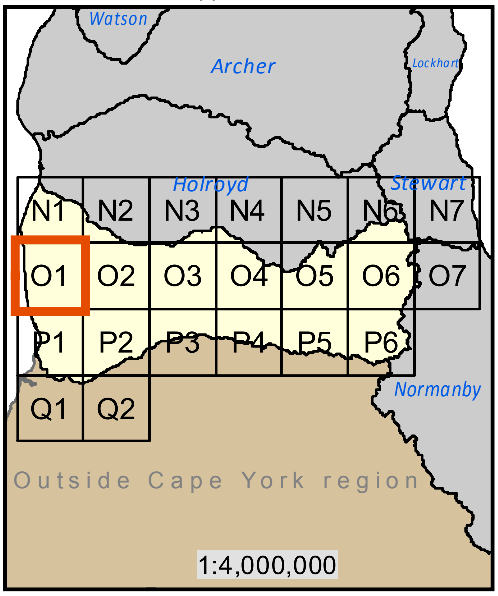
Likely

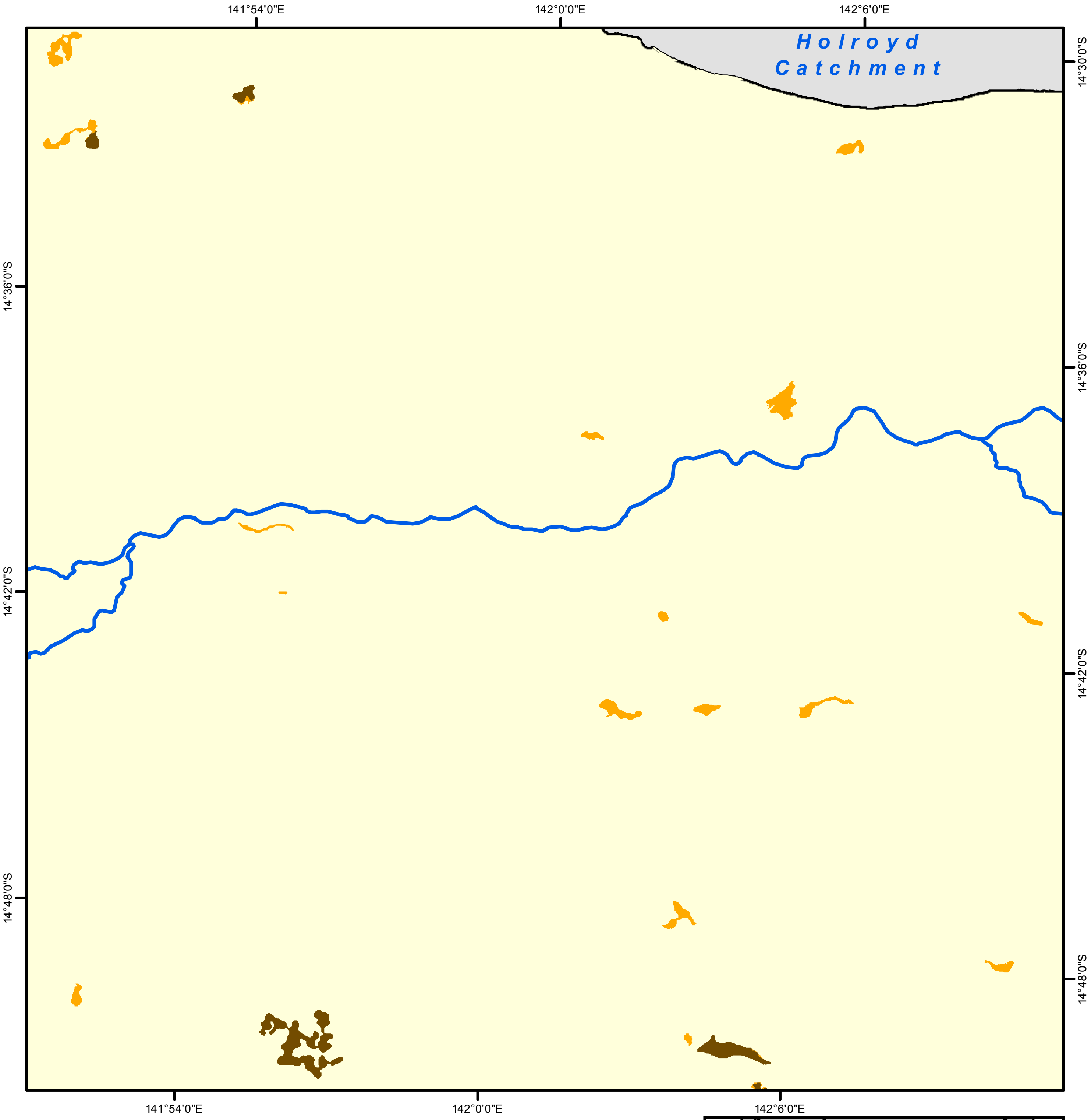
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





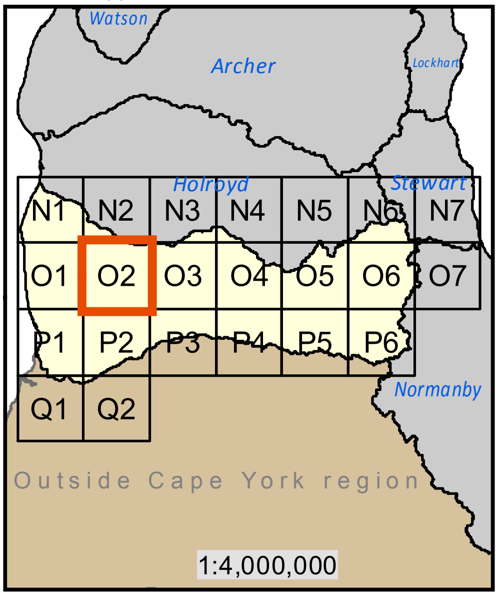
O2 Coleman Catchment

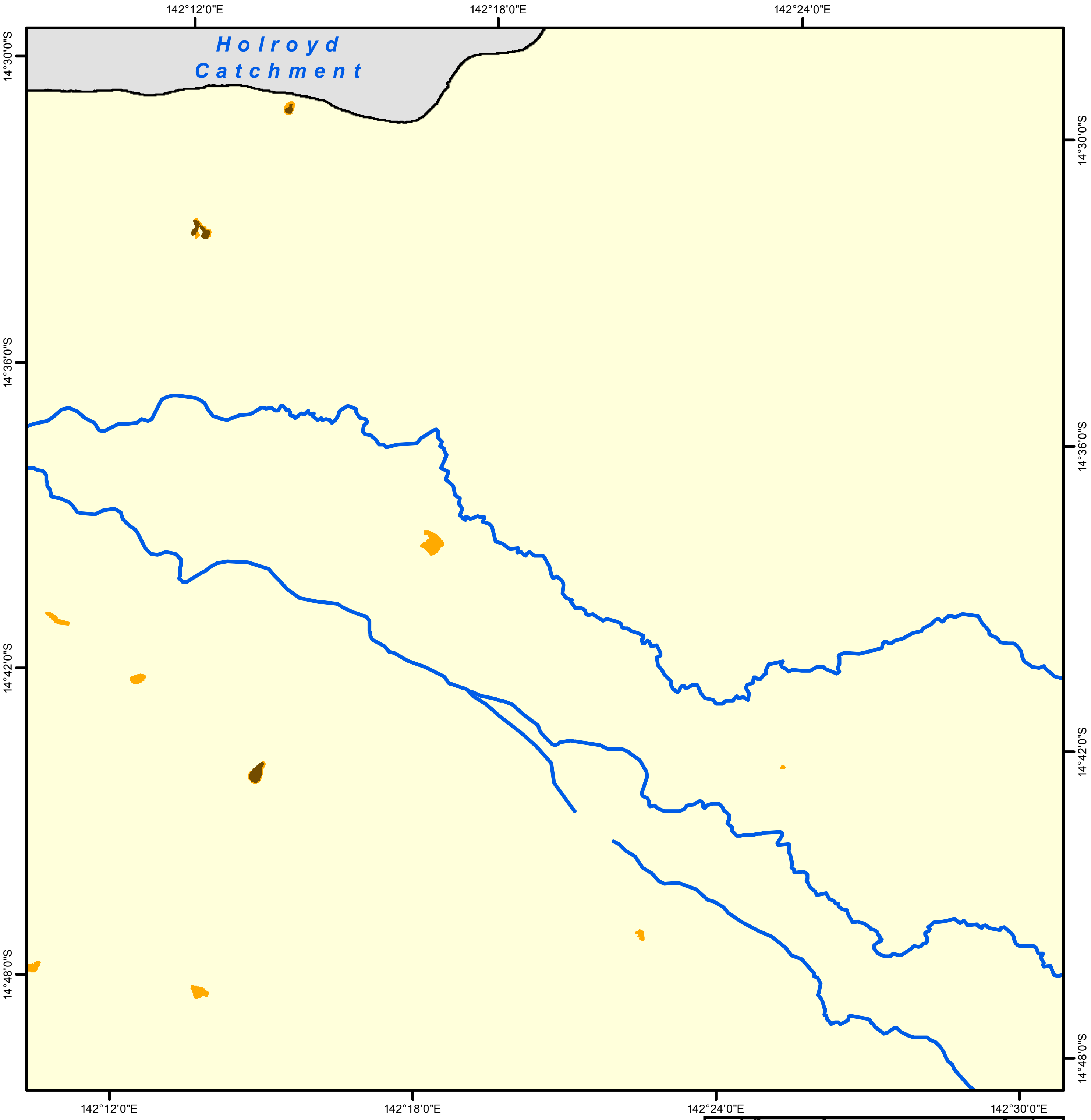
0 2 4 8 12 16 Kilometres

1:200,000

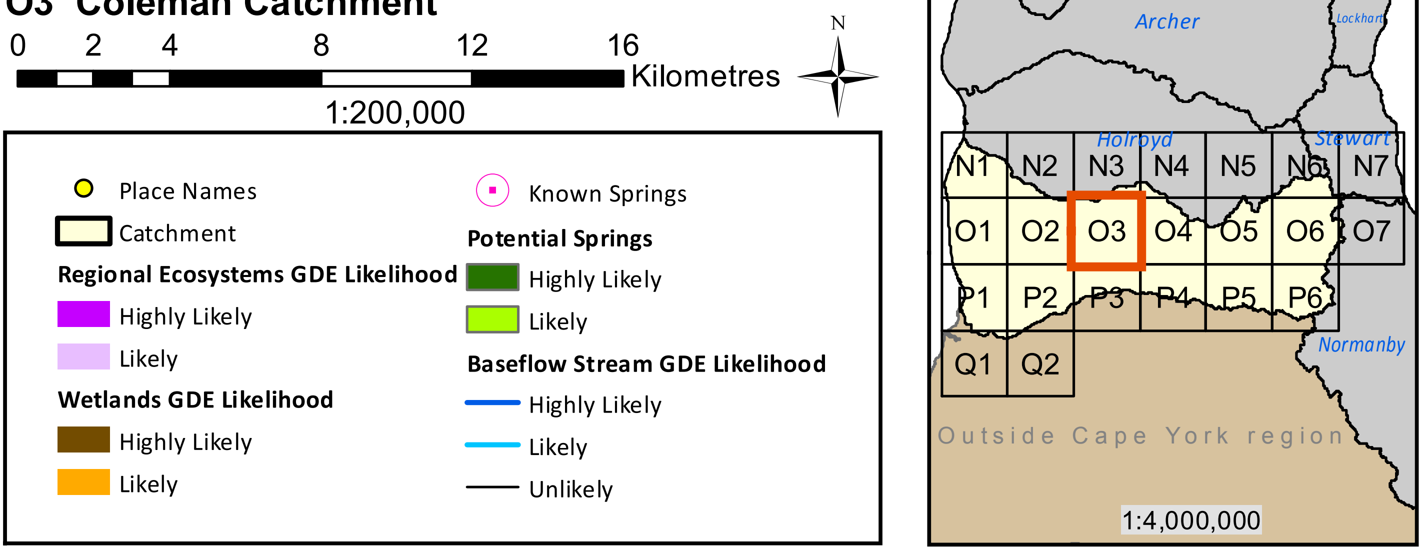
N

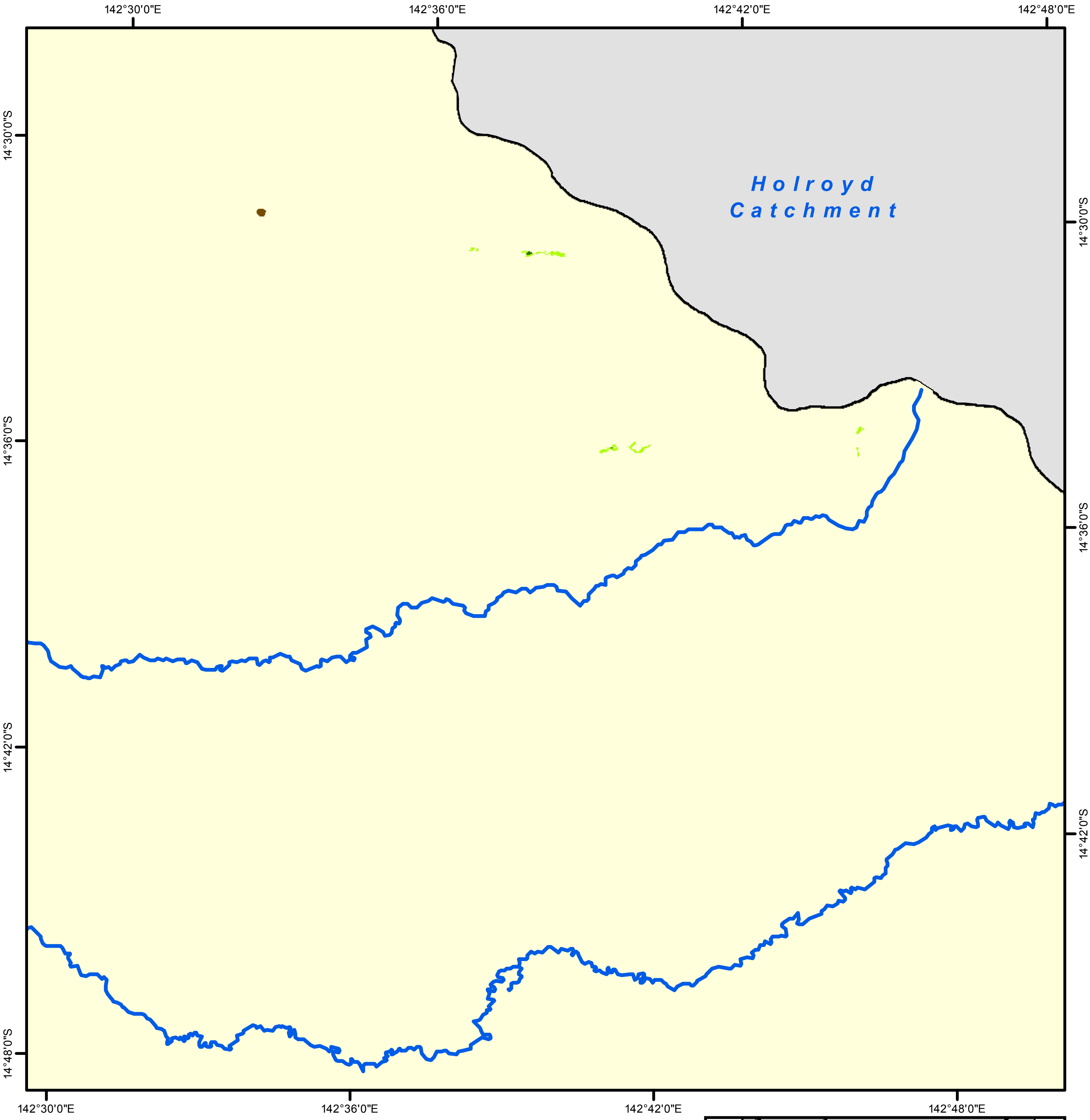
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



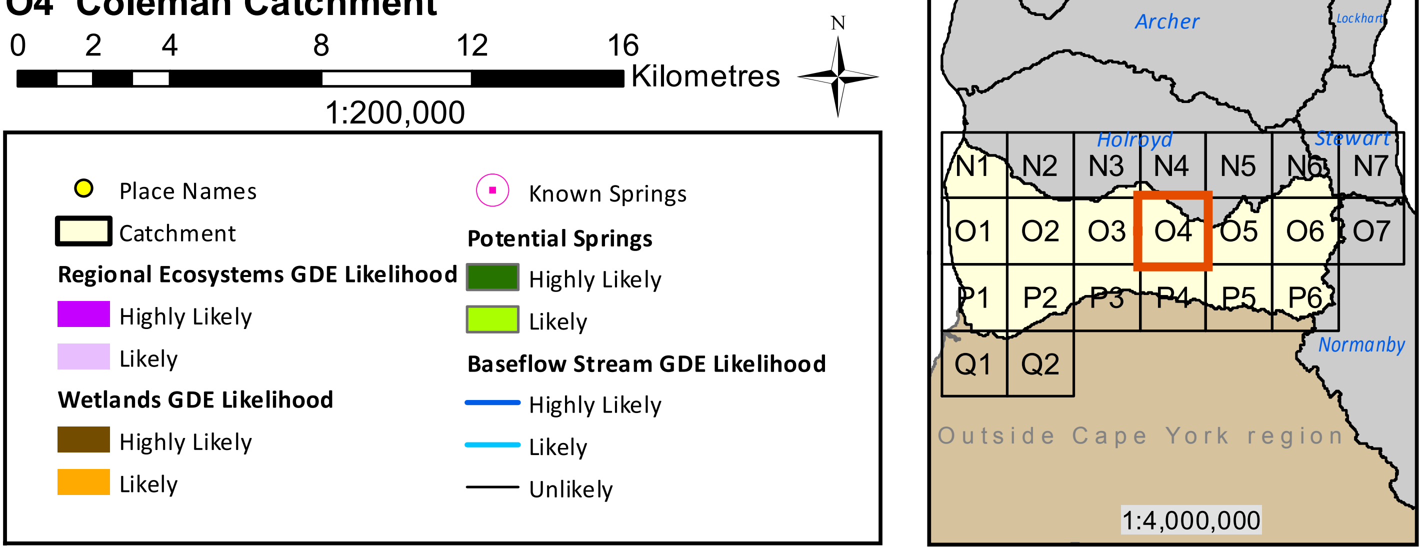


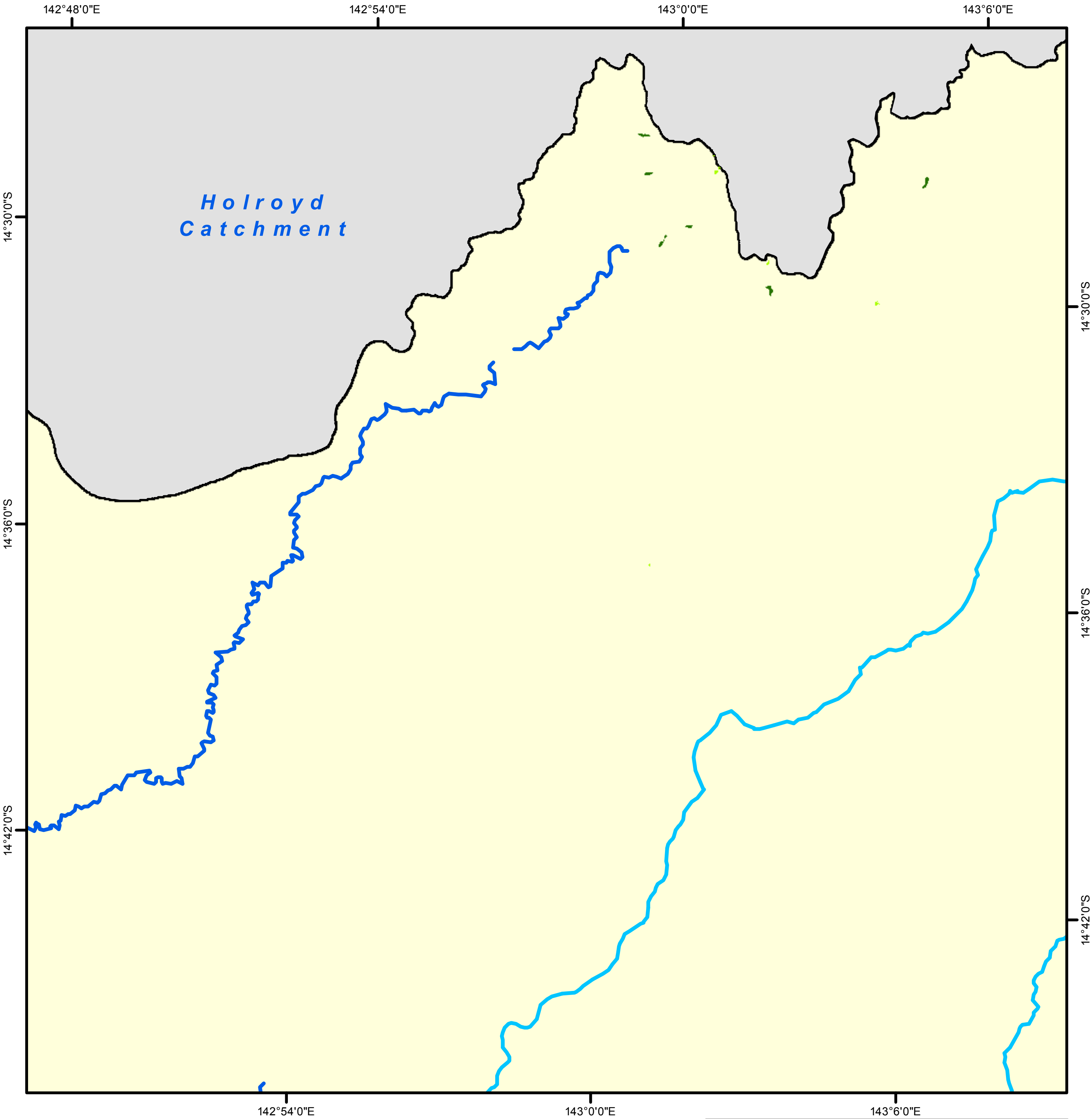
O3 Coleman Catchment





O4 Coleman Catchment





O5 Coleman Catchment

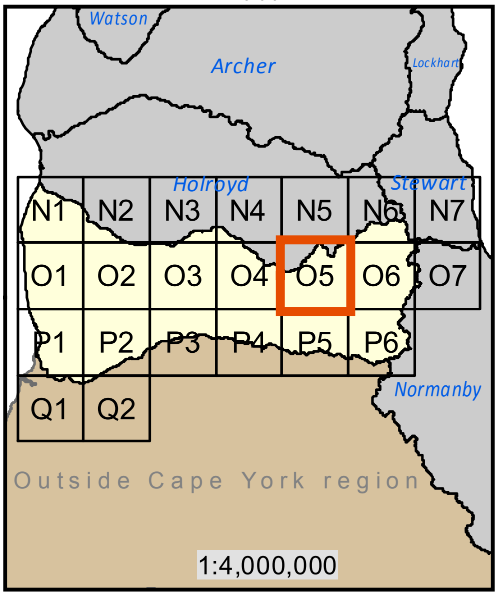
0 2 4 8 12 16 Kilometres

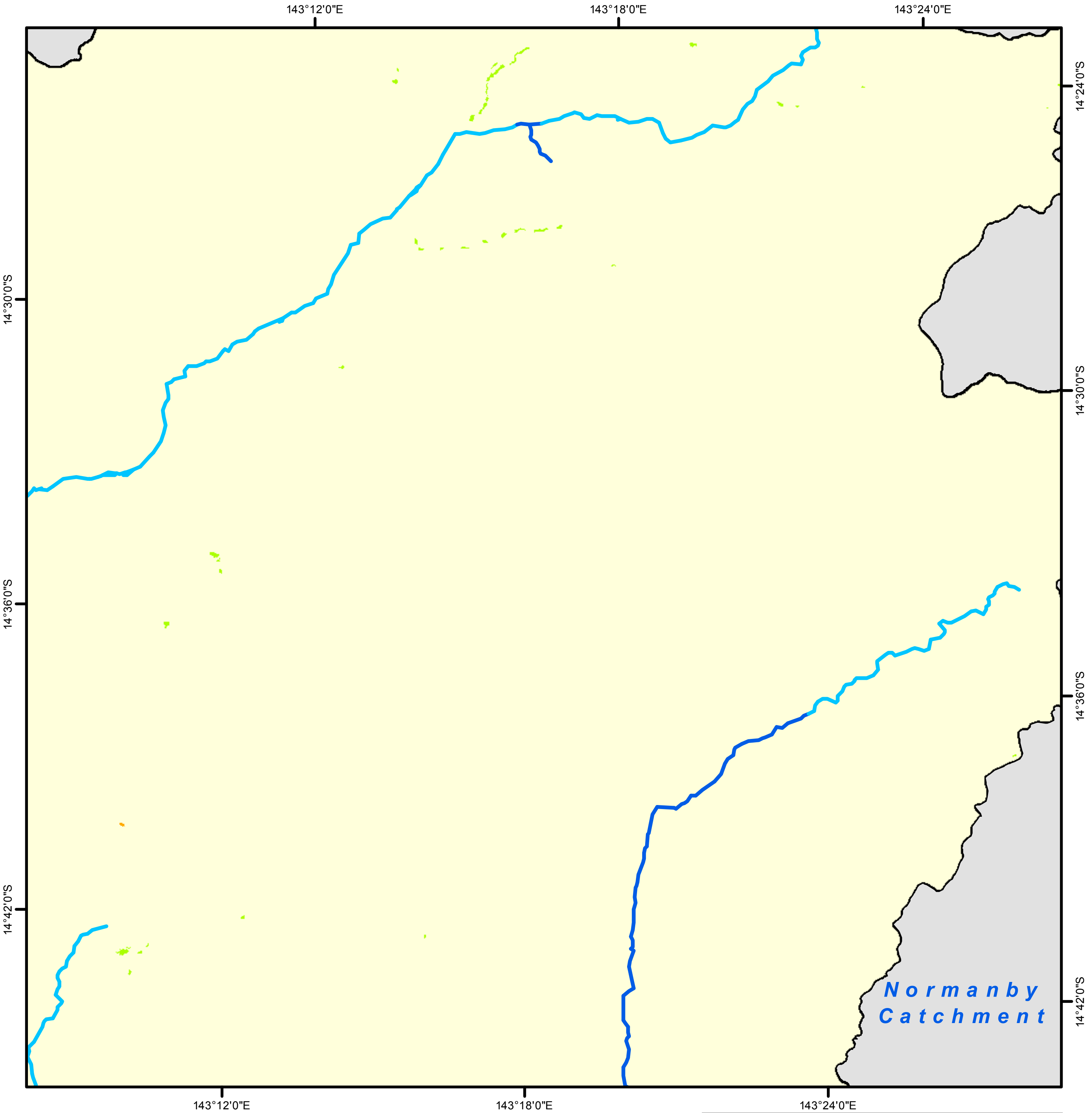
1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





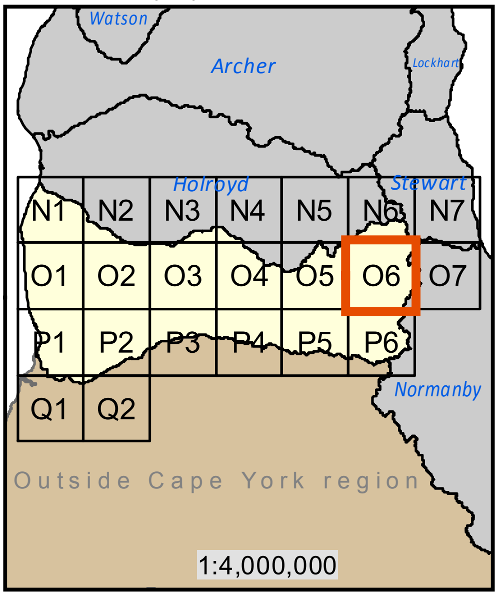
O6 Coleman Catchment

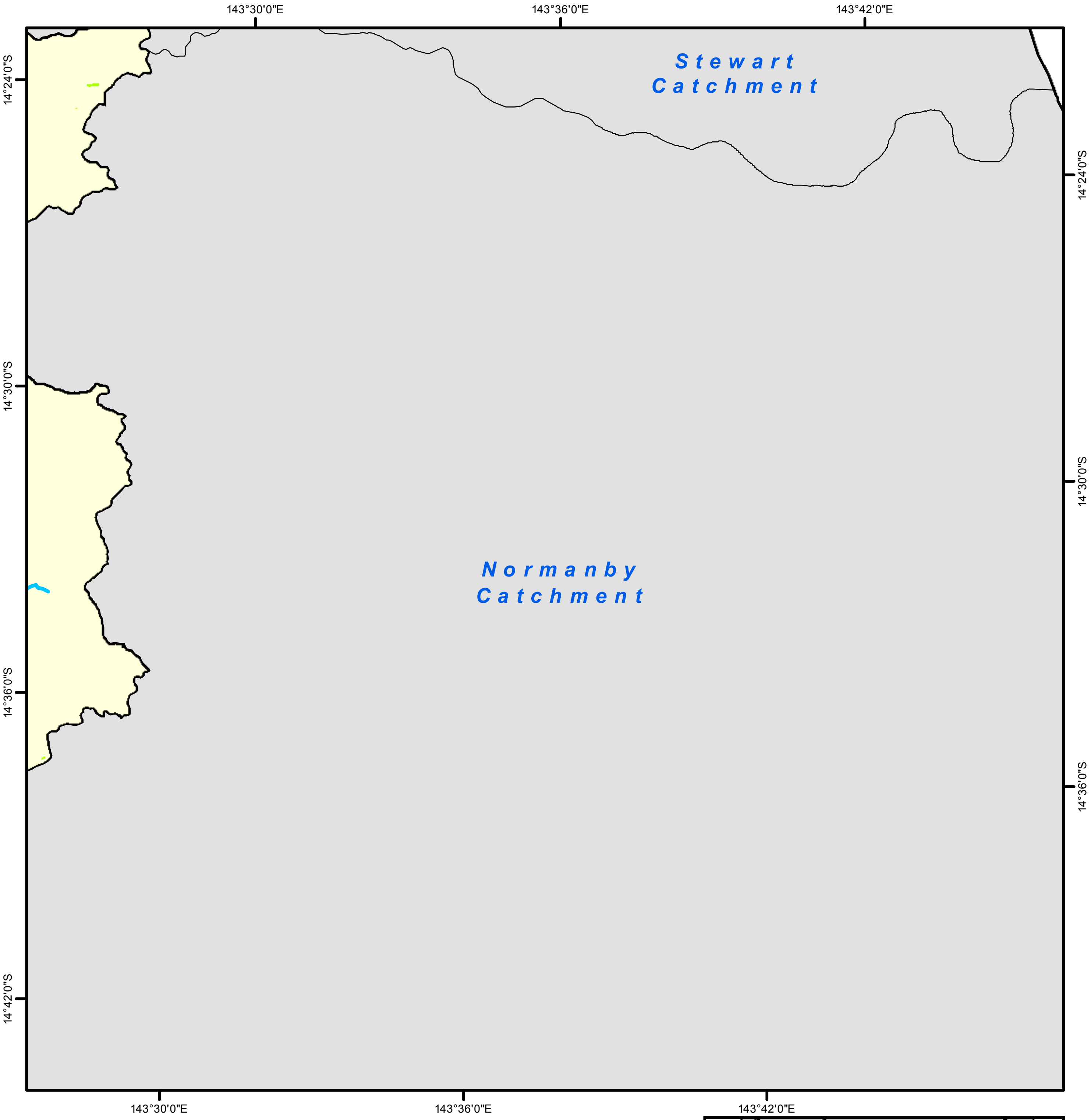
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



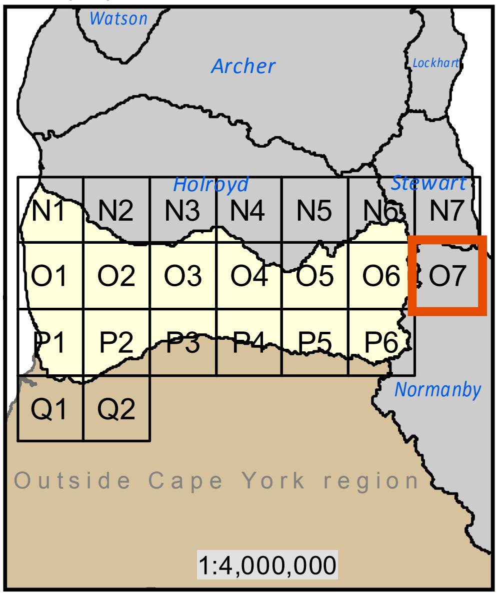


O7 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

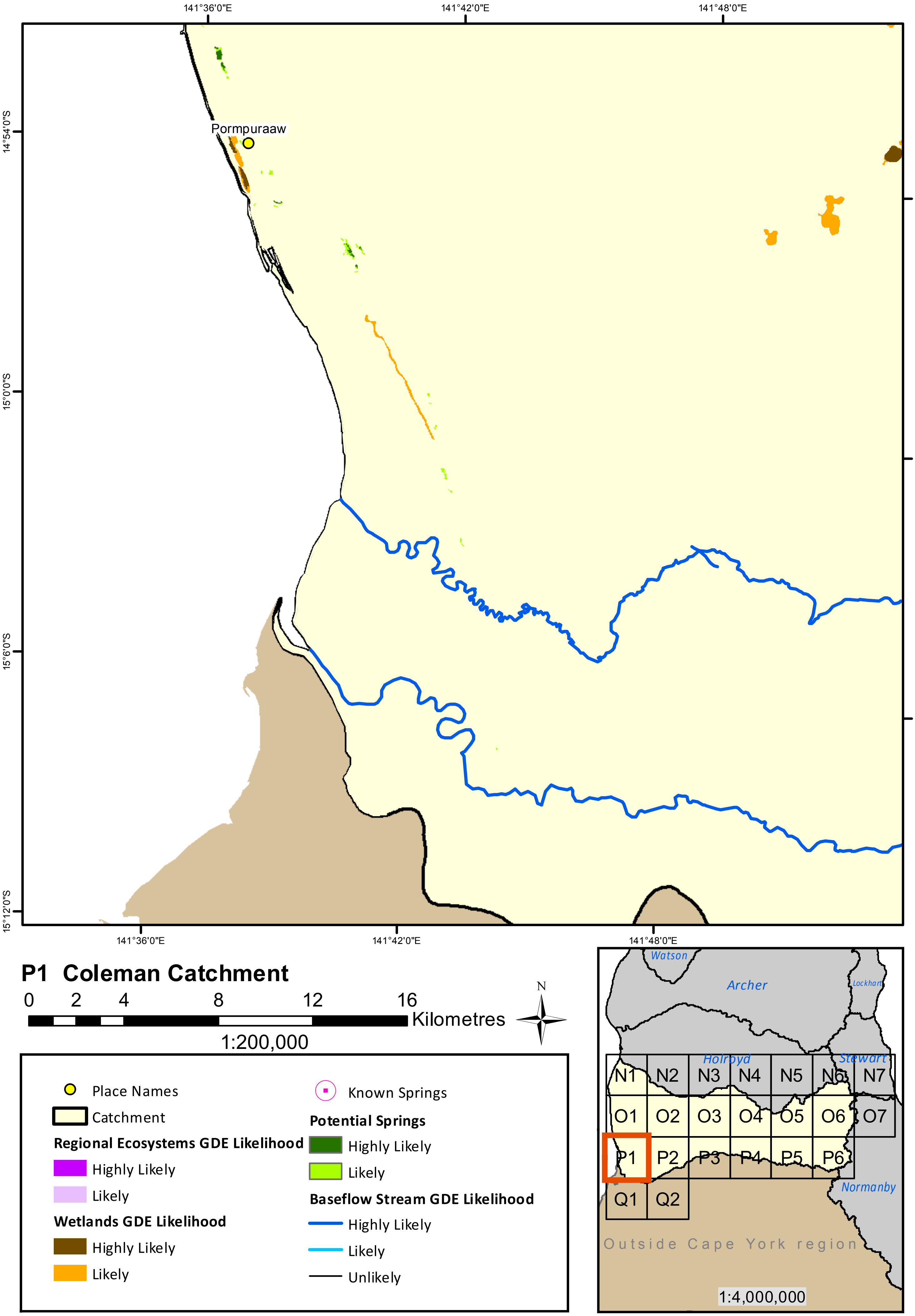
Likely

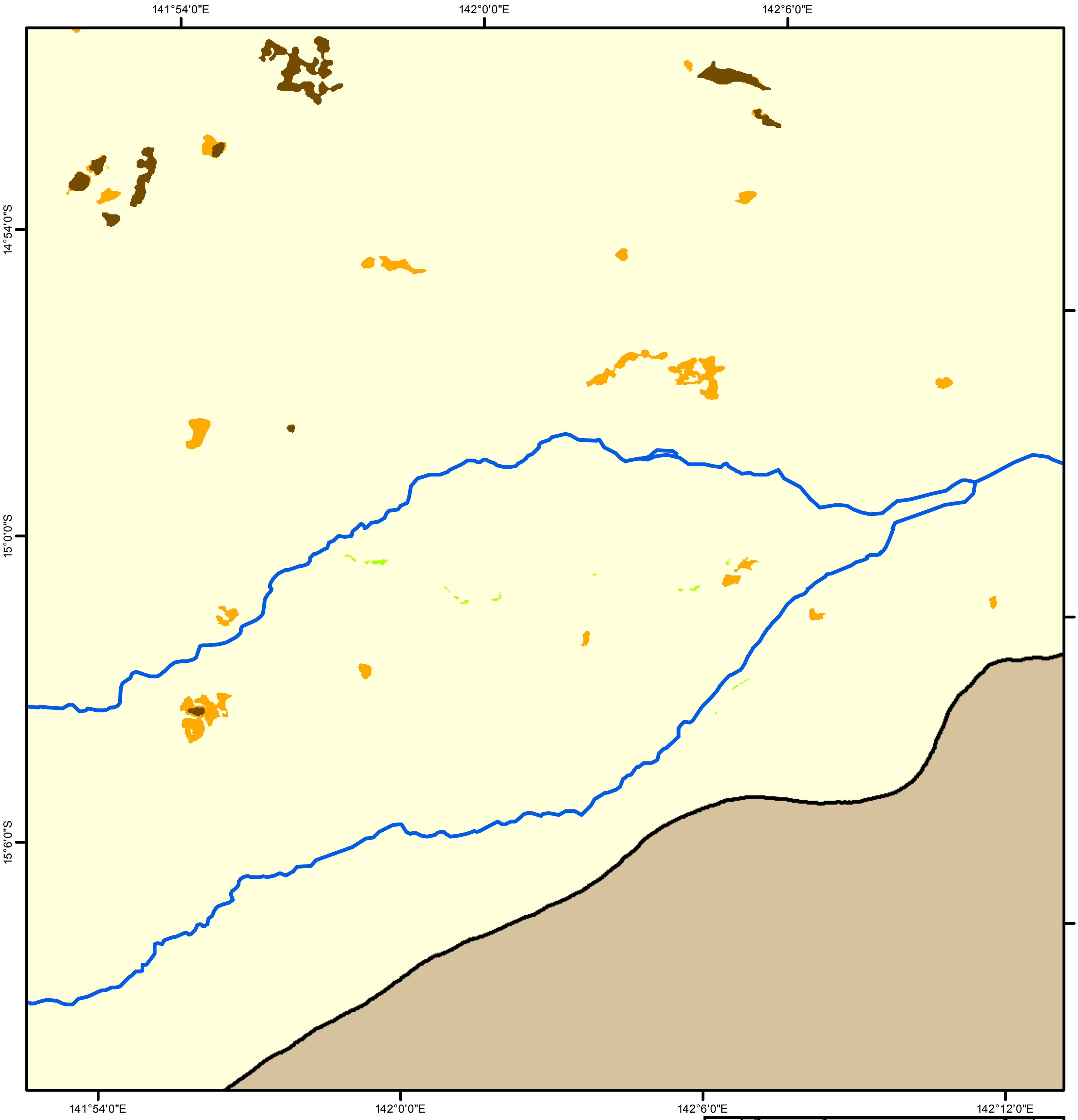
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely


141°36'0"E
141°42'0"E
141°48'0"E
14°54'0"S
15°0'0"S
15°6'0"S
15°12'0"S
Pormpuraaw
P1 Coleman Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Watson
Archer
Lockhart
Holroyd
Stewart
N1 N2 N3 N4 N5 N6 N7
O1 O2 O3 O4 O5 O6 O7
P1 P2 P3 P4 P5 P6
Q1 Q2
Normanby
Outside Cape York region
1:4,000,000



P2 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

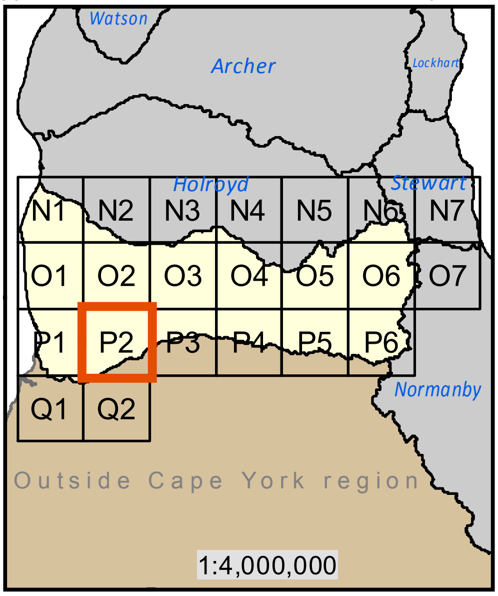
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

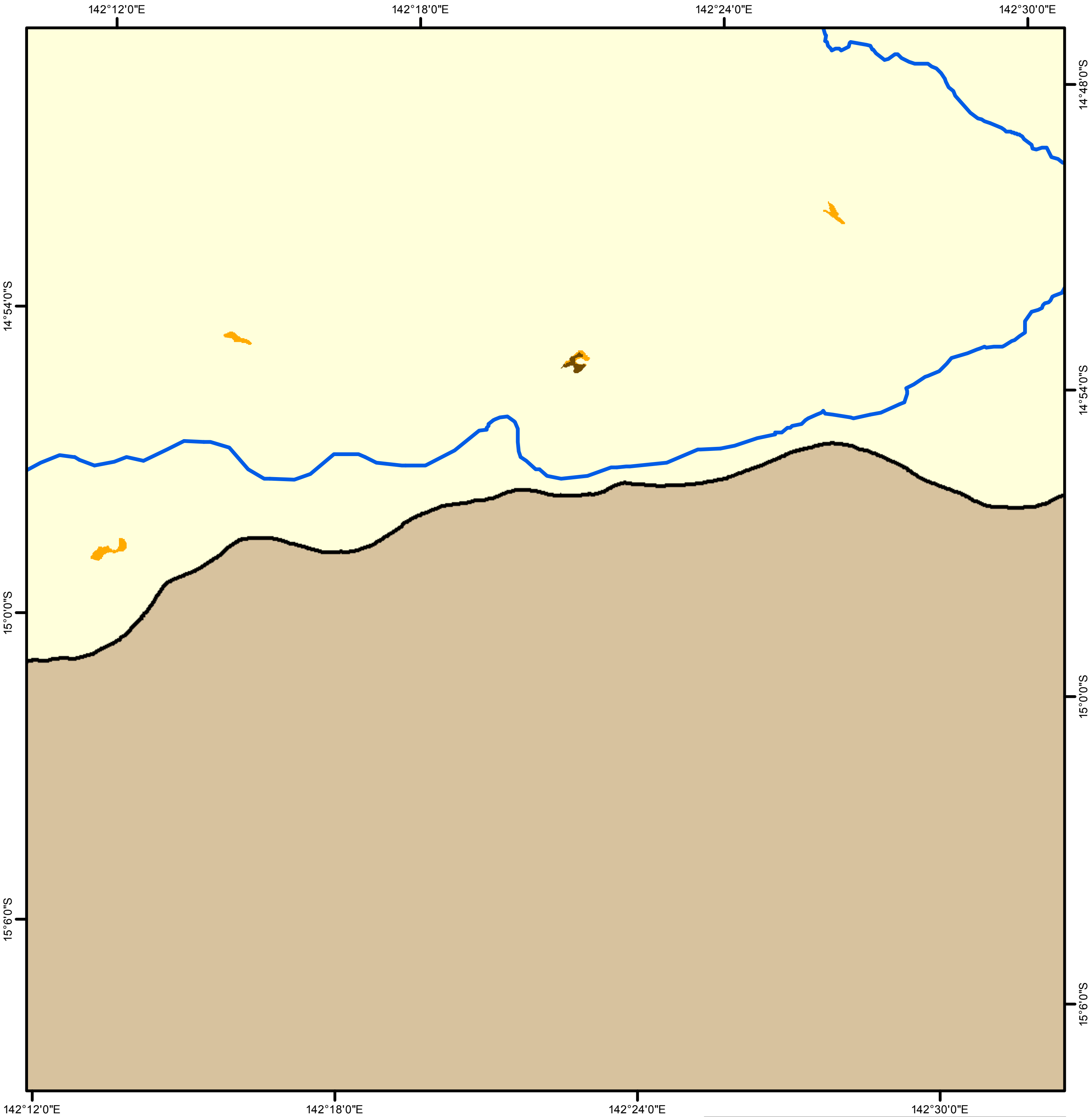
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





P3 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

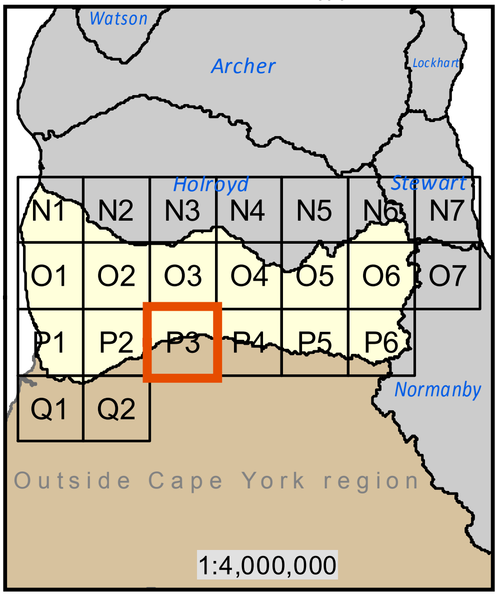
Likely

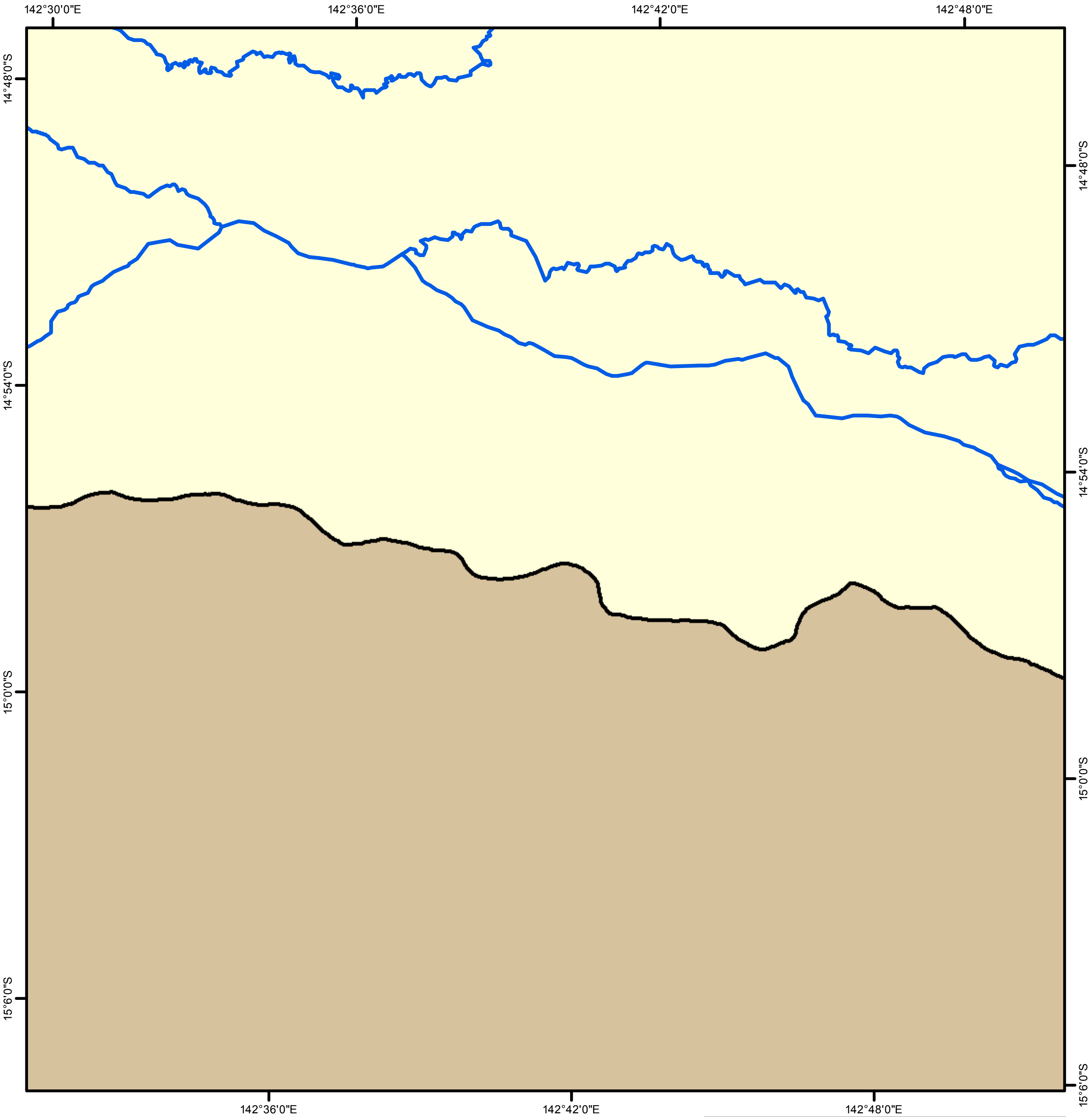
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





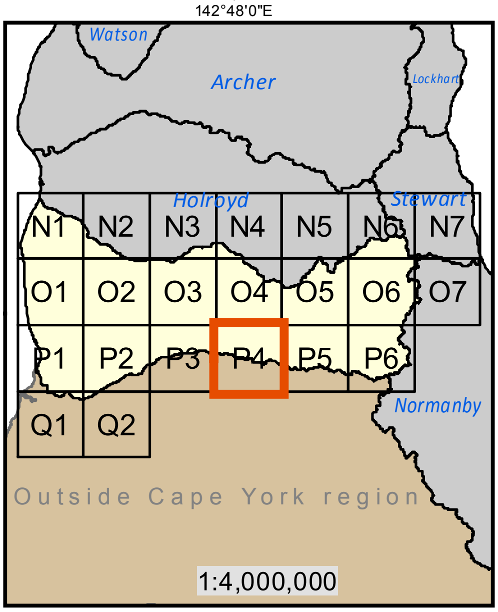
P4 Coleman Catchment

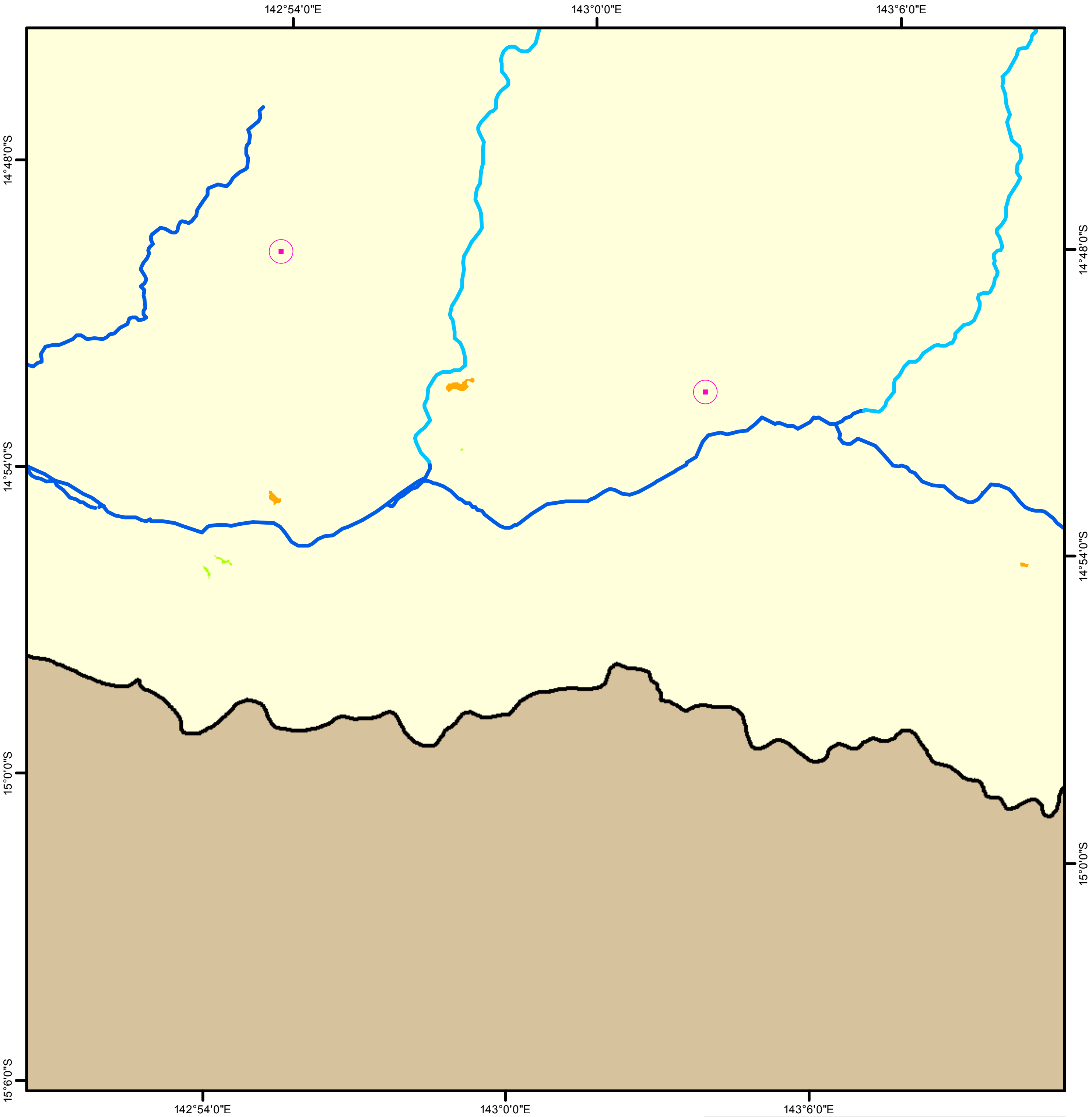
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





P5 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

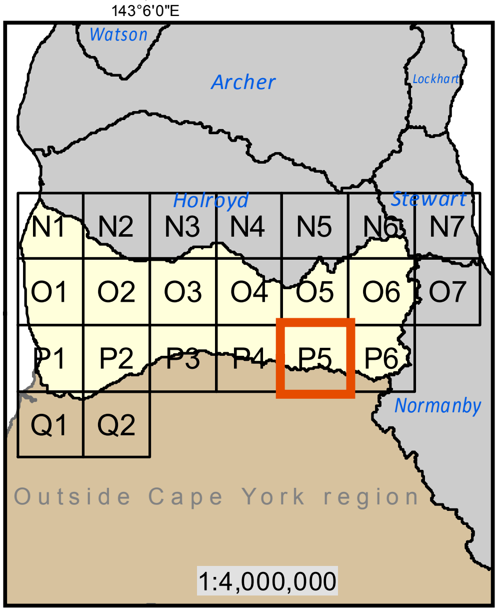
Likely

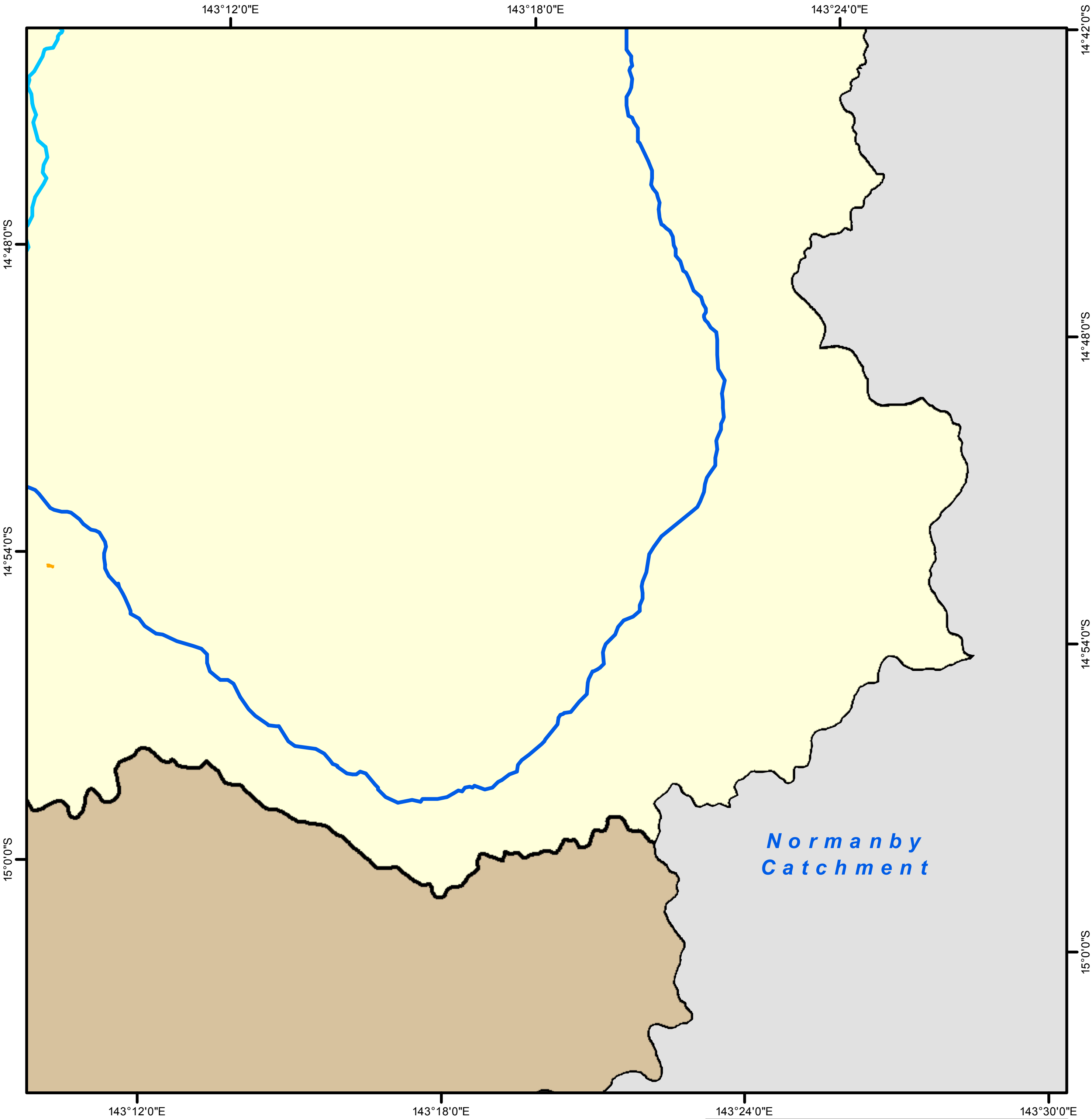
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



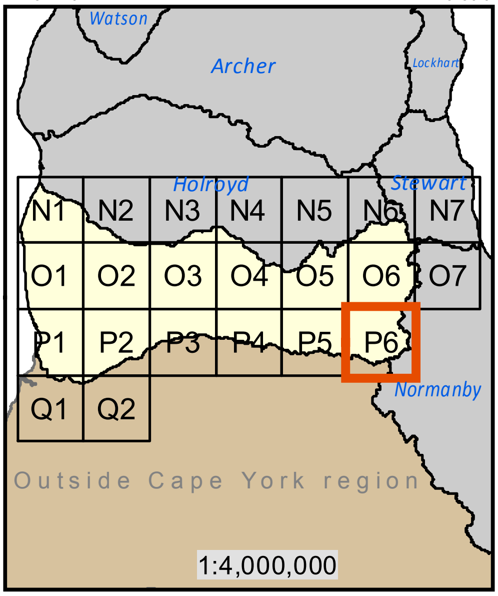


P6 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

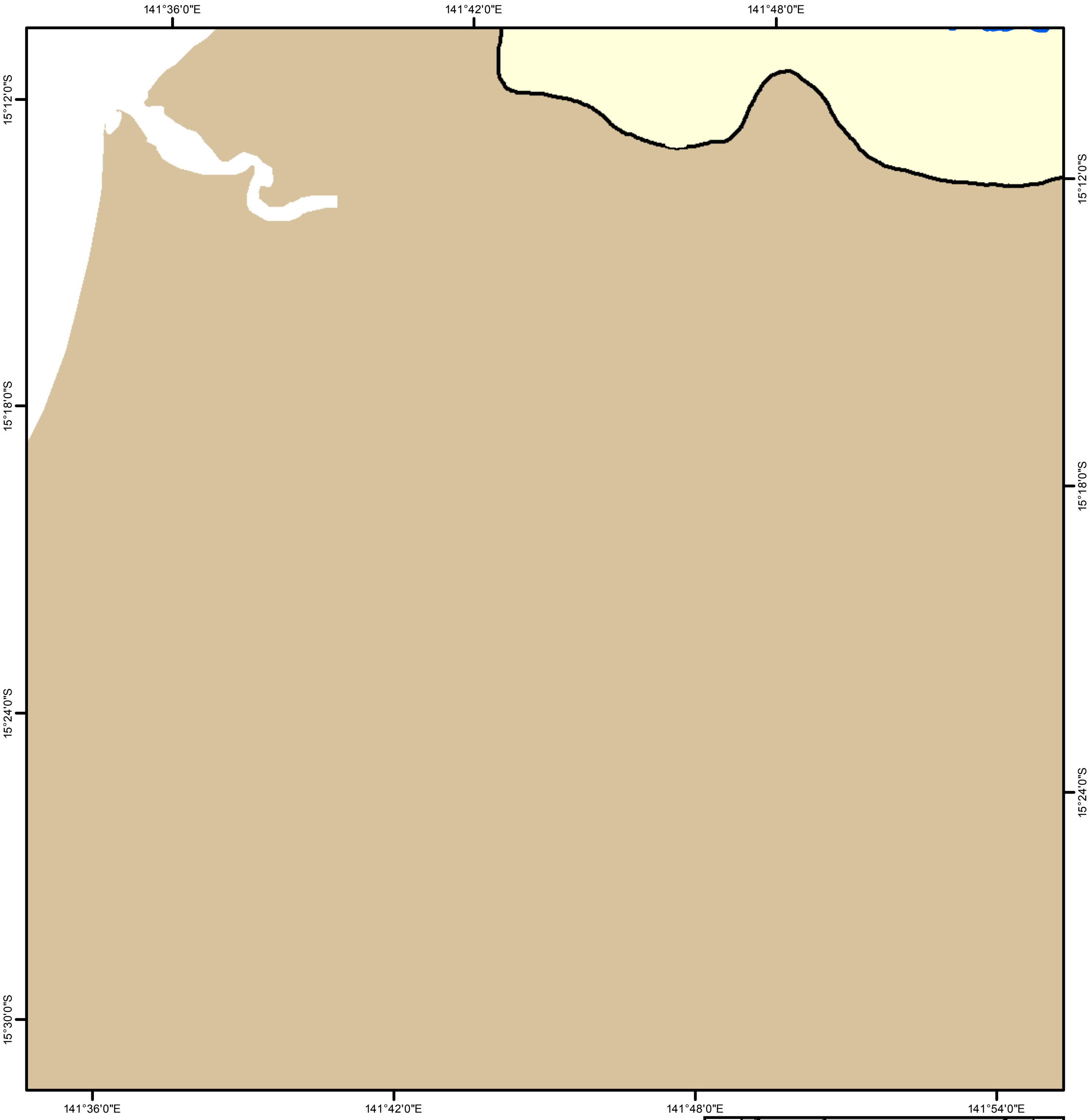
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



Q1 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

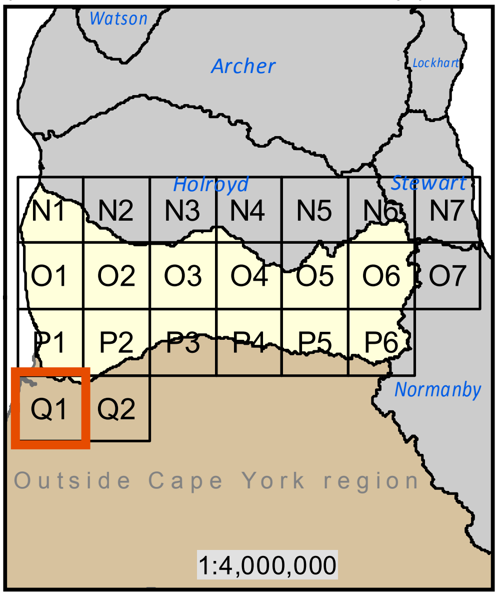
- Known Springs

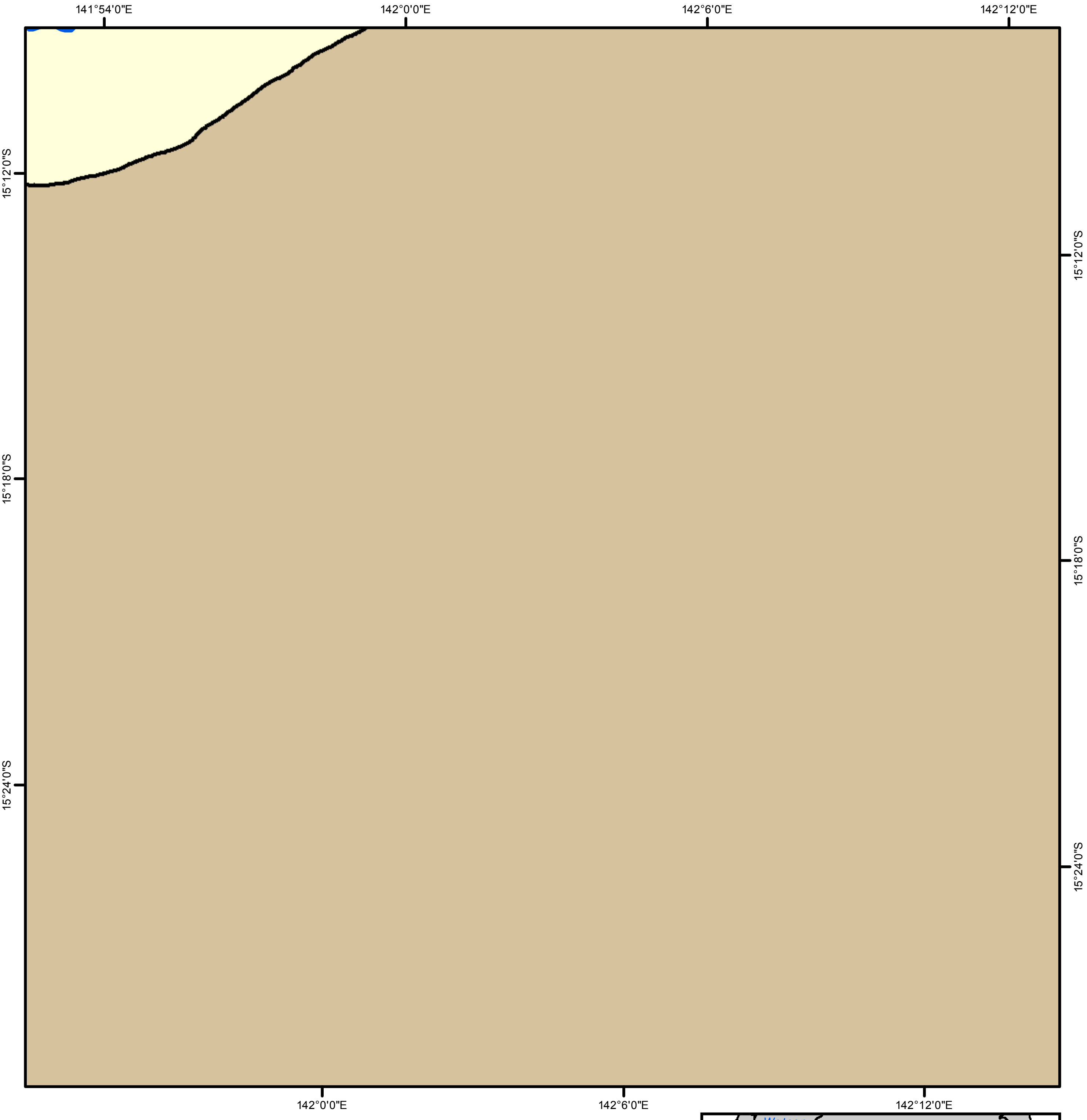
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





Q2 Coleman Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

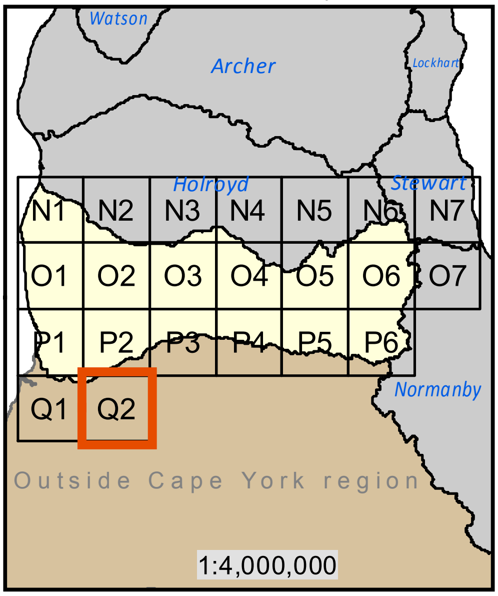
Likely

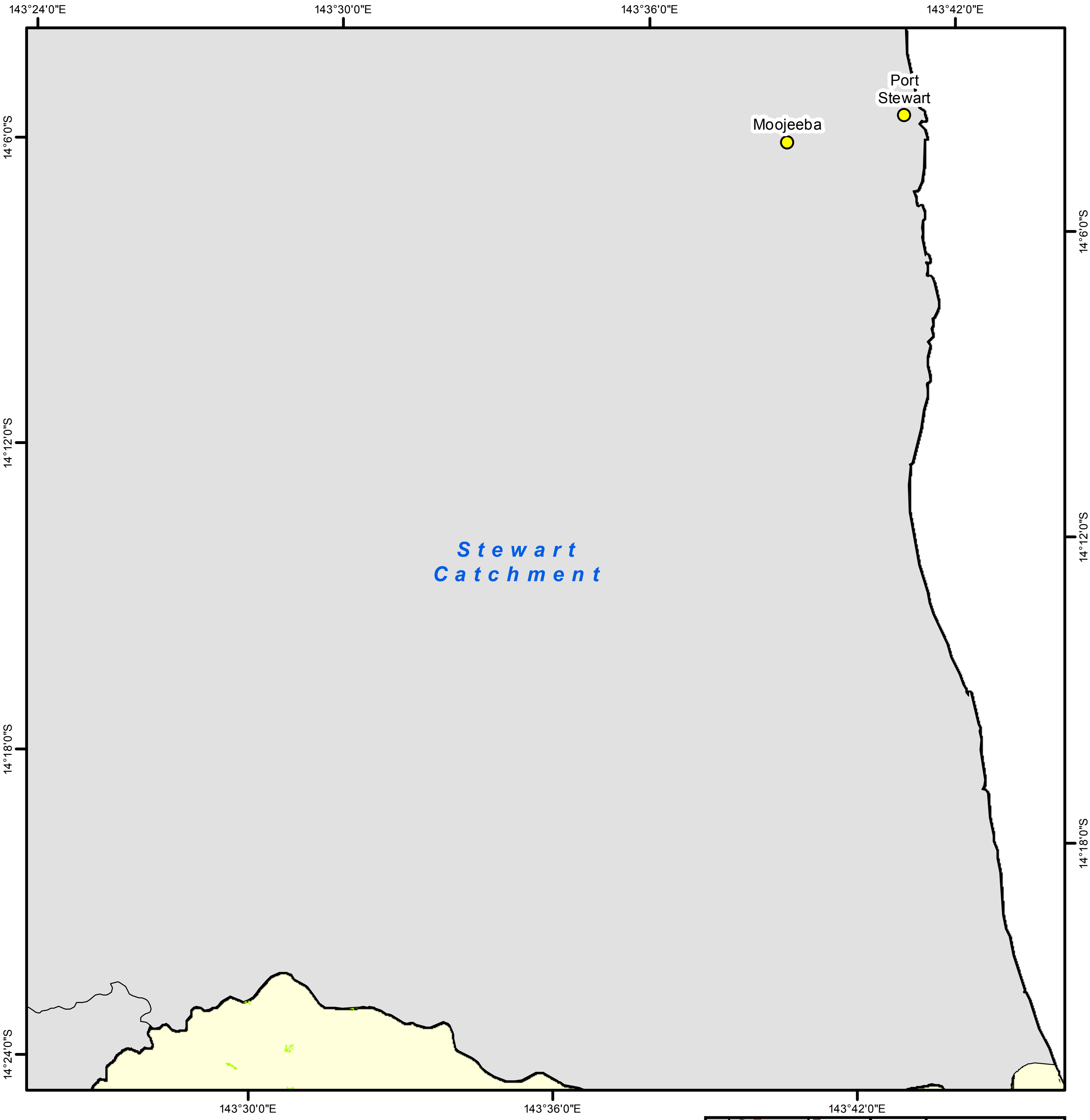
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





N7 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

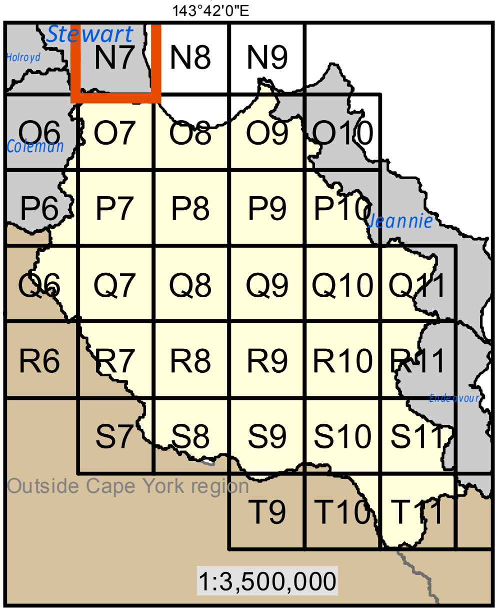
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

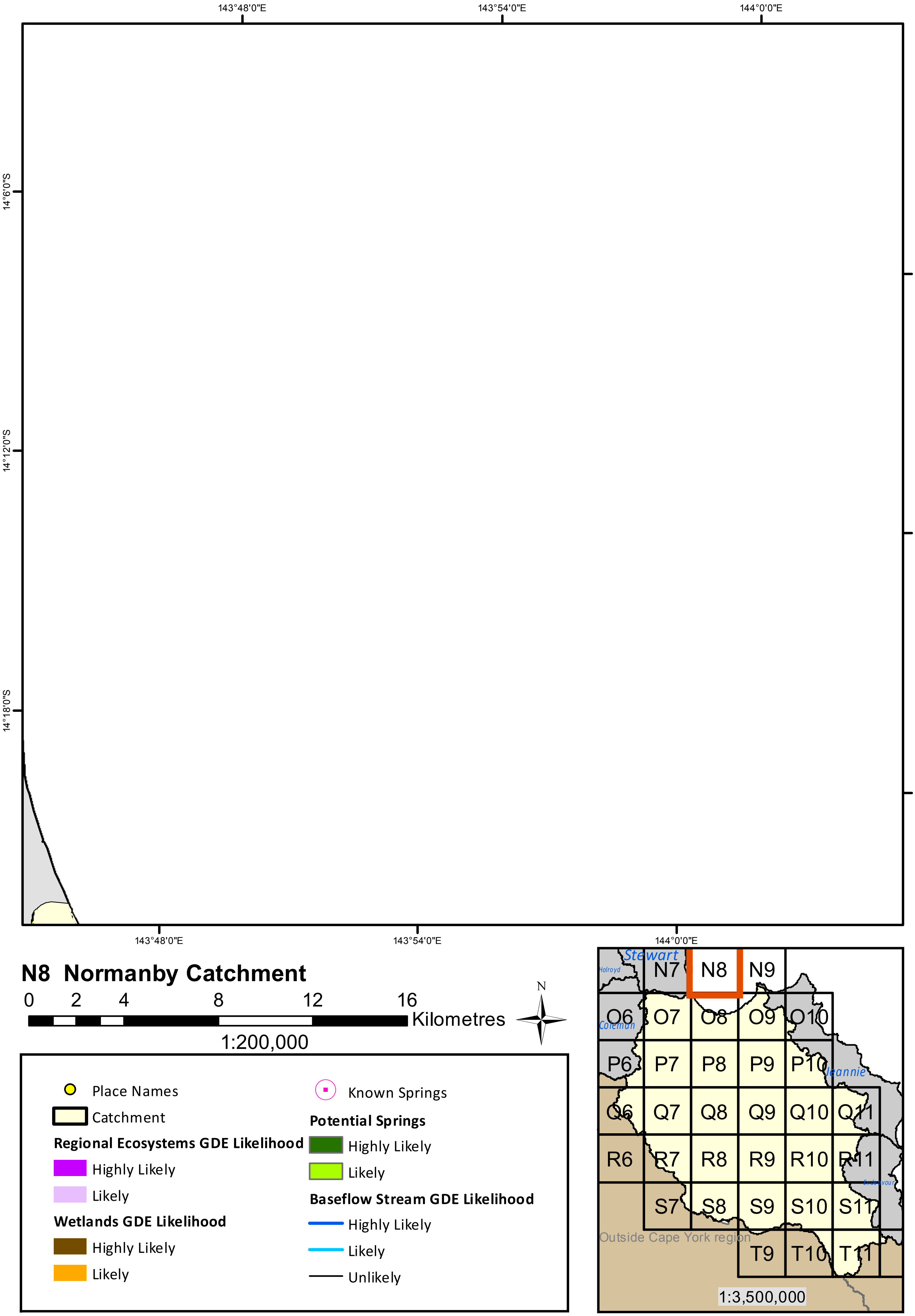
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

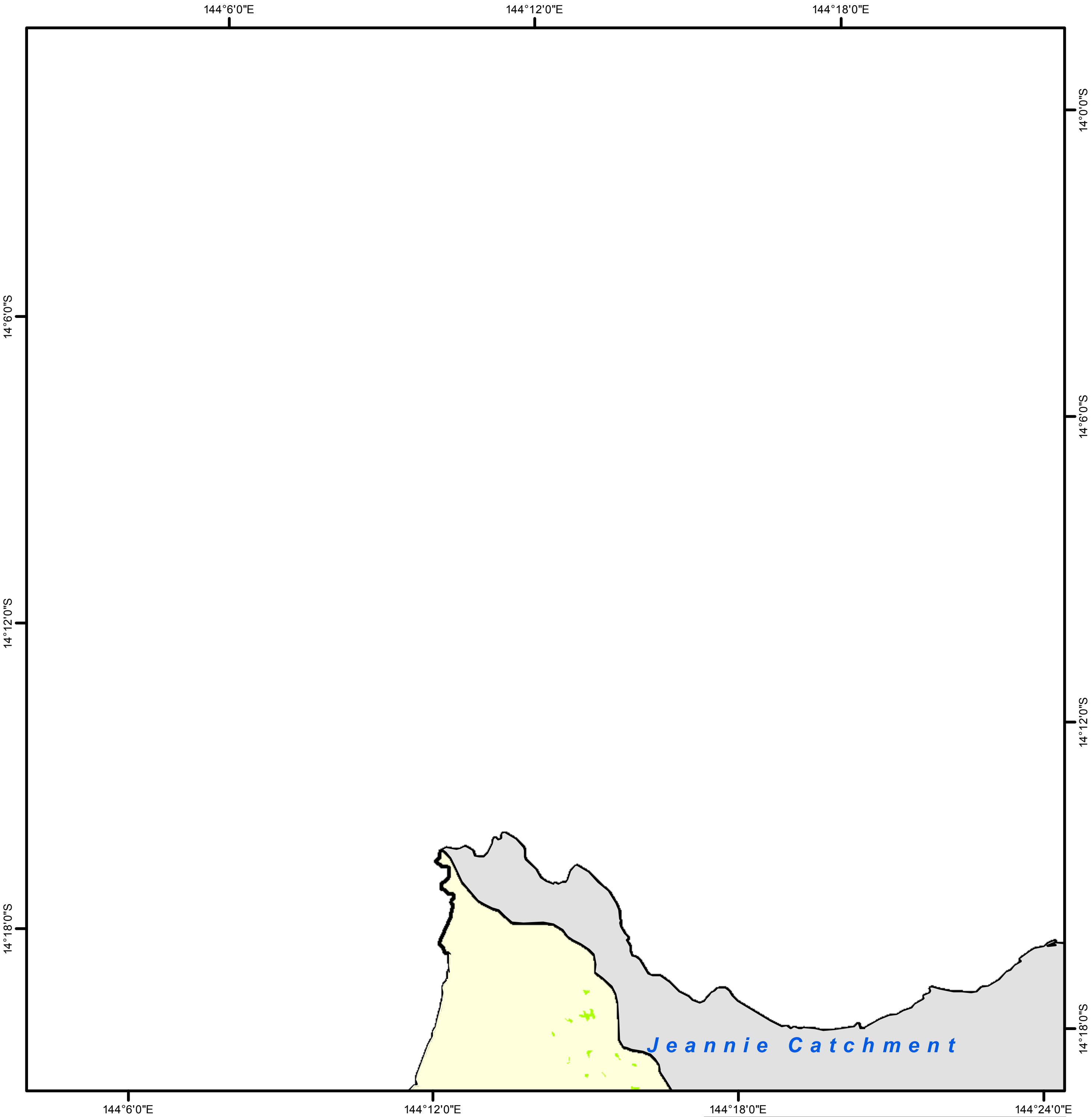
Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





143°48'0"E
143°54'0"E
144°0'0"E
14°6'0"S
14°12'0"S
14°18'0"S
N8 Normanby Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Stewart
Holroyd
N7
N8
N9
O6
O7
O8
O9
O10
Coleman
P6
P7
P8
P9
P10
Jeannie
Q6
Q7
Q8
Q9
Q10
Q11
R6
R7
R8
R9
R10
R11
S7
S8
S9
S10
S11
Outside Cape York region
T9
T10
T11
1:3,500,000



N9 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

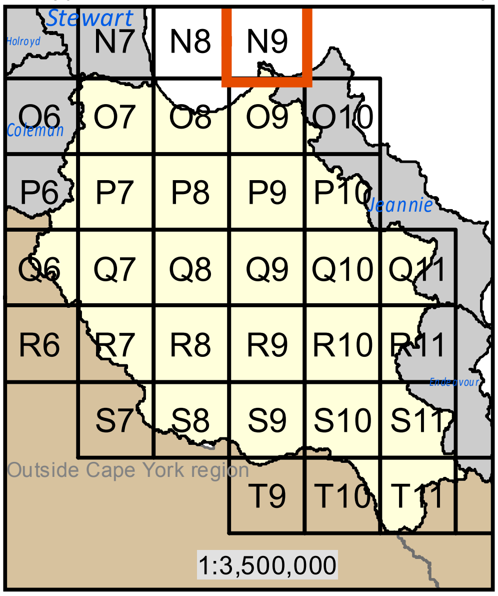
Likely

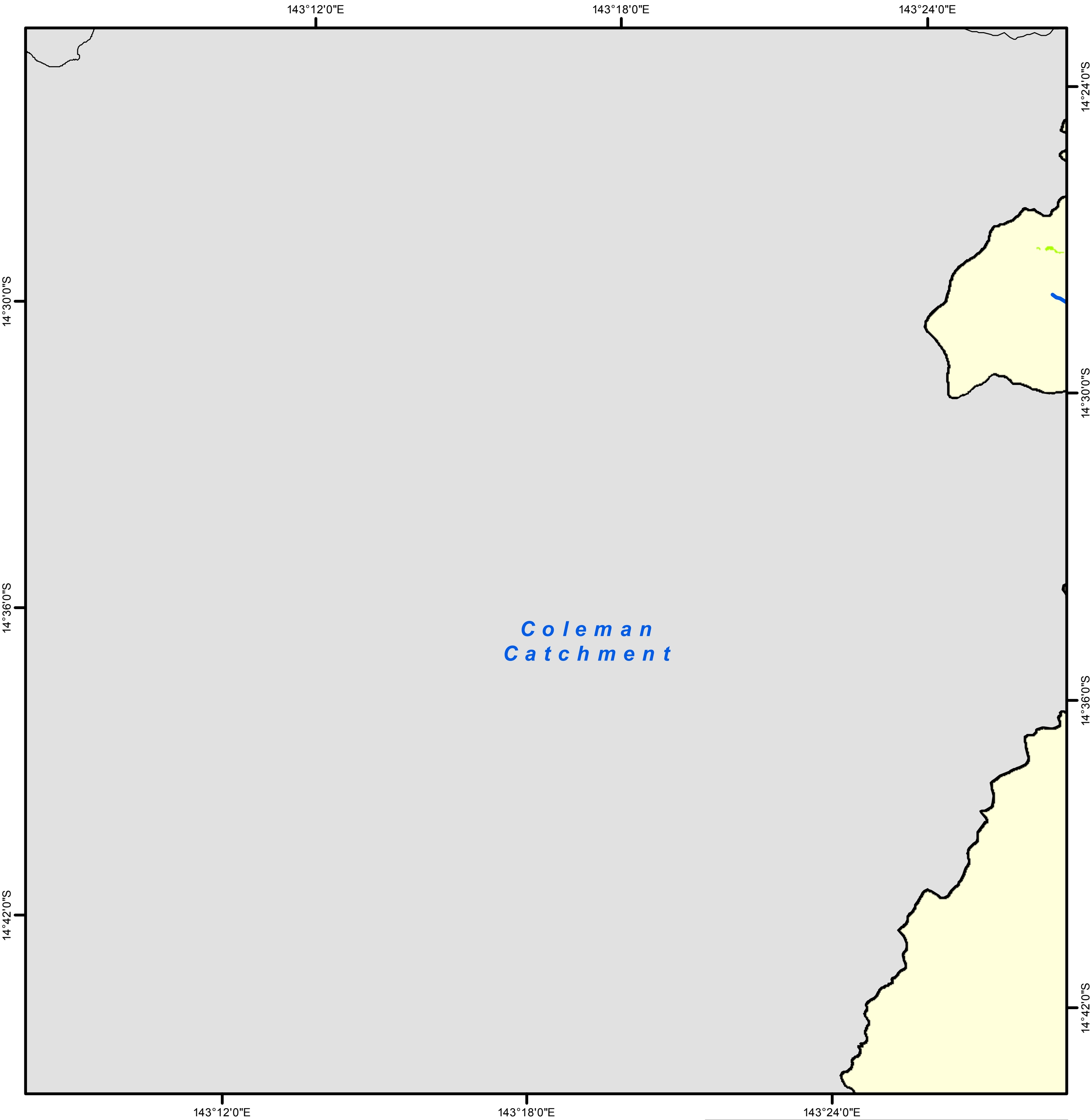
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



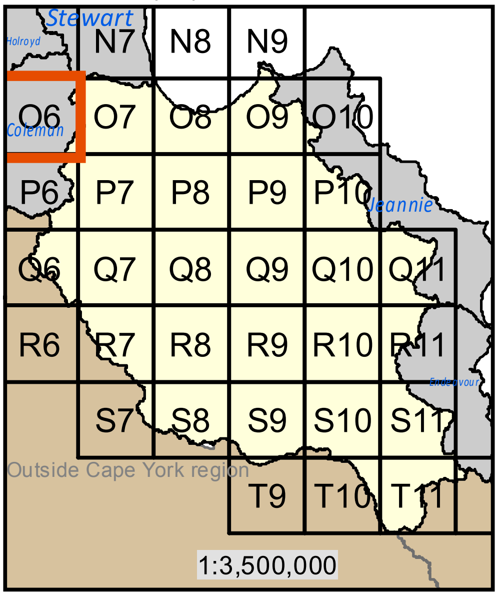


O6 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

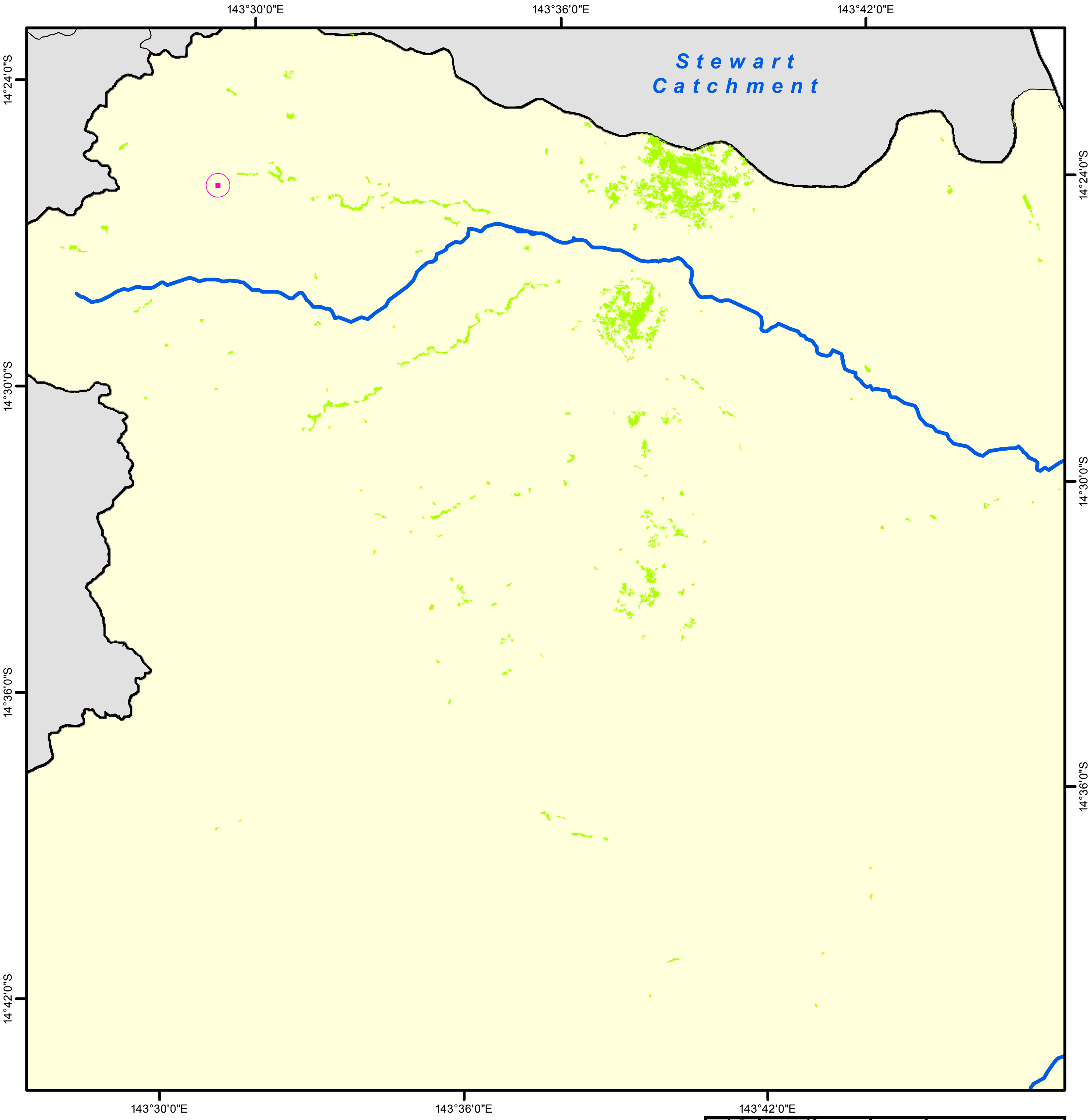
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely

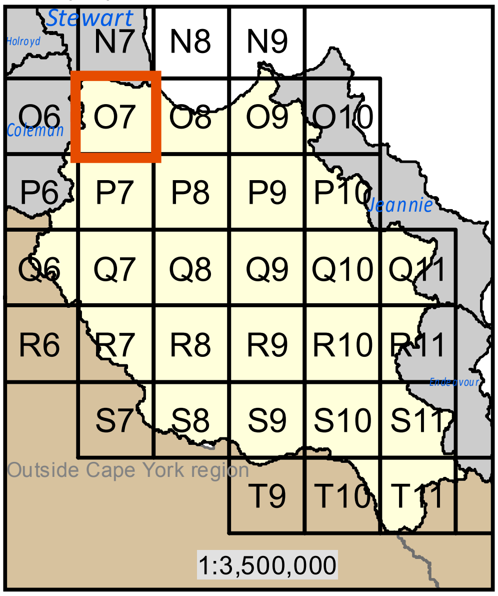


O7 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

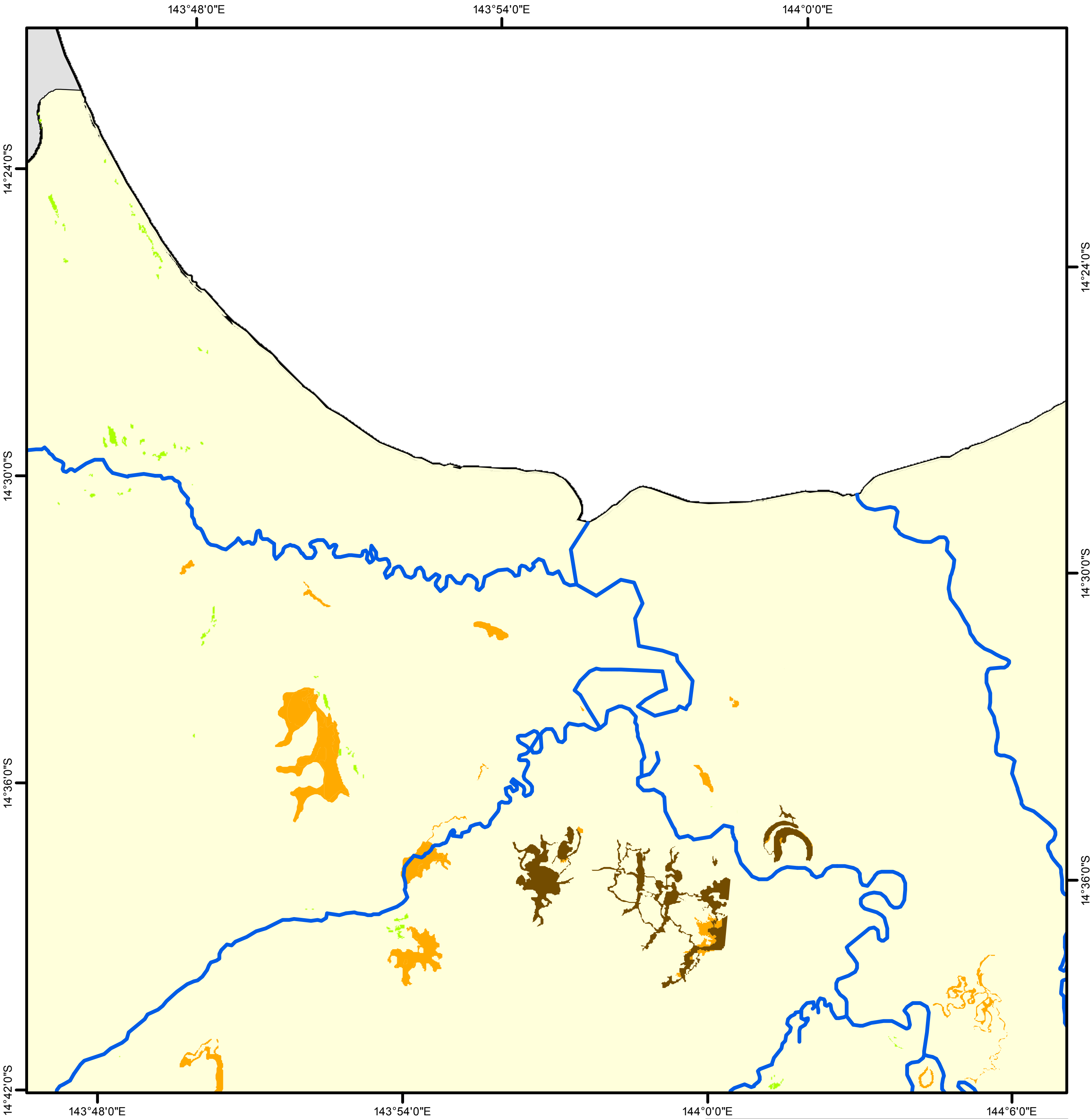
Likely

Baseflow Stream GDE Likelihood

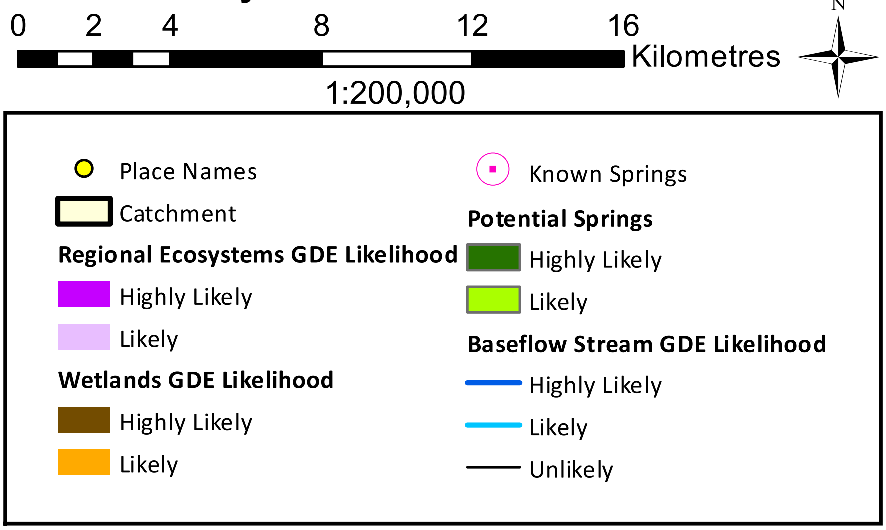
Highly Likely

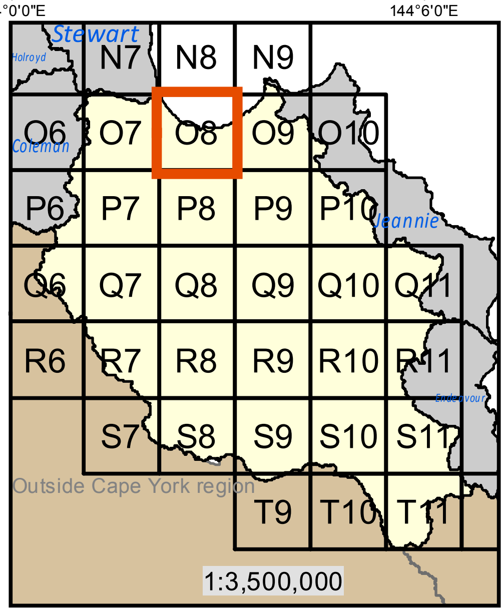
Likely

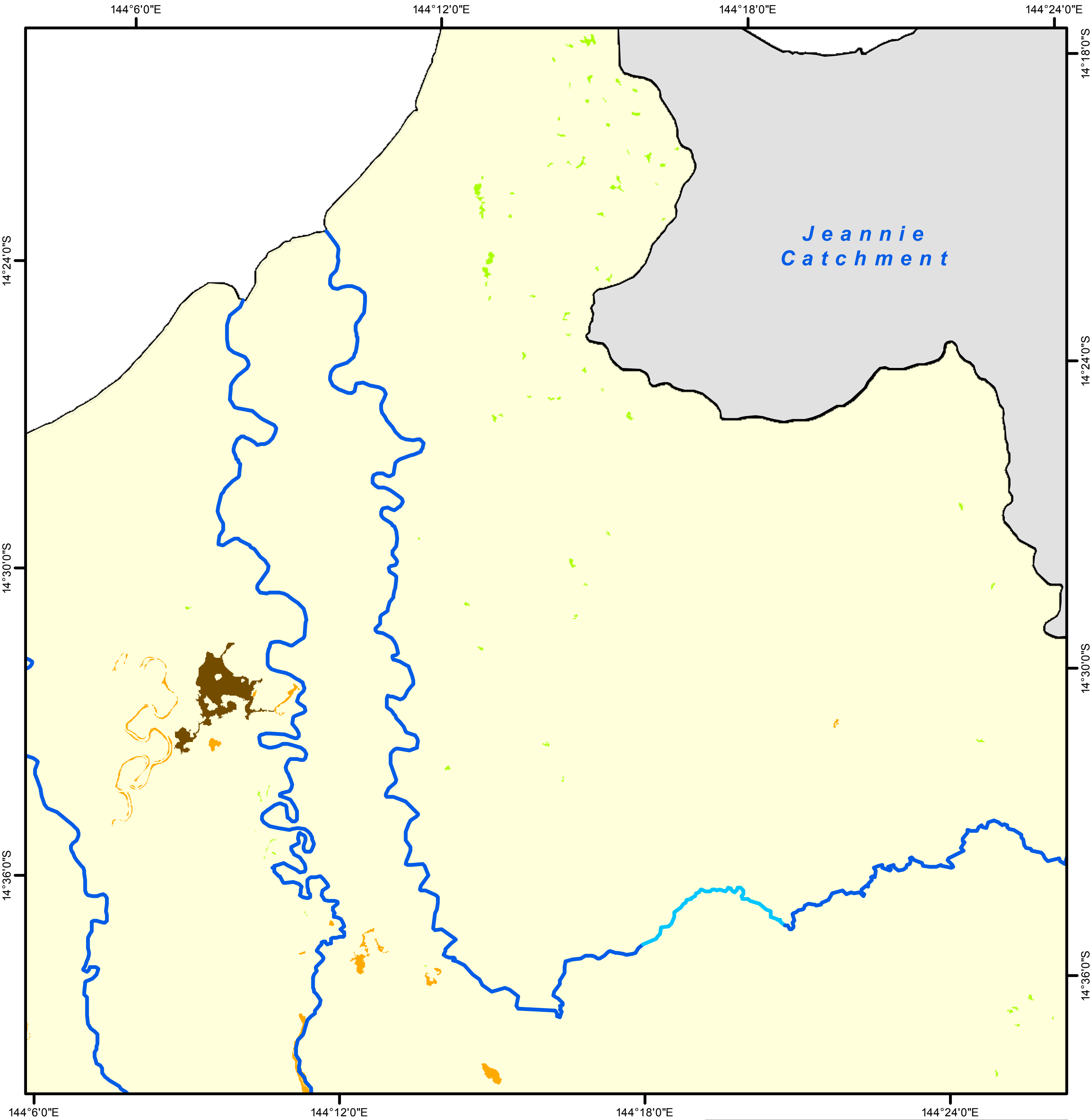
Unlikely



O8 Normanby Catchment







O9 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

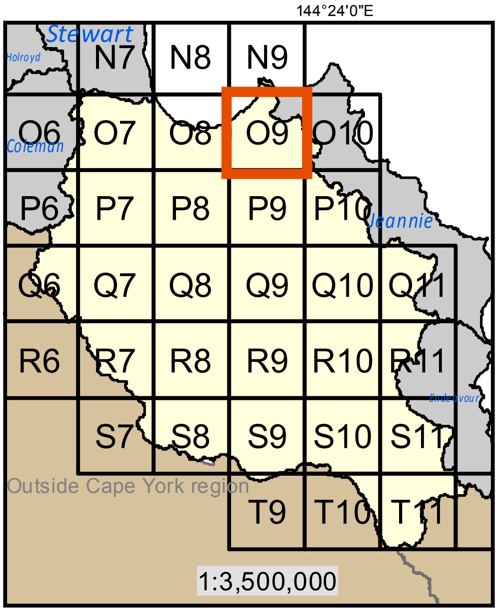
- Known Springs

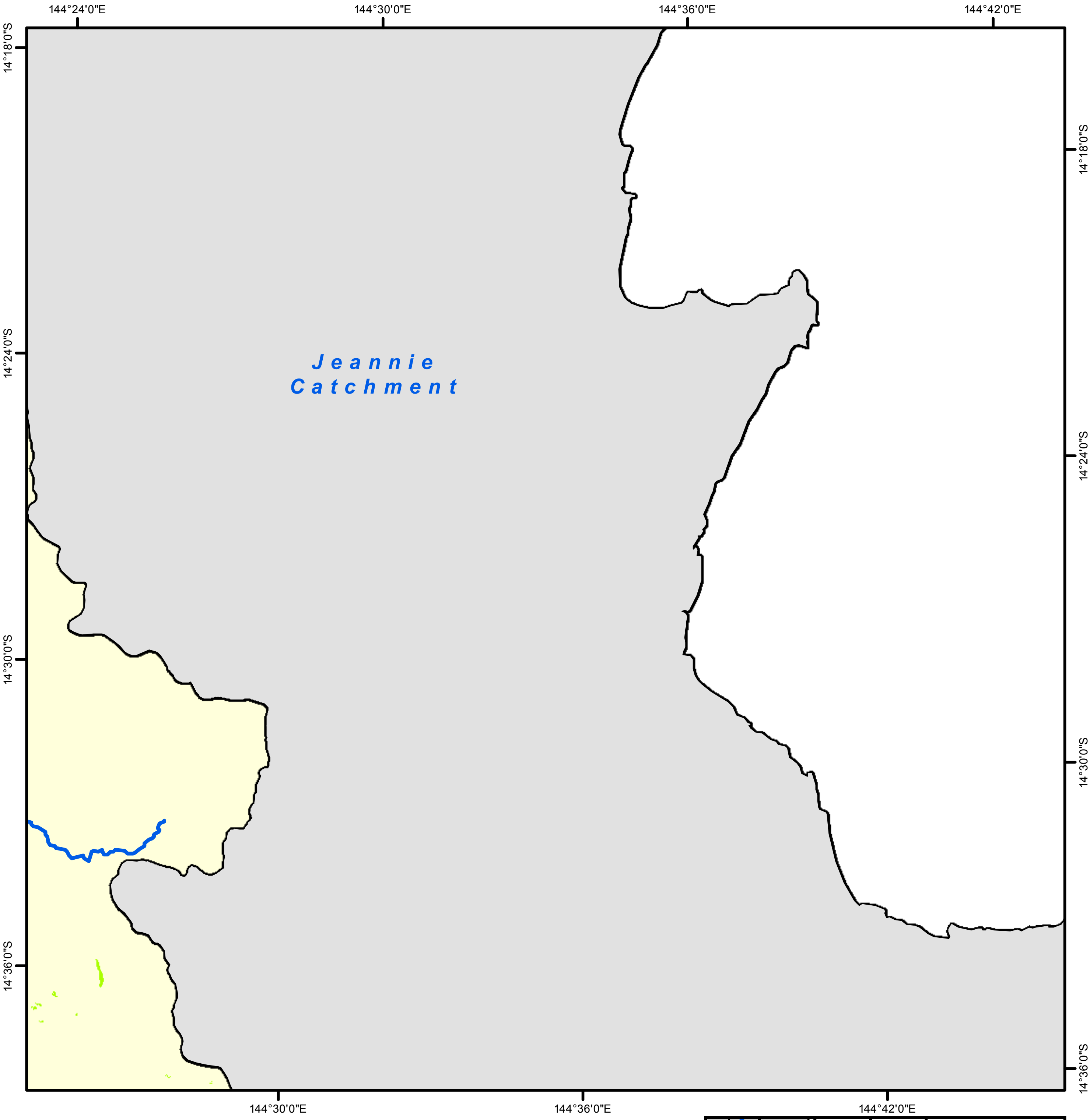
Potential Springs

- Highly Likely
- Likely

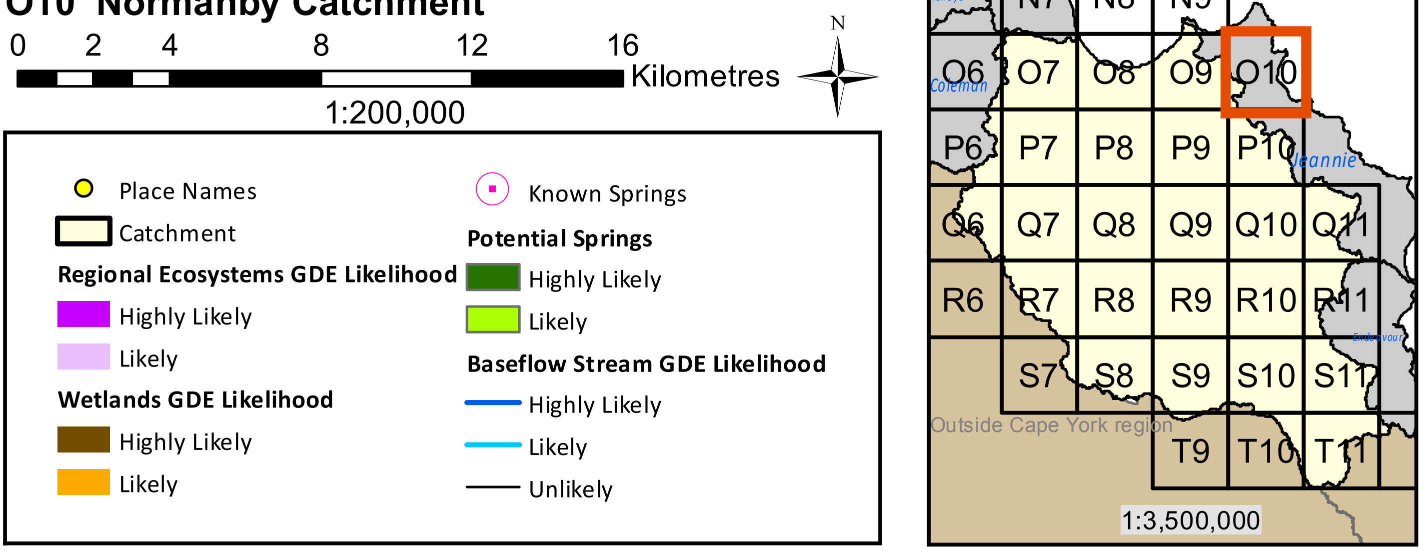
Baseflow Stream GDE Likelihood

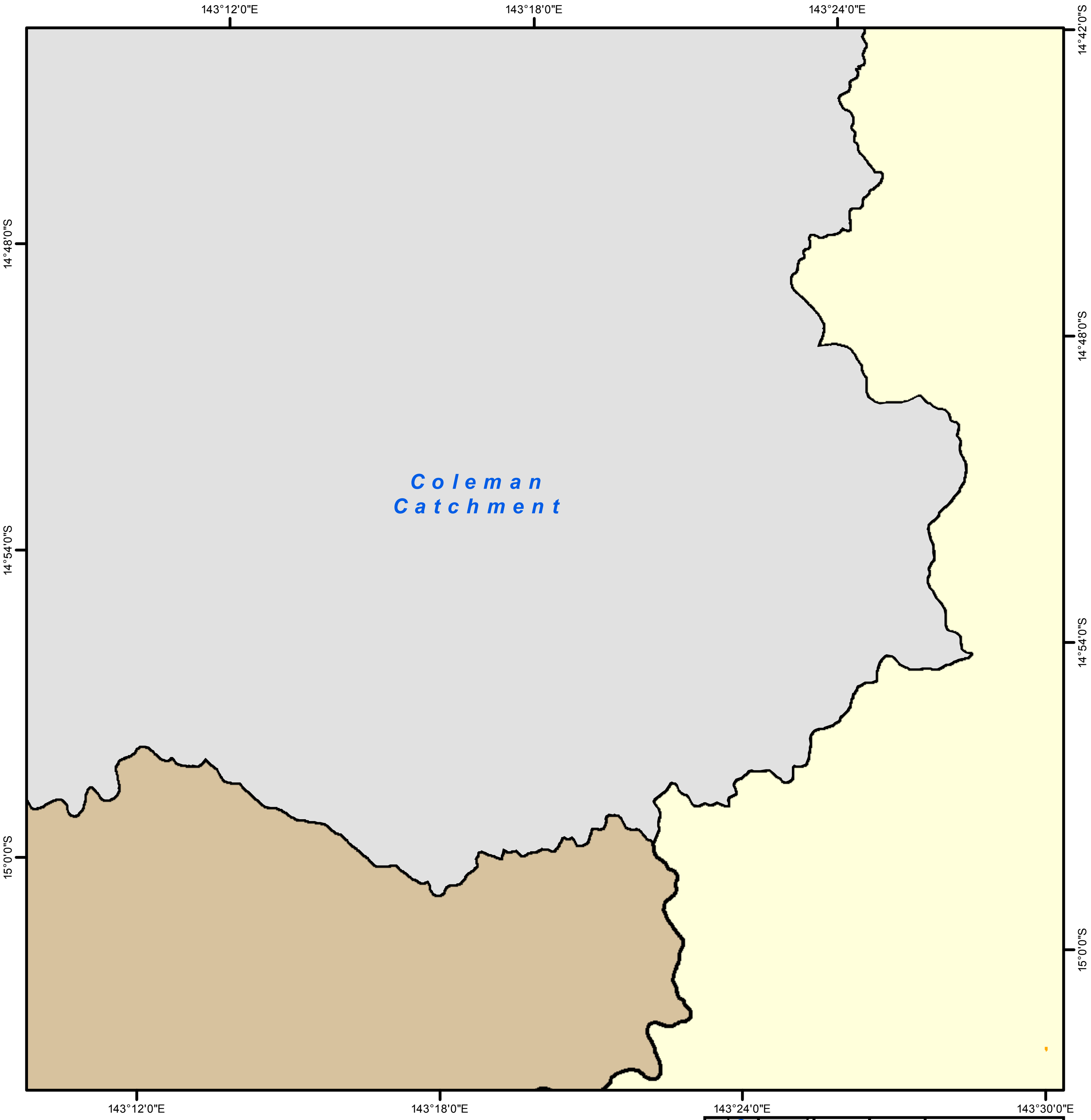
- Highly Likely
- Likely
- Unlikely





O10 Normanby Catchment





P6 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

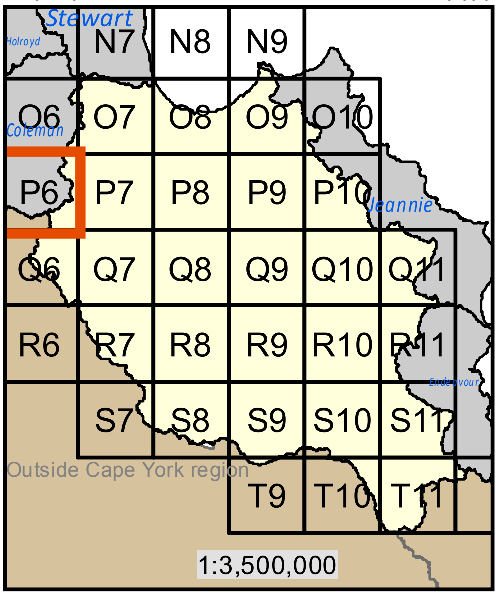
Likely

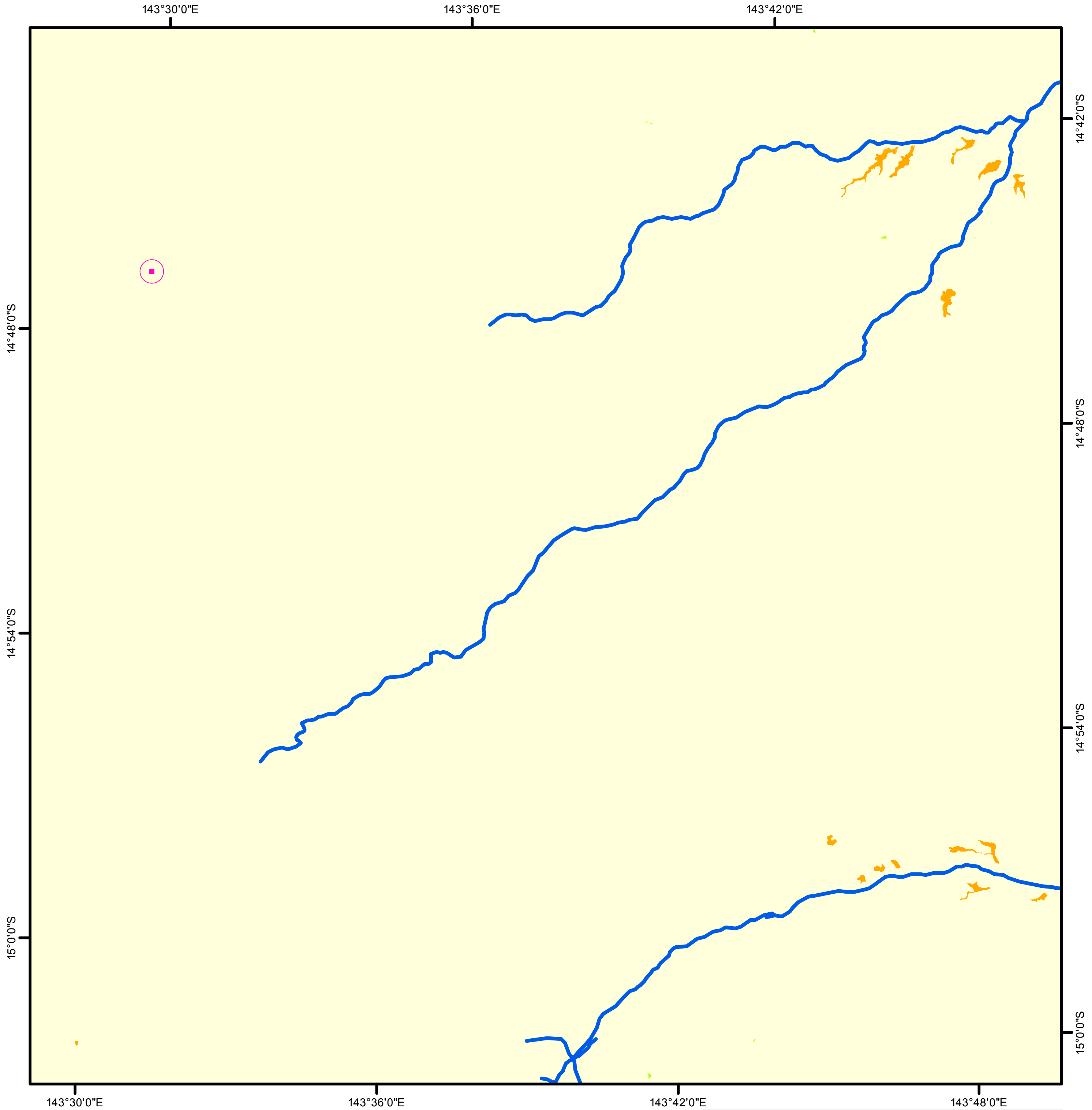
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





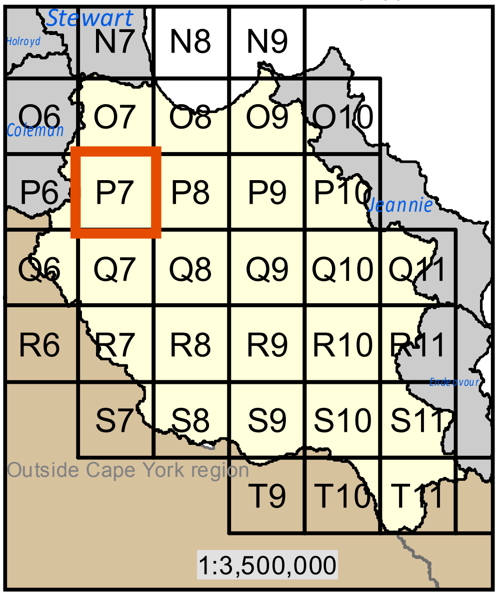
P7 Normanby Catchment

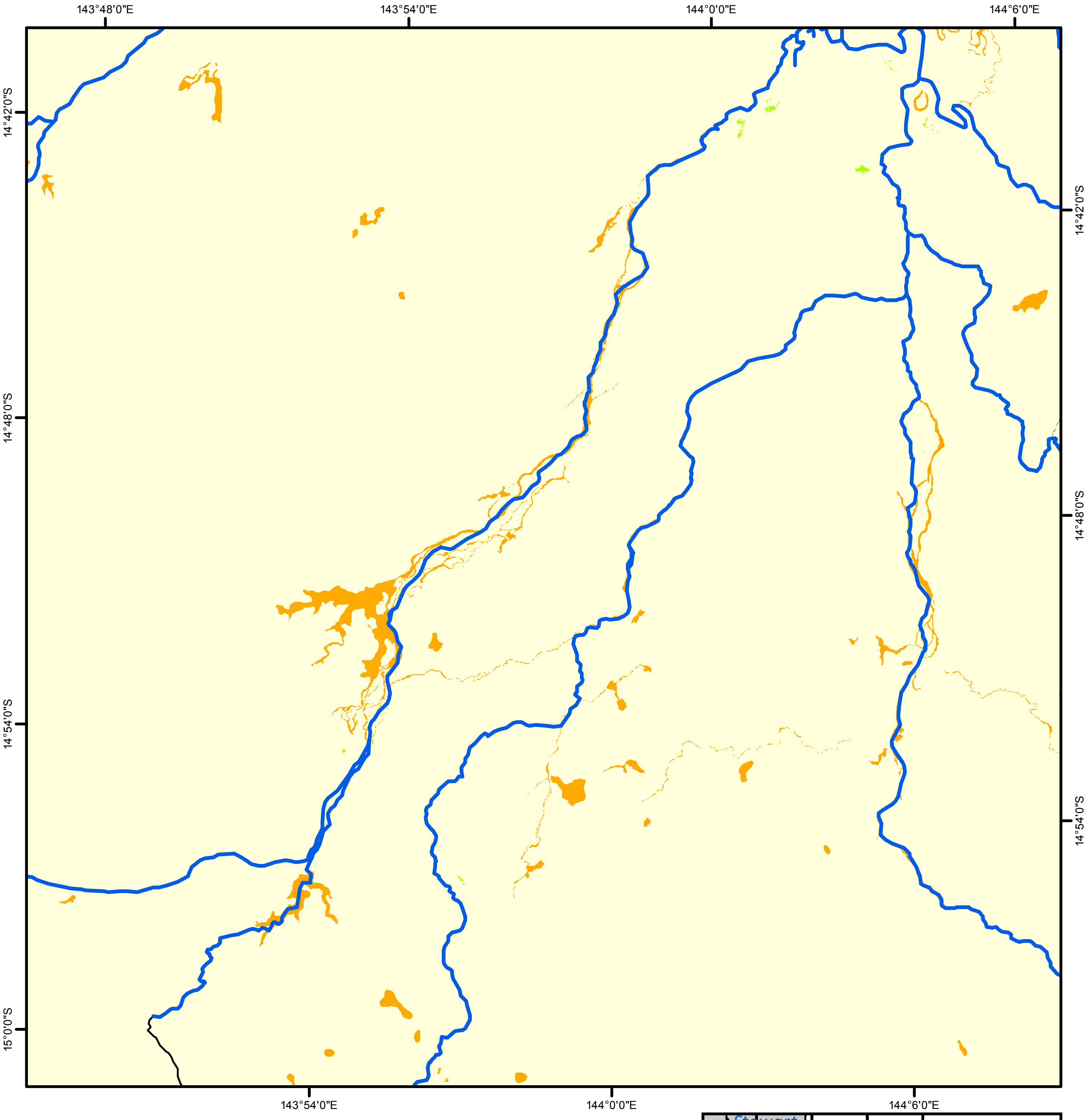
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





P8 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

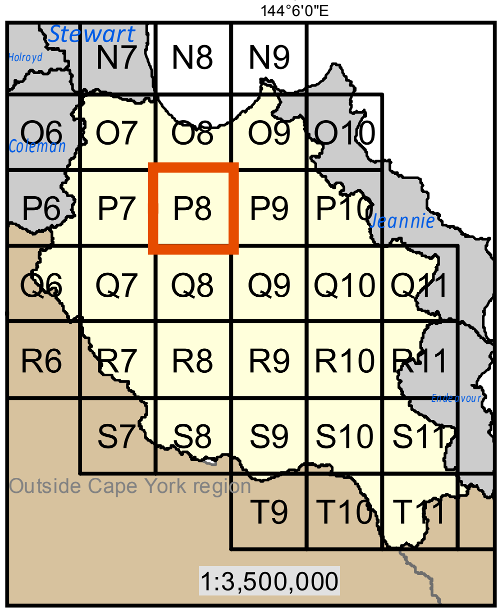
- Known Springs

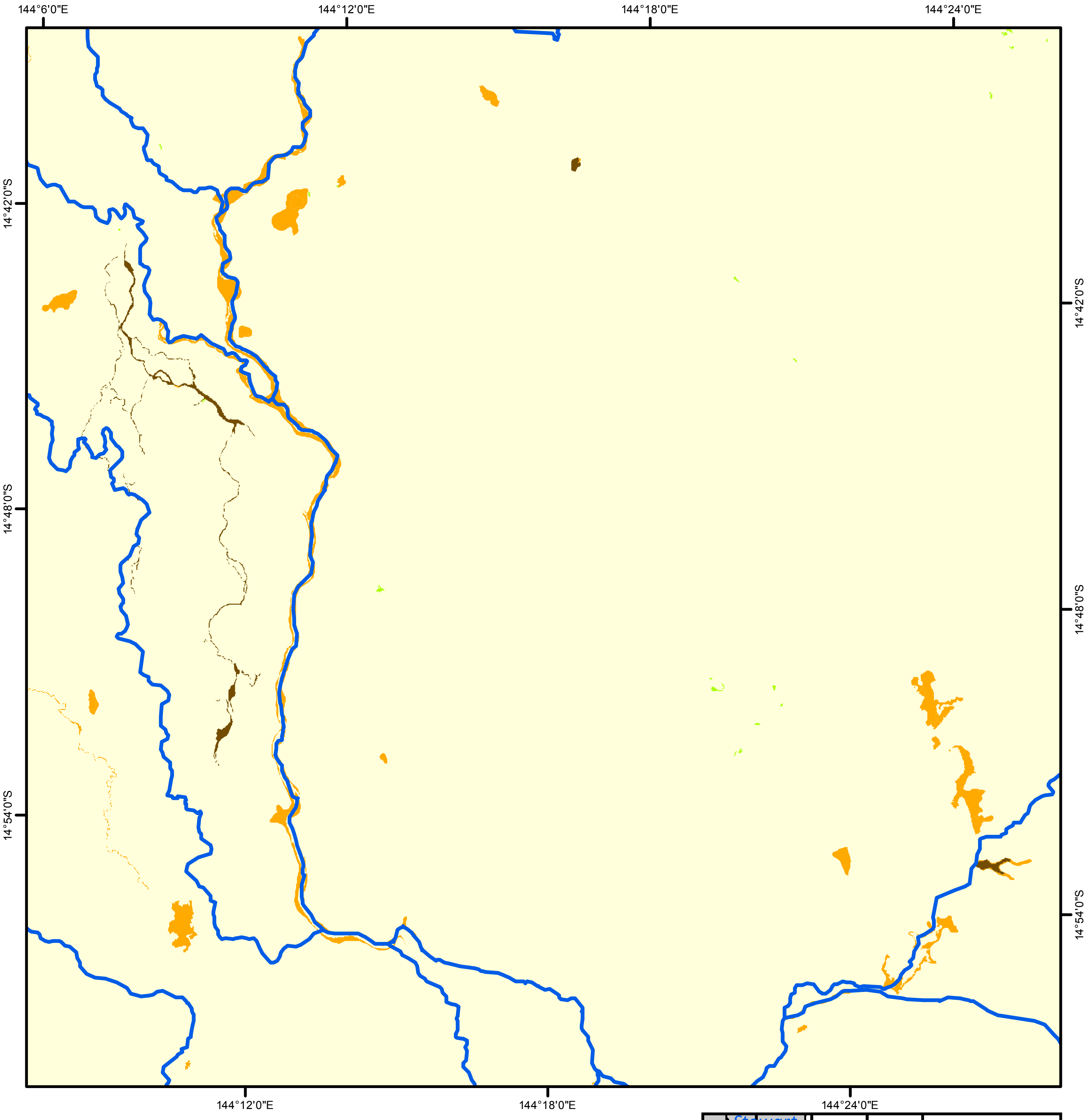
Potential Springs

- Highly Likely
- Likely

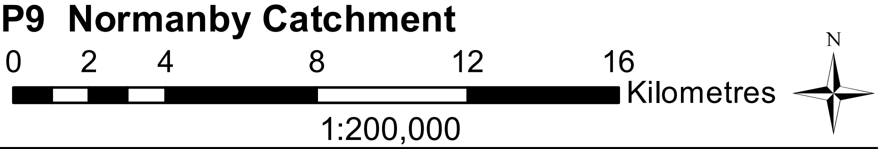
Baseflow Stream GDE Likelihood

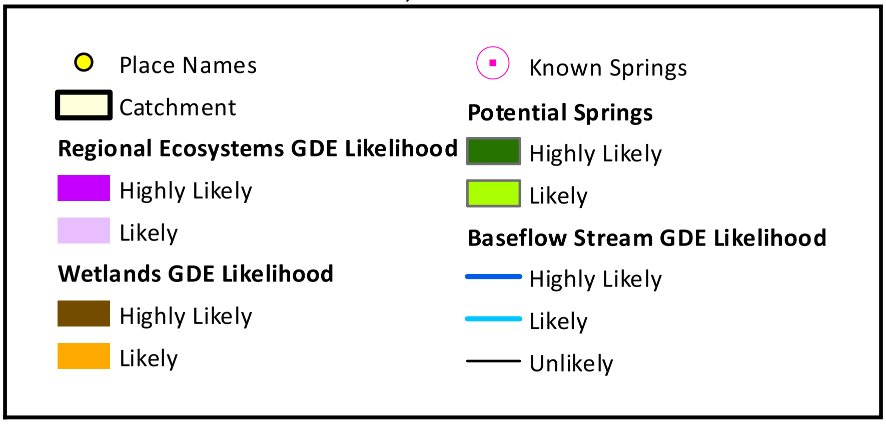
- Highly Likely
- Likely
- Unlikely

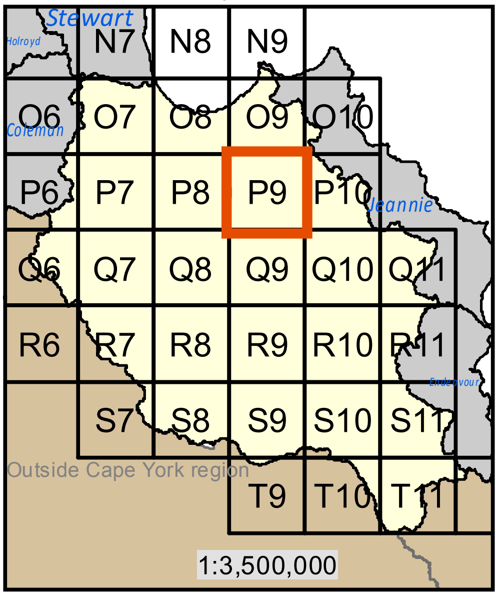


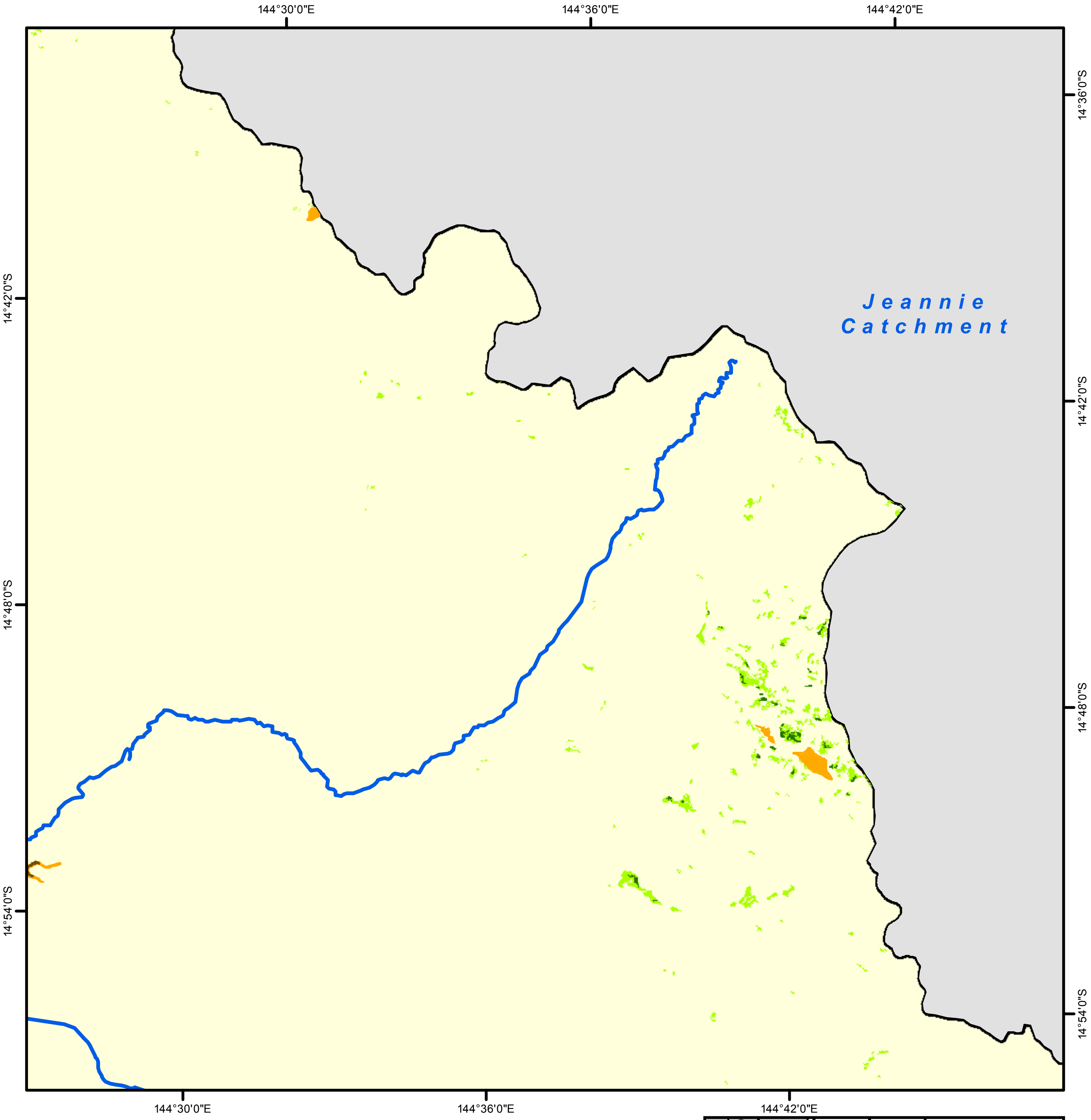


P9 Normanby Catchment

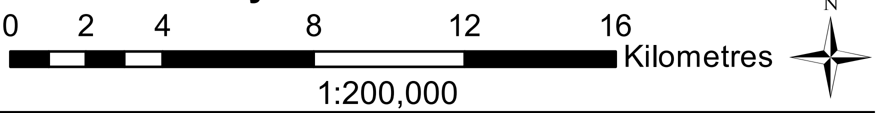


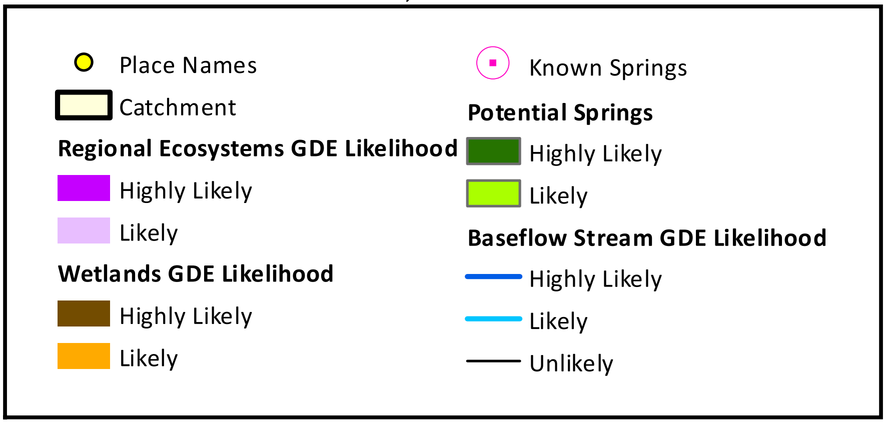


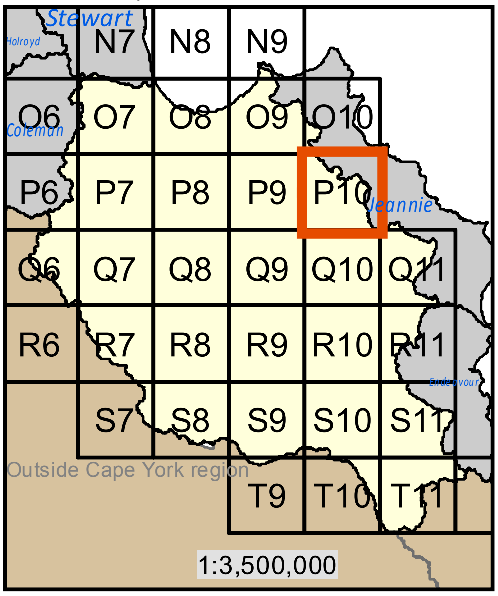


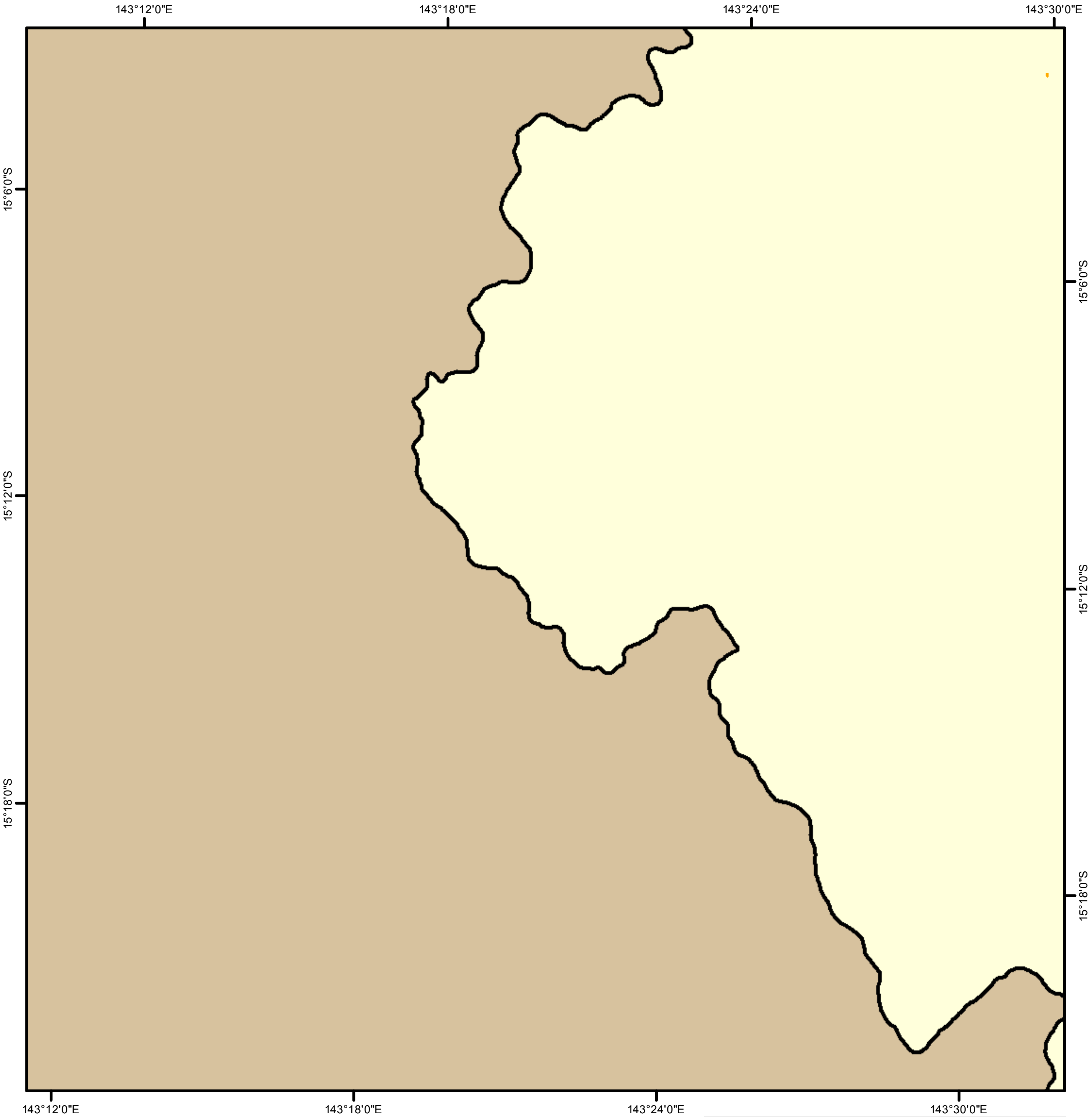


P10 Normanby Catchment









Q6 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

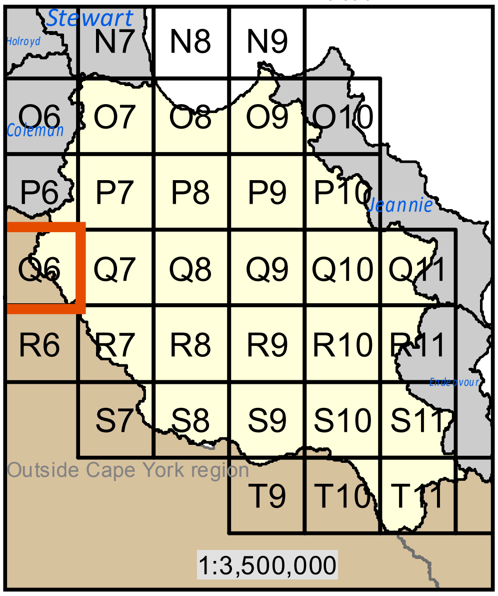
- Known Springs

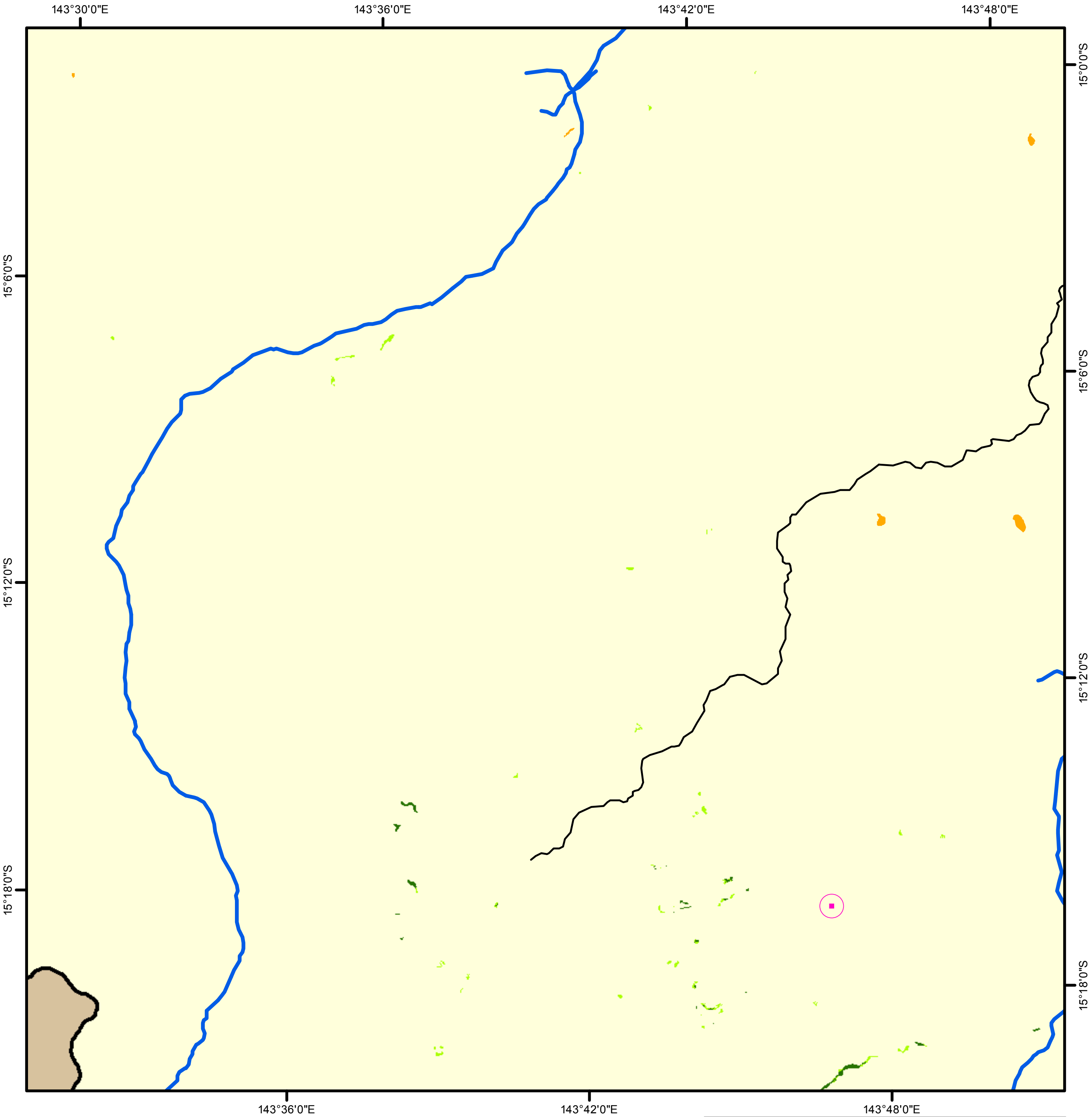
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





Q7 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

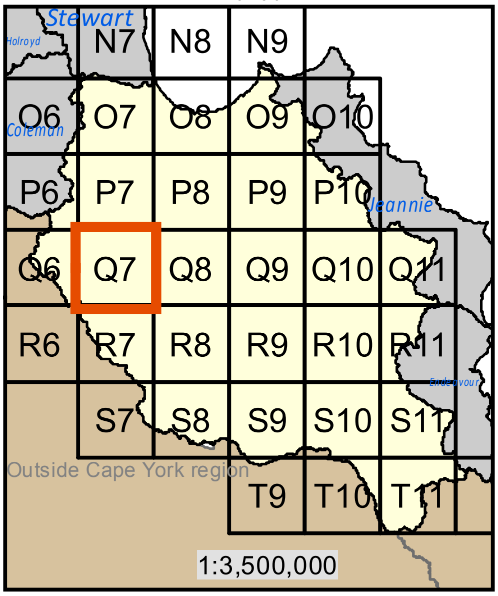
- Known Springs

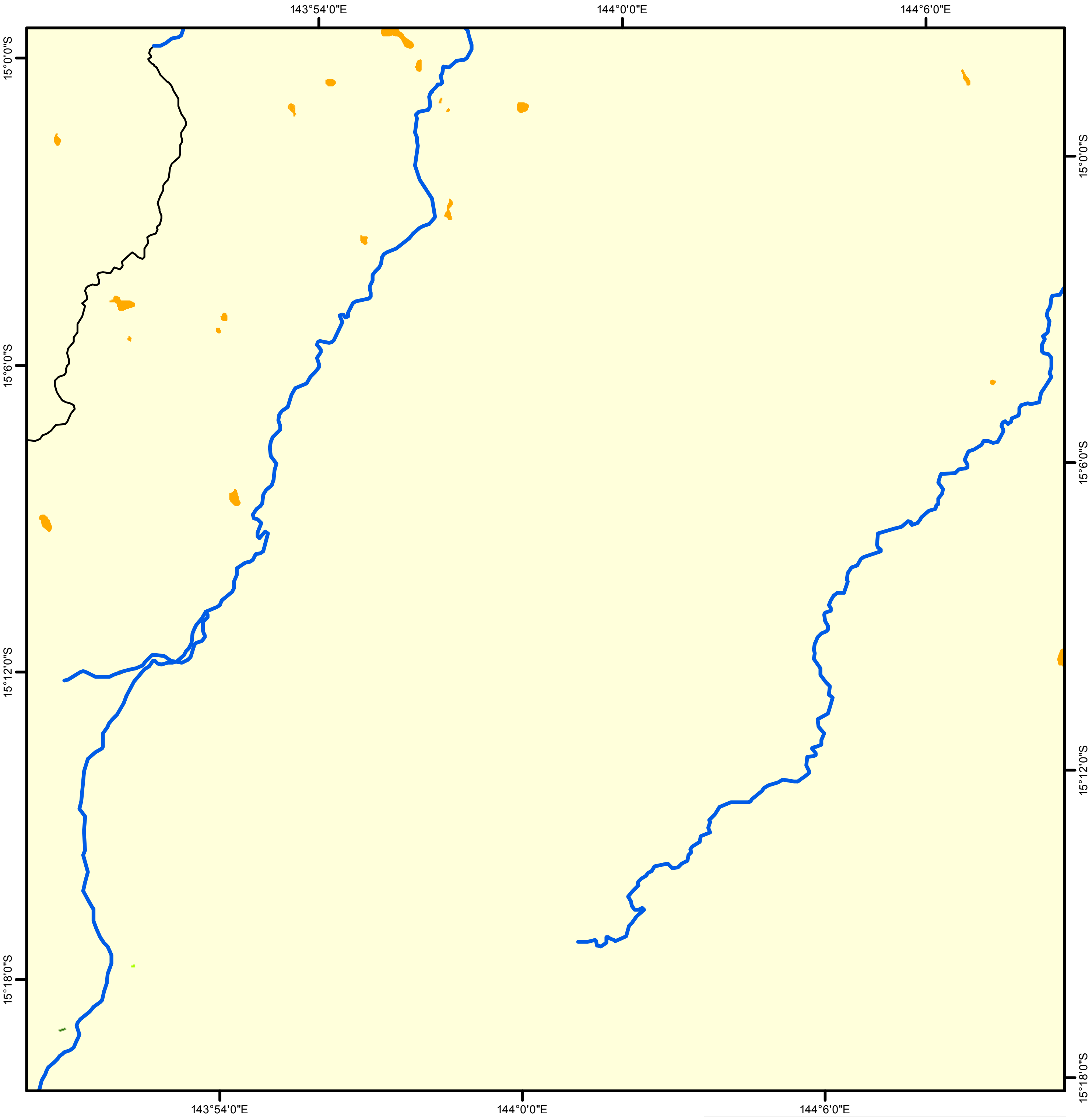
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





Q8 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

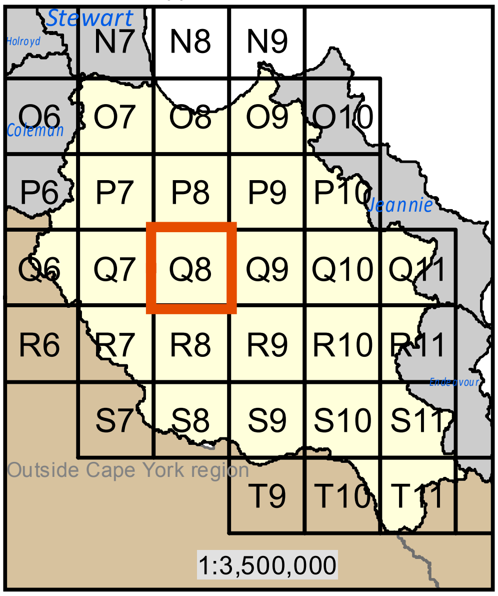
- Known Springs

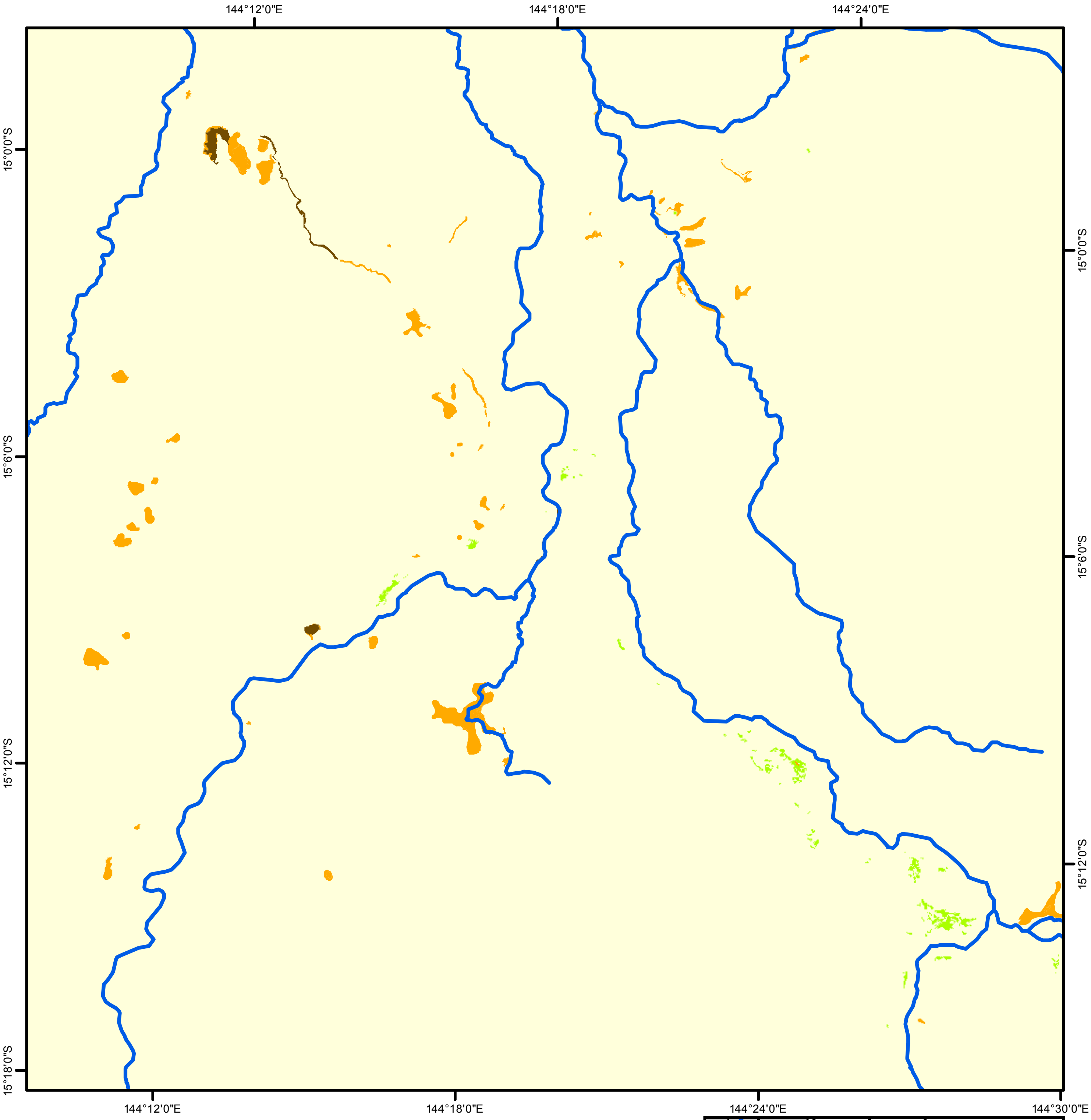
Potential Springs

- Highly Likely
- Likely

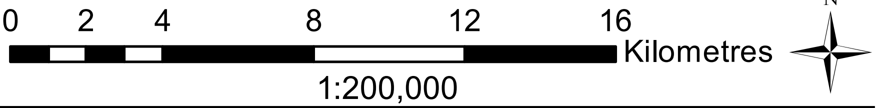
Baseflow Stream GDE Likelihood

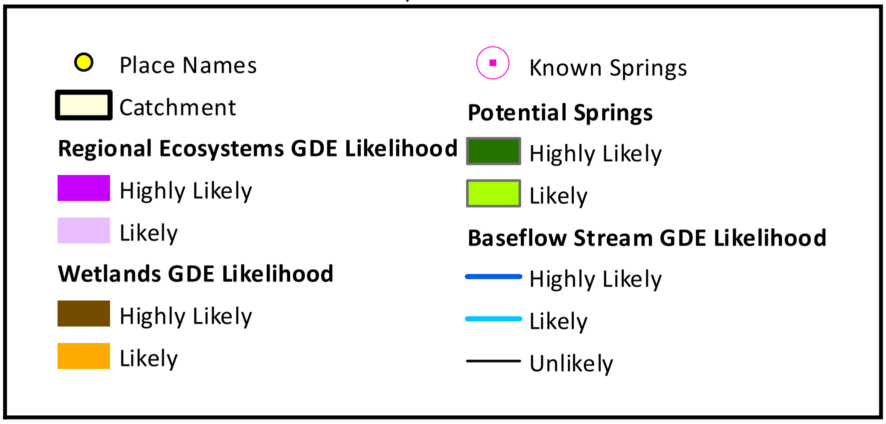
- Highly Likely
- Likely
- Unlikely

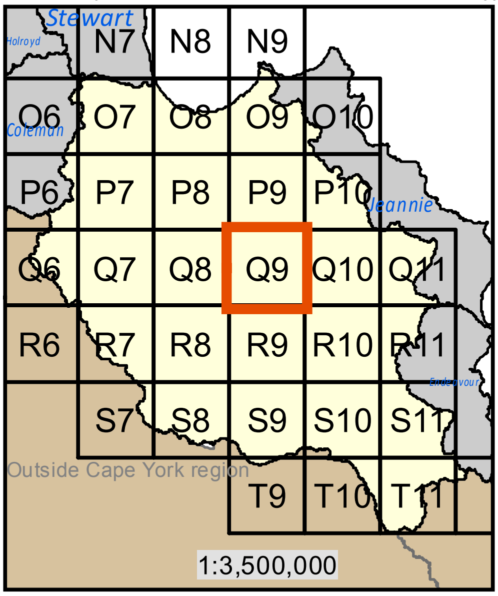


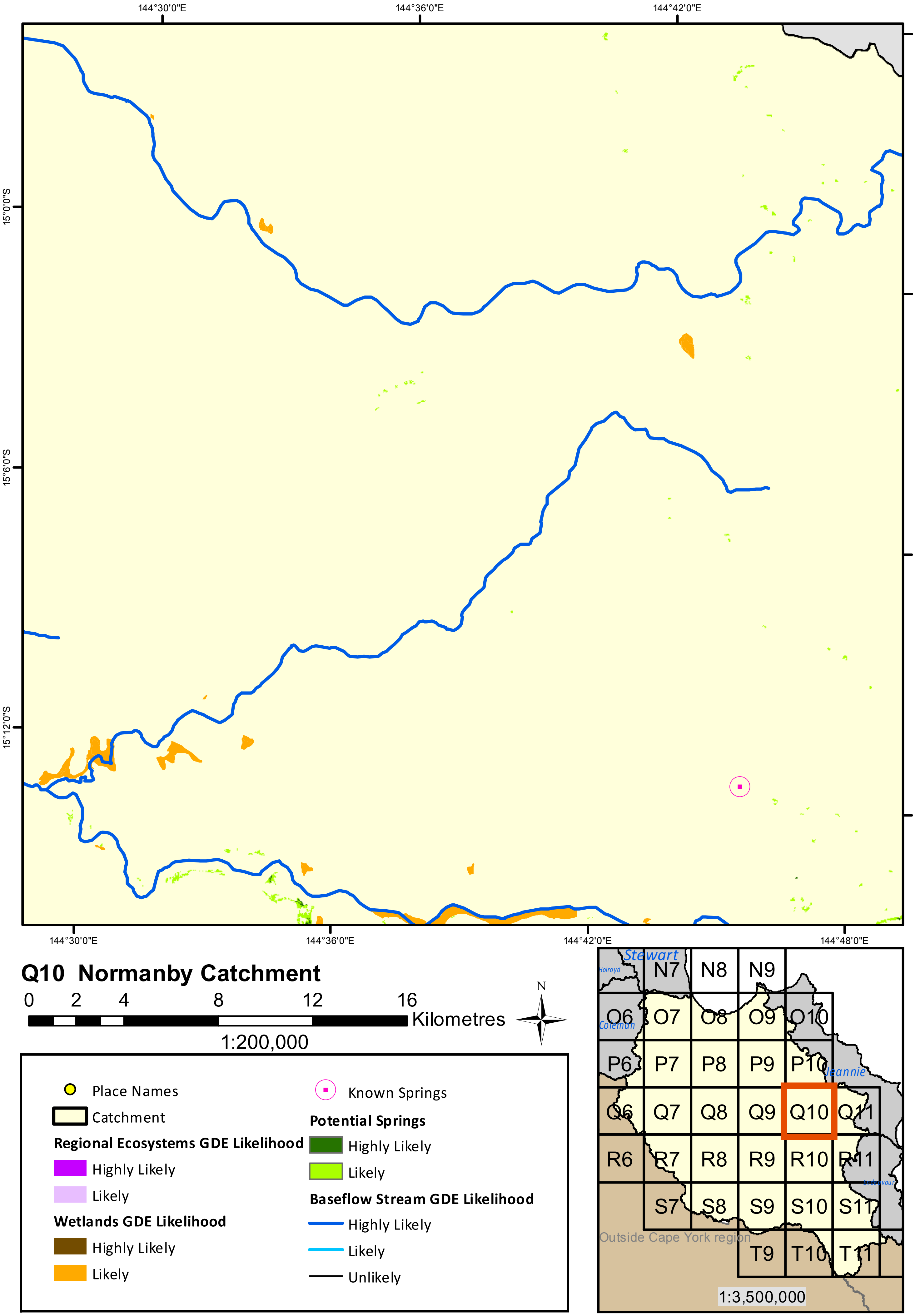


Q9 Normanby Catchment

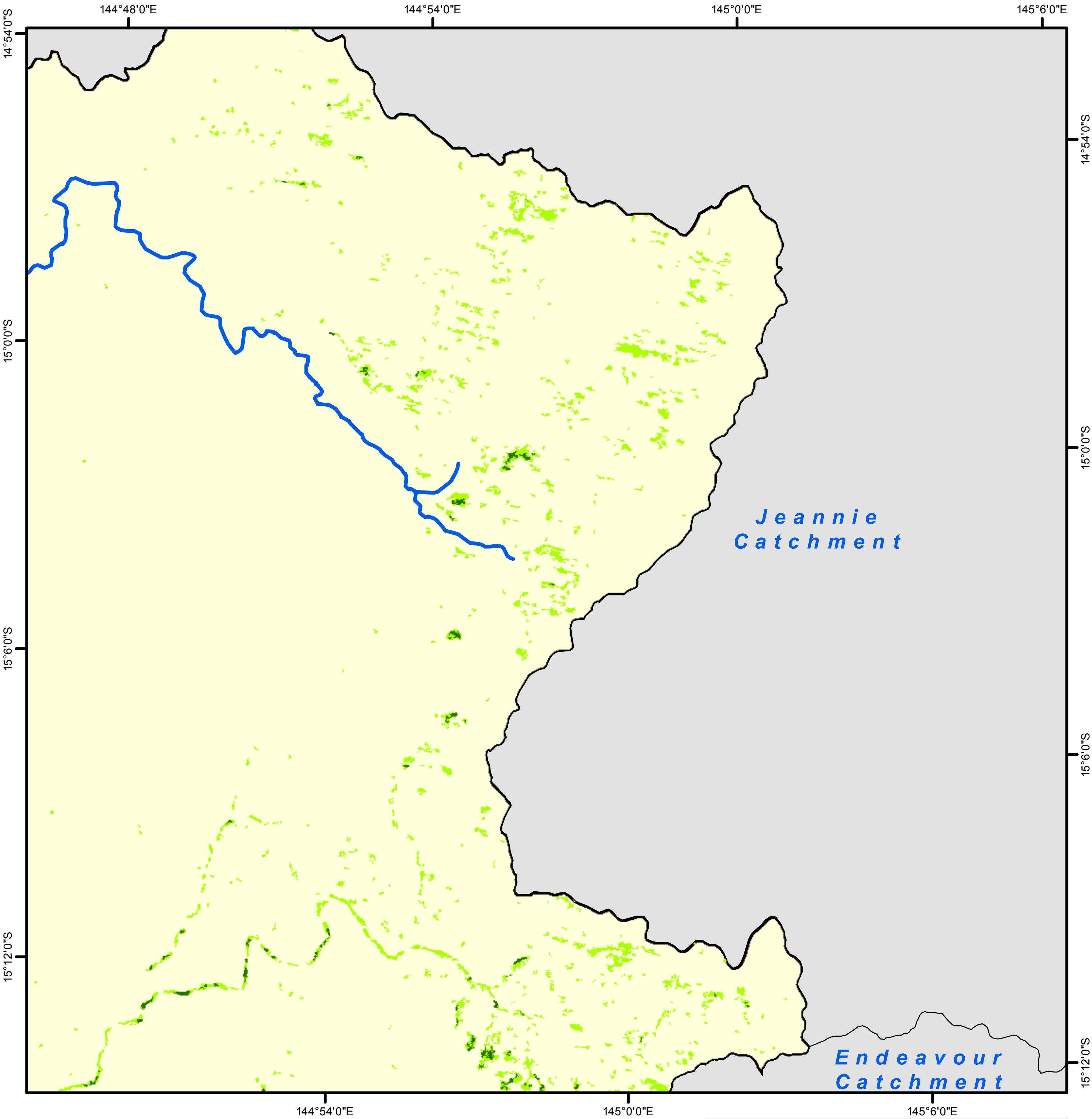








144°30'0"E
144°36'0"E
144°42'0"E
144°48'0"E
14°54'0"S
15°0'0"S
15°6'0"S
15°12'0"S
Q10 Normanby Catchment
0 2 4 8 12 16
Kilometres
1:200,000
N
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely
Stewart
Holroyd
Coleman
Jeannie
Endeavour
N7 N8 N9
O6 O7 O8 O9 O10
P6 P7 P8 P9 P10
Q6 Q7 Q8 Q9 Q10 Q11
R6 R7 R8 R9 R10 R11
S7 S8 S9 S10 S11
T9 T10 T11
Outside Cape York region
1:3,500,000

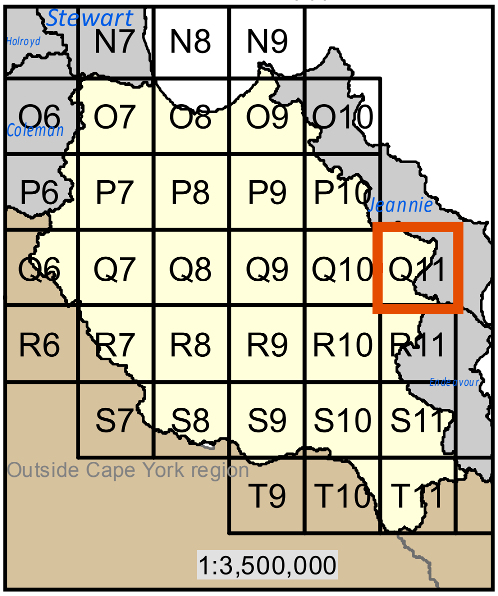


Q11 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

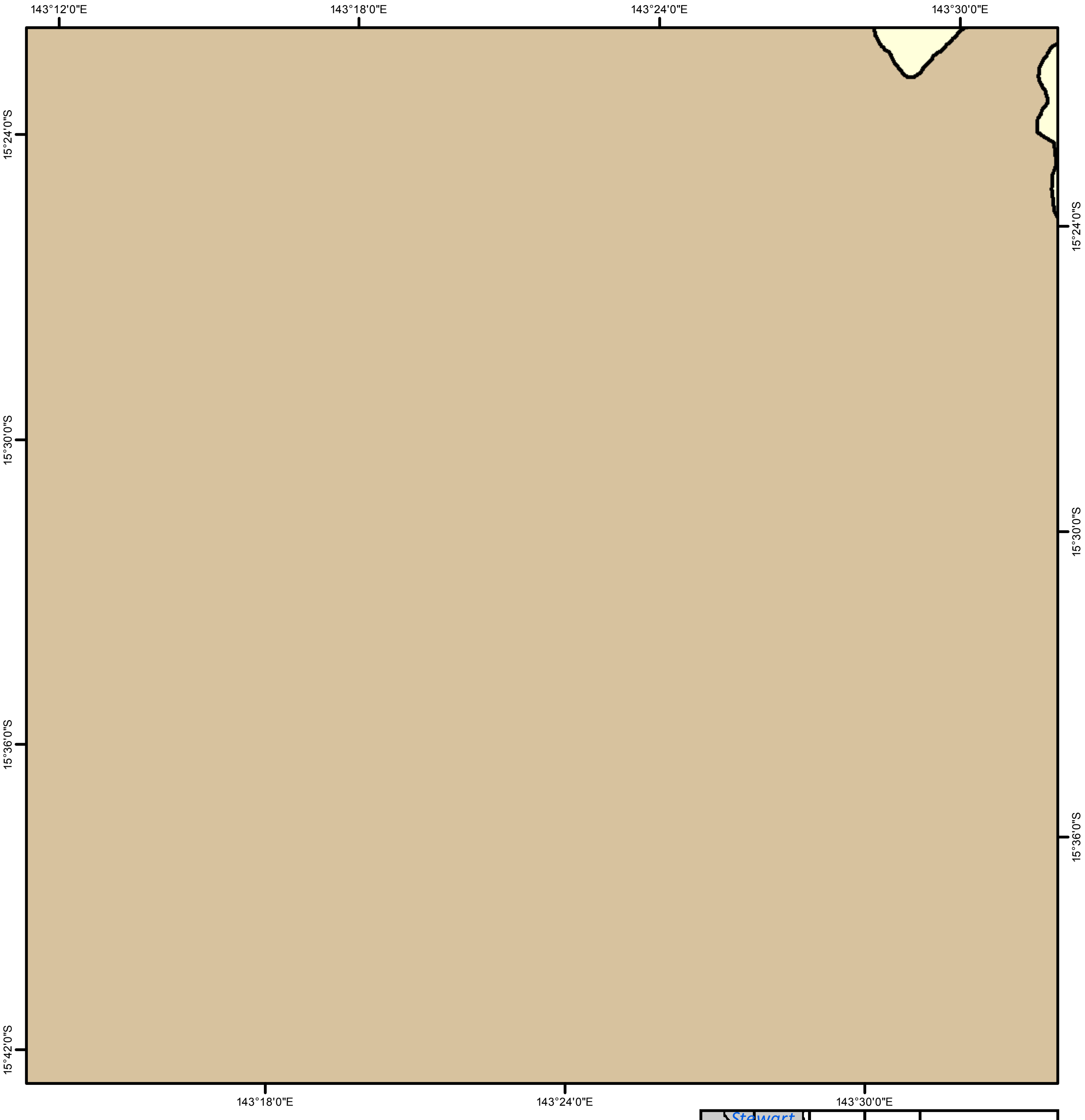
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



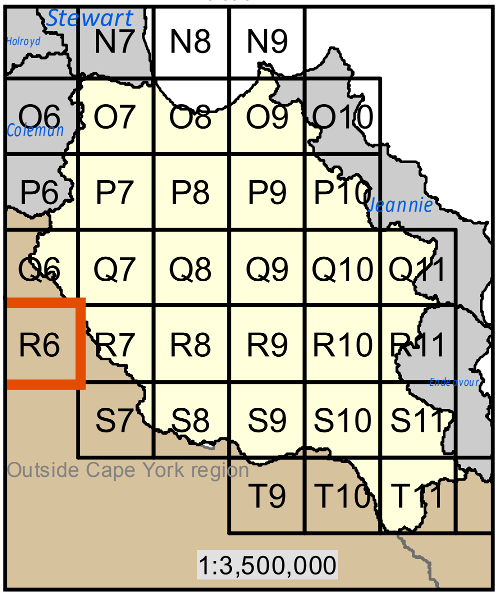
R6 Normanby Catchment

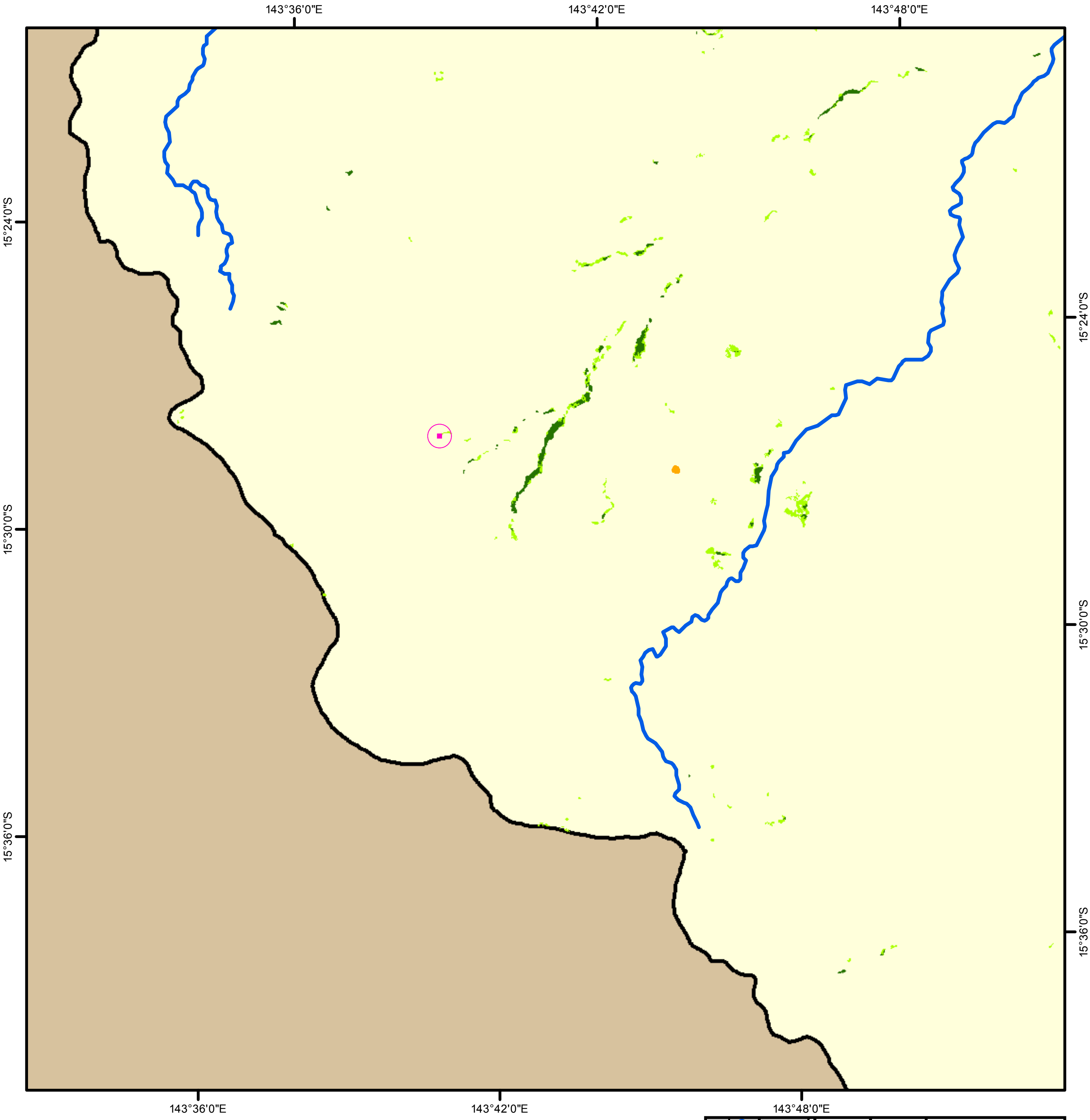
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





R7 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

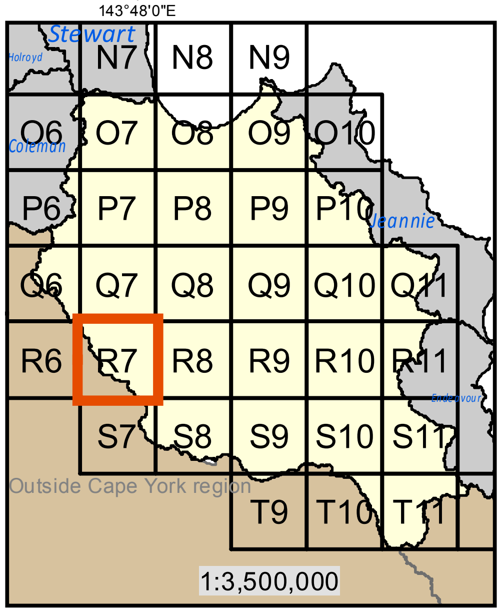
- Place Names
- Catchment
- Known Springs

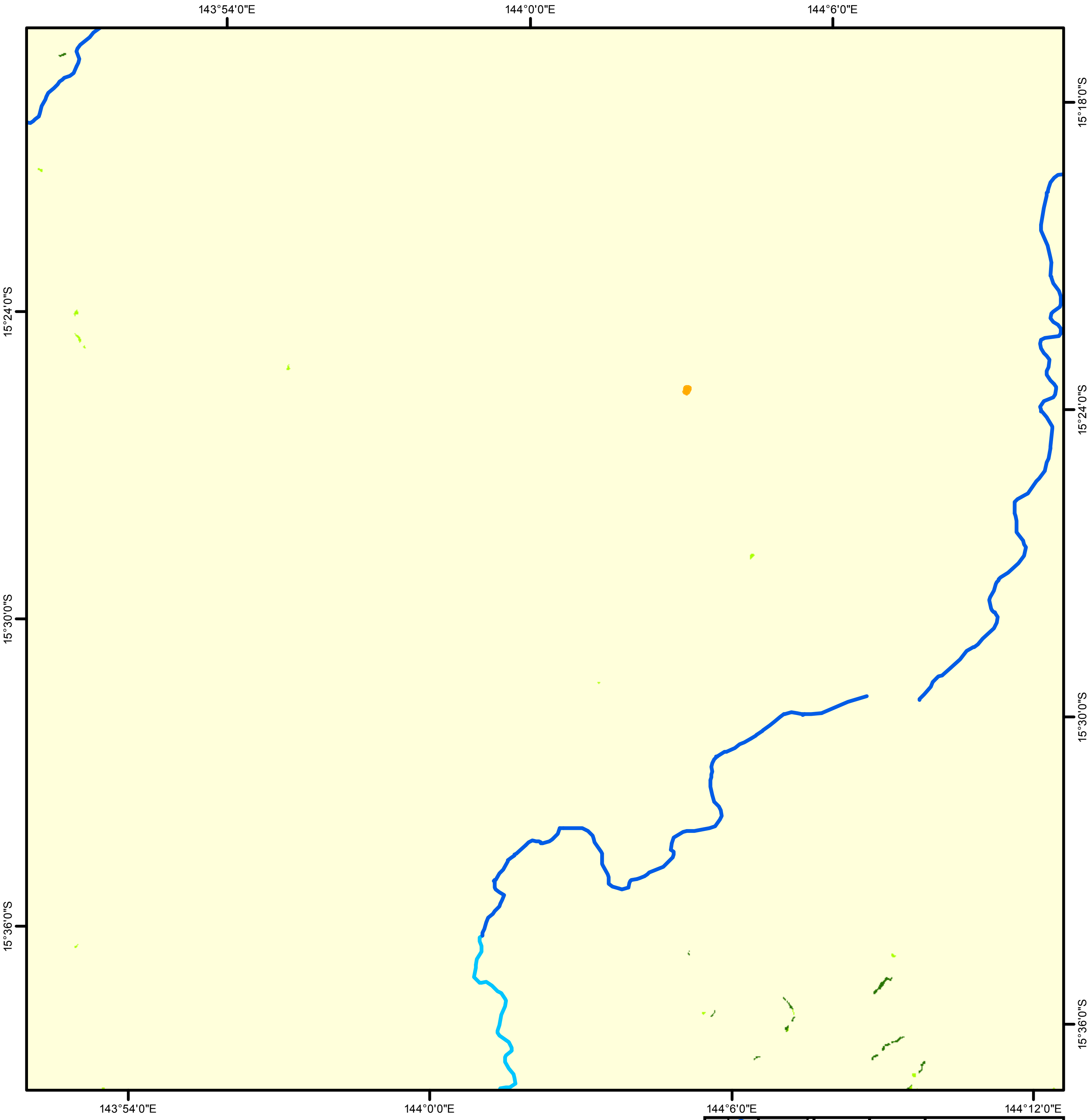
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

Wetlands GDE Likelihood
- Highly Likely
- Likely

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely





R8 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

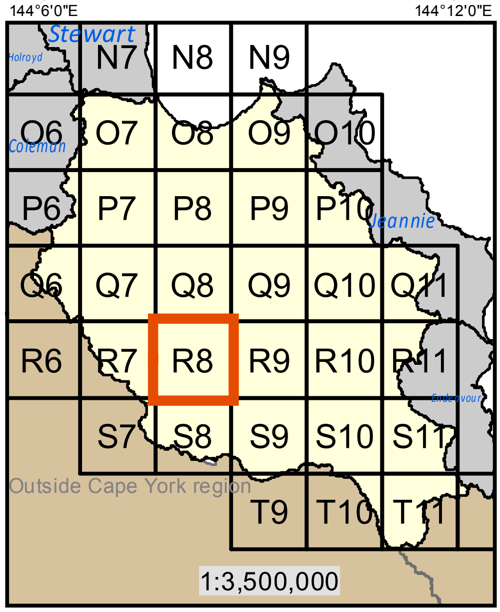
- Known Springs

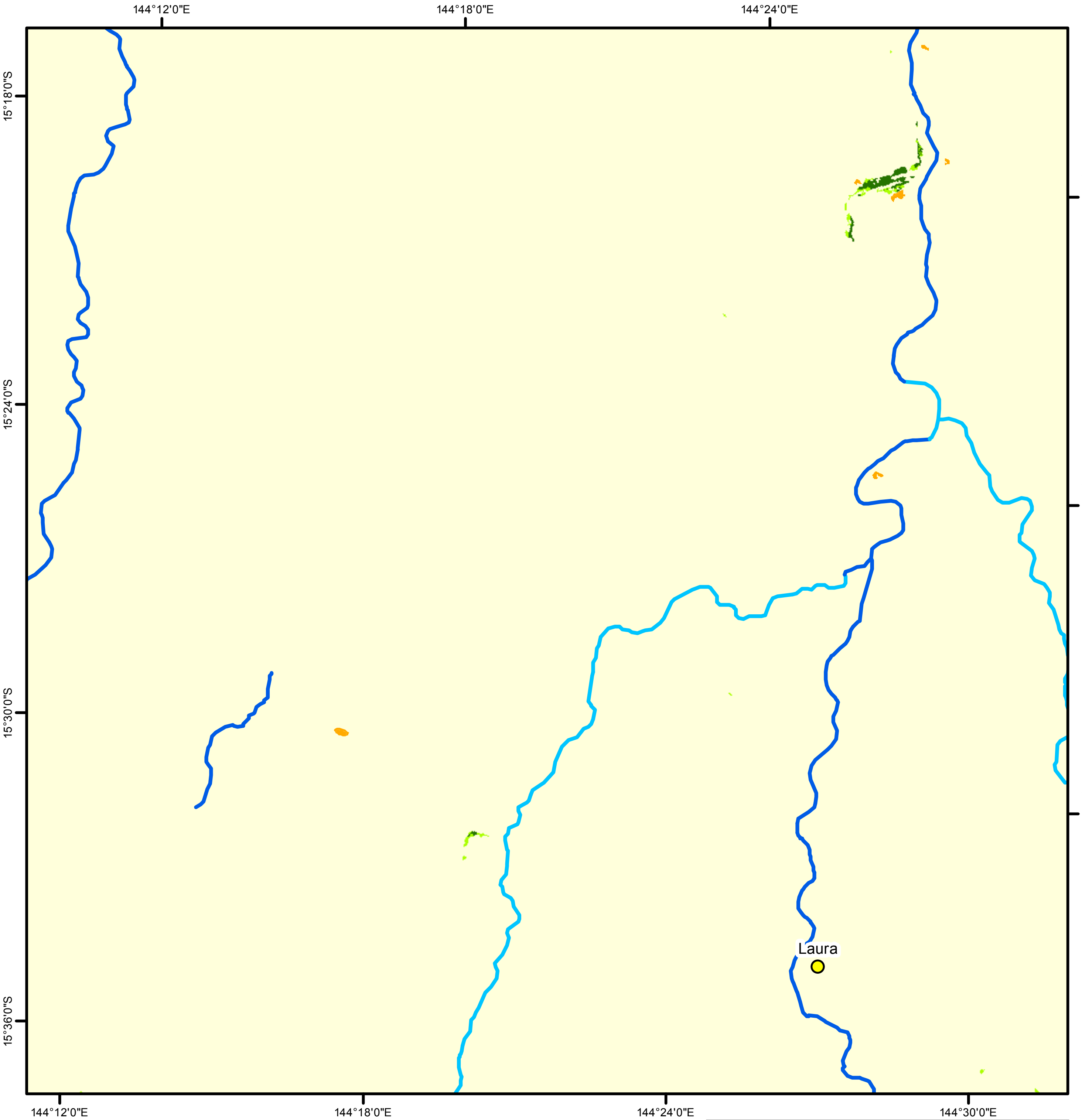
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





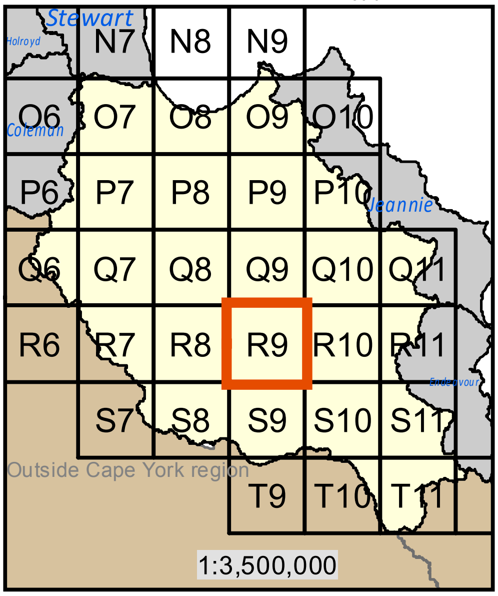
R9 Normanby Catchment

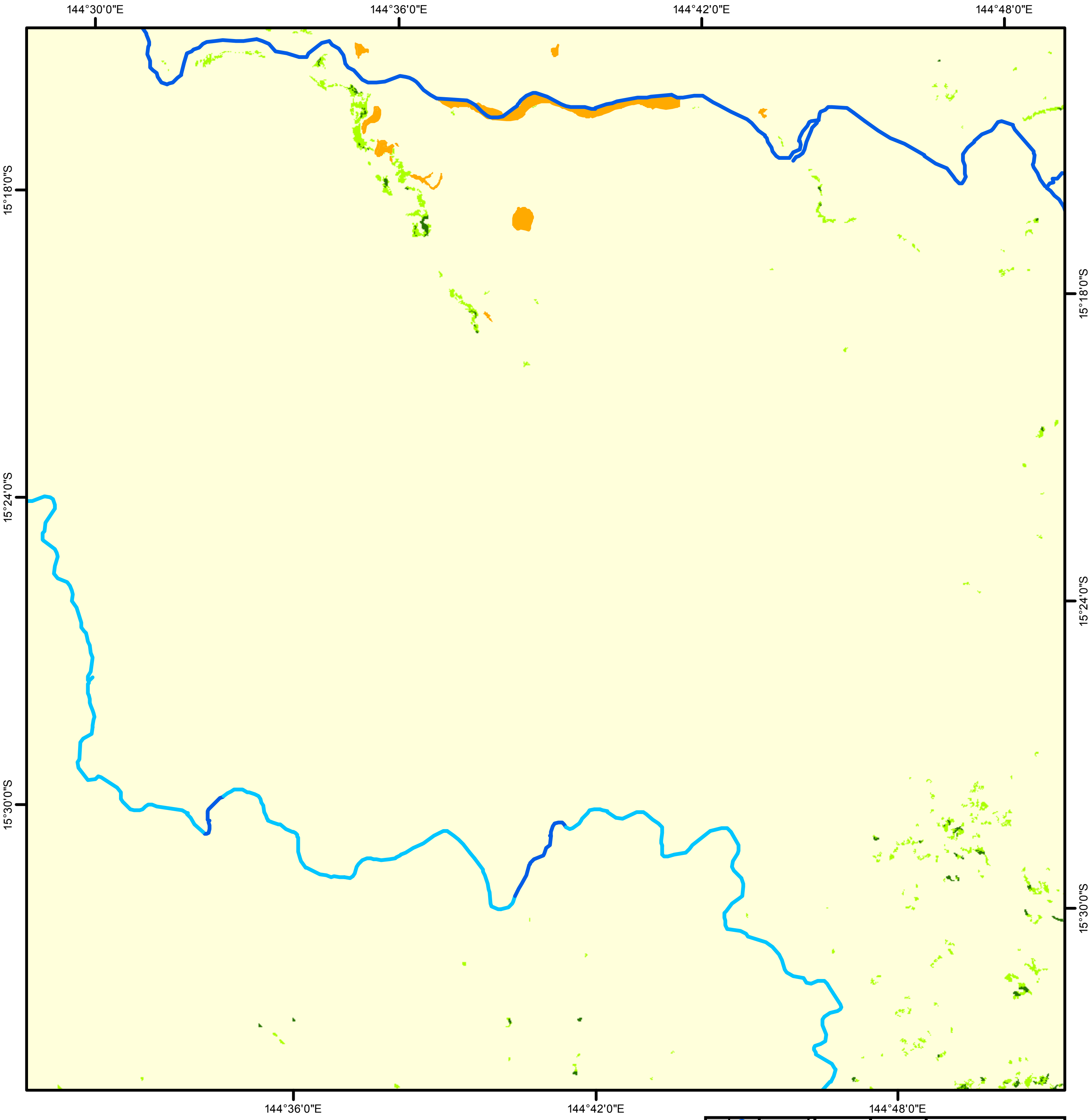
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





R10 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

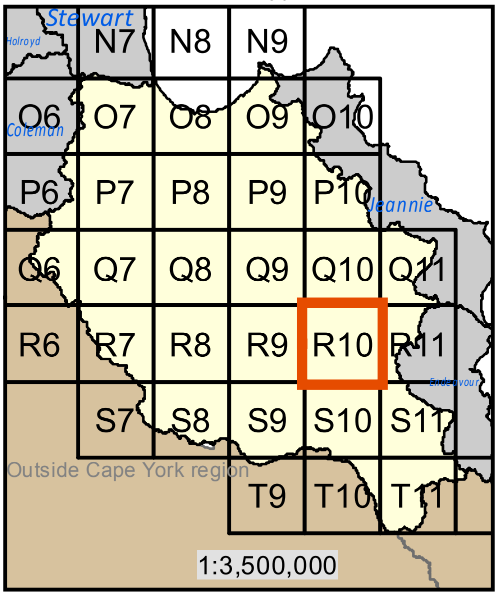
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

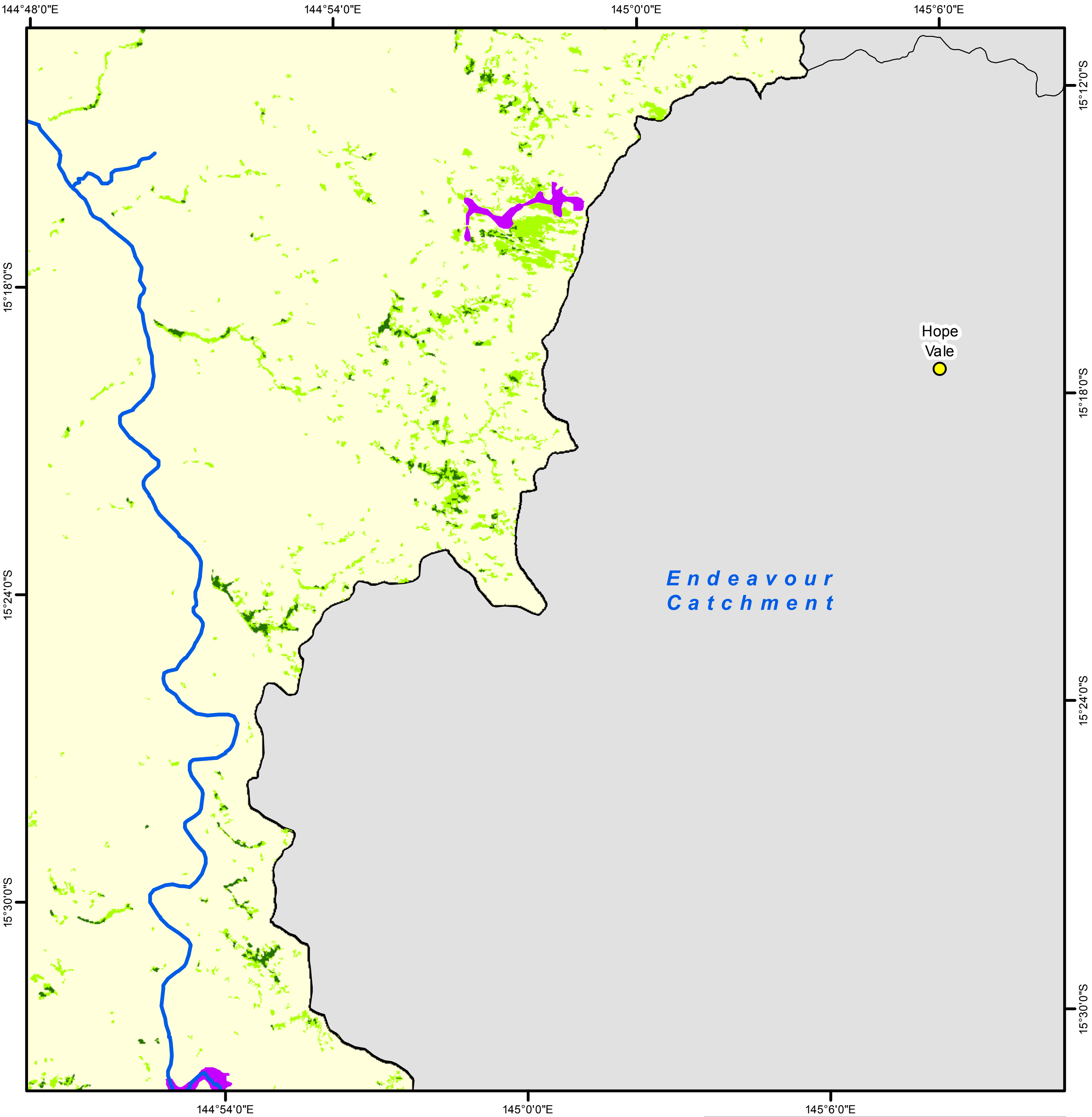
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely



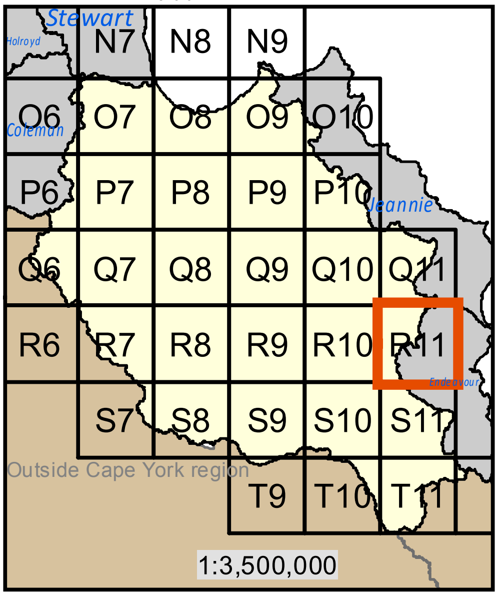


R11 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



- Place Names
- Catchment

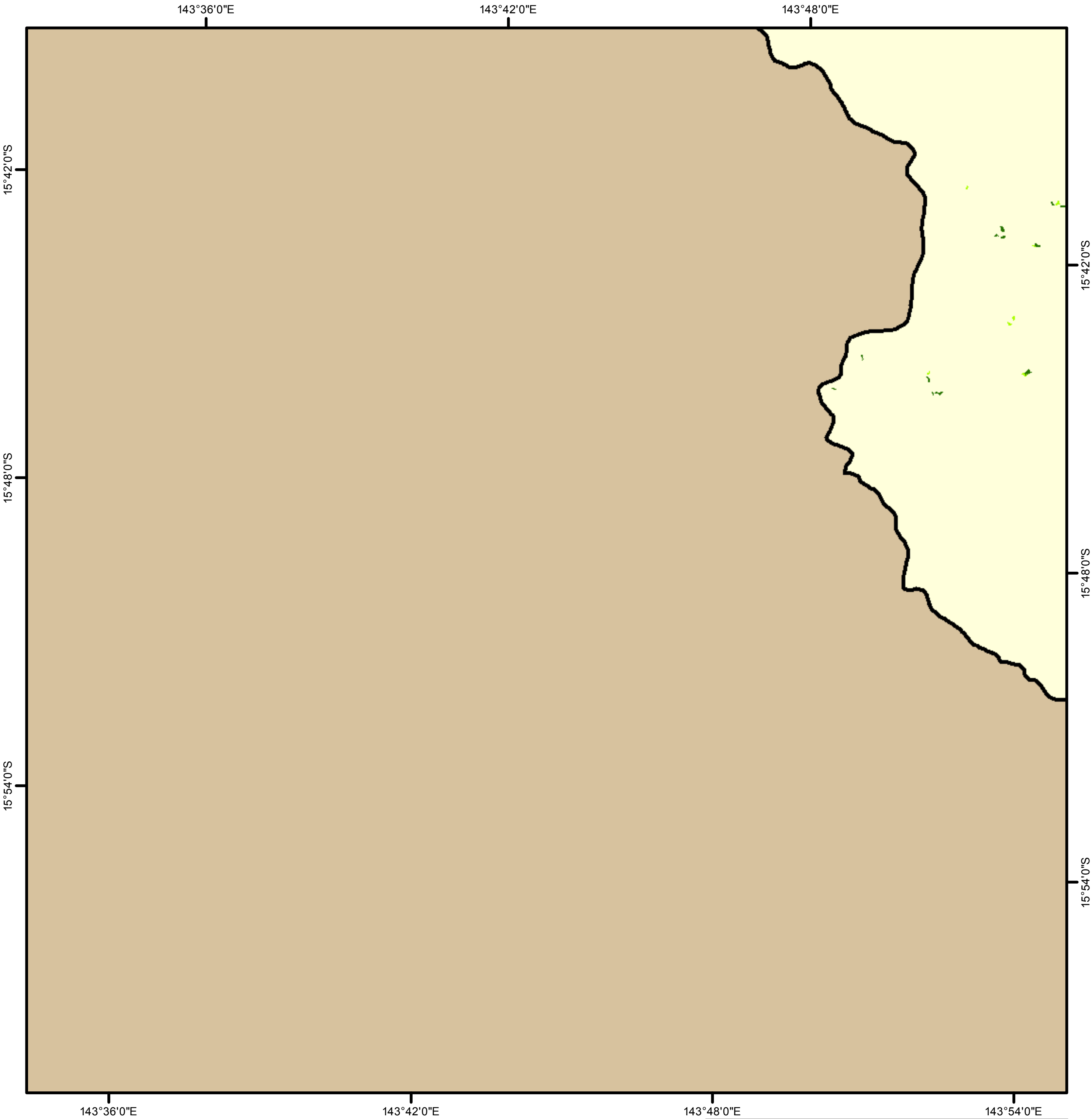
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely



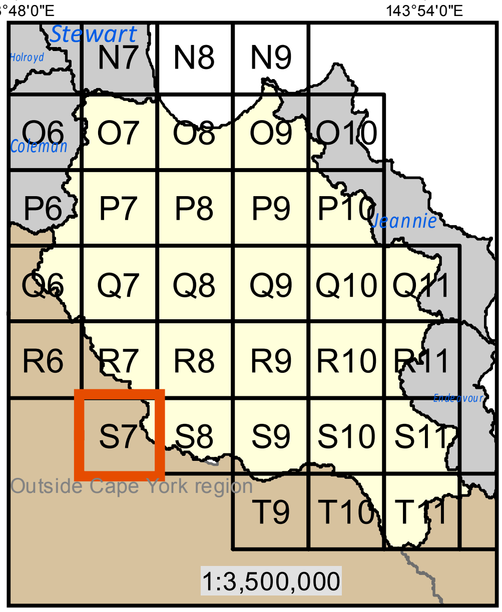
S7 Normanby Catchment

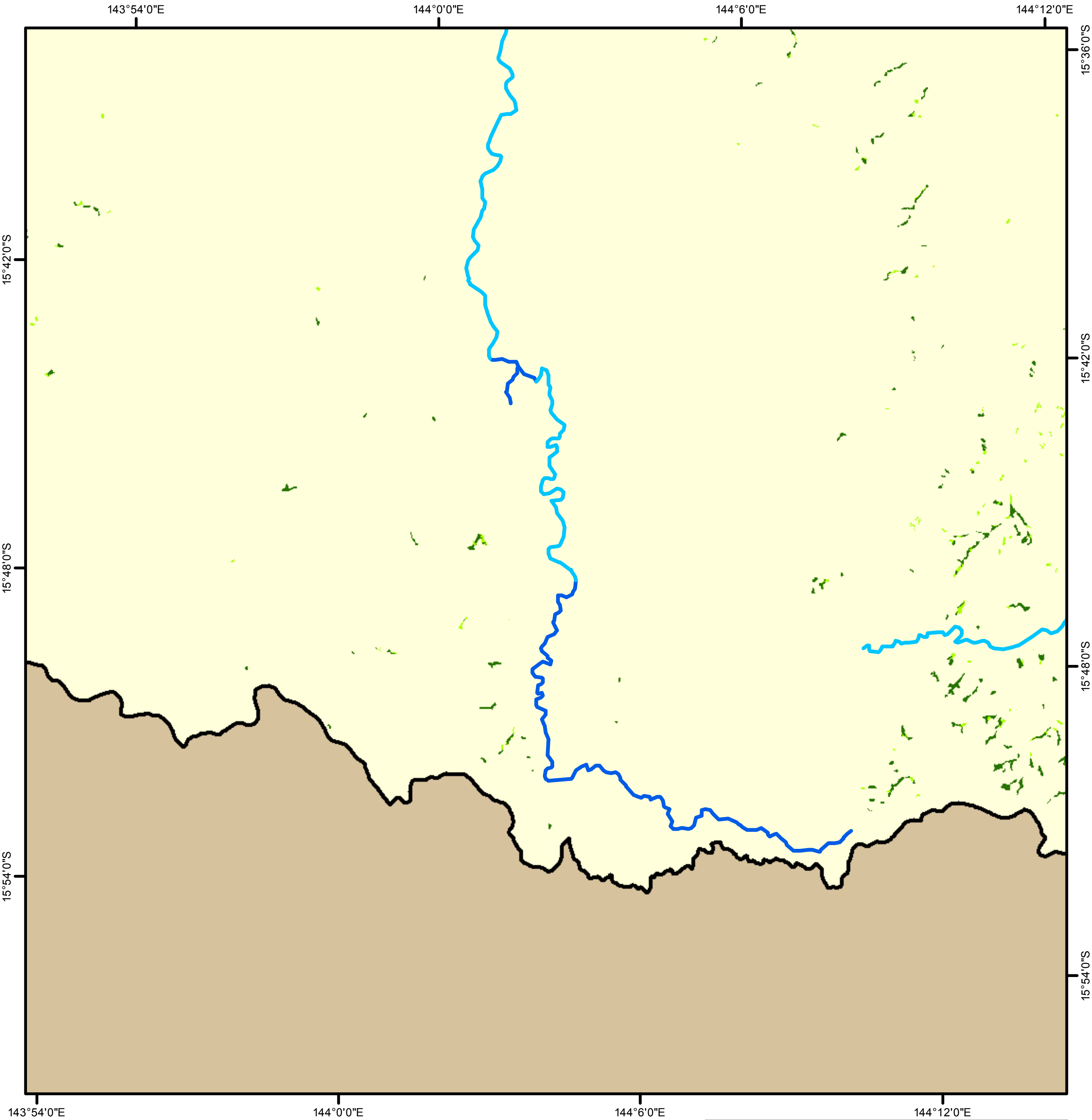
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely



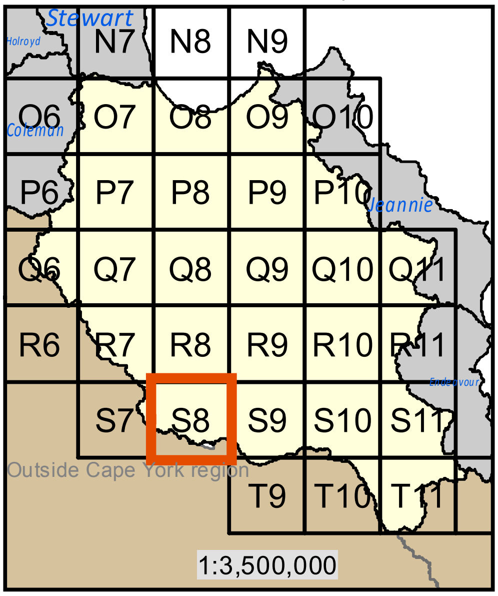


S8 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

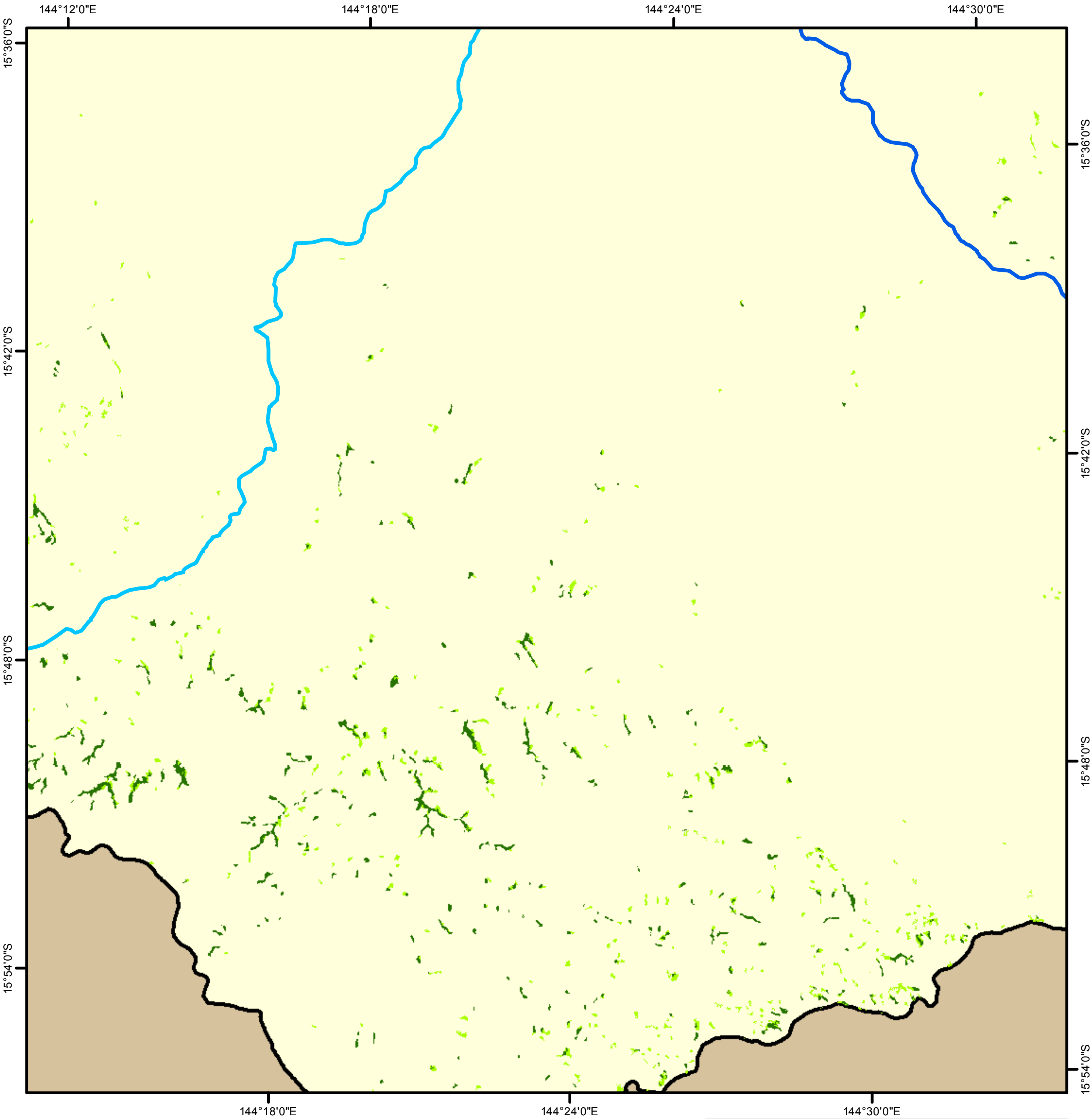
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely

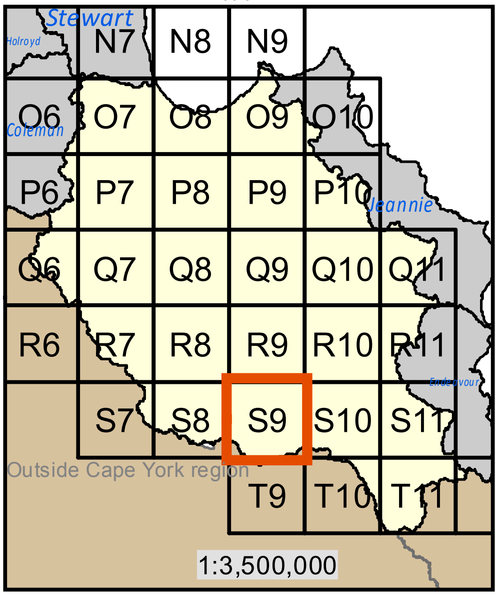


S9 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

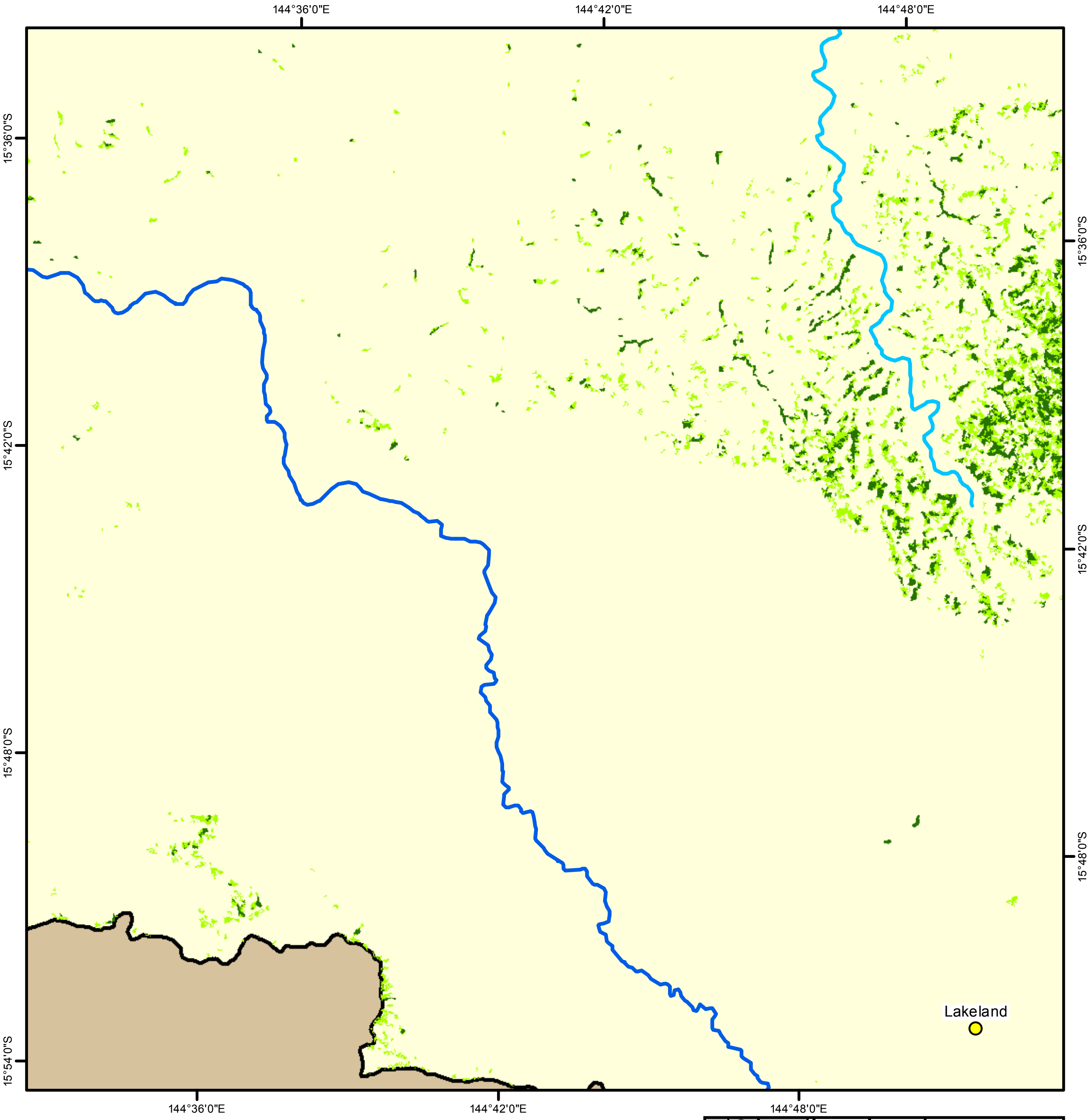
Likely

Baseflow Stream GDE Likelihood

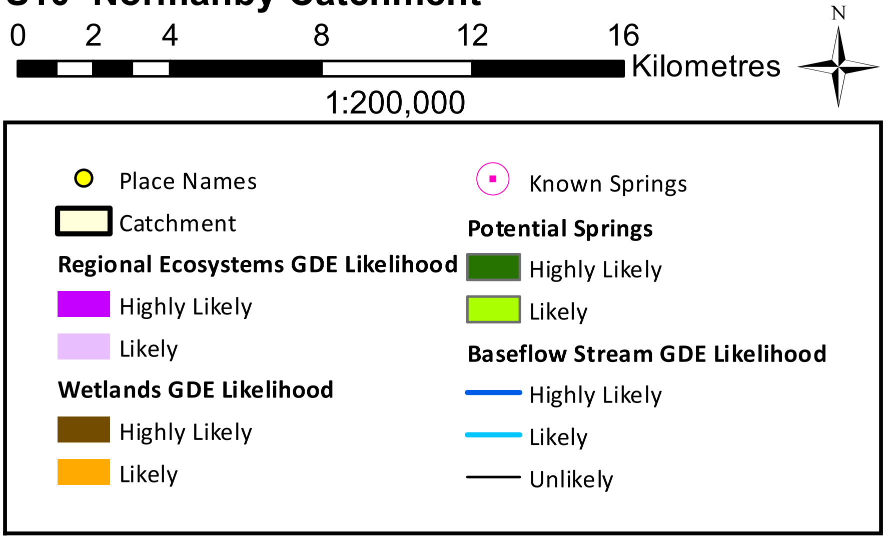
Highly Likely

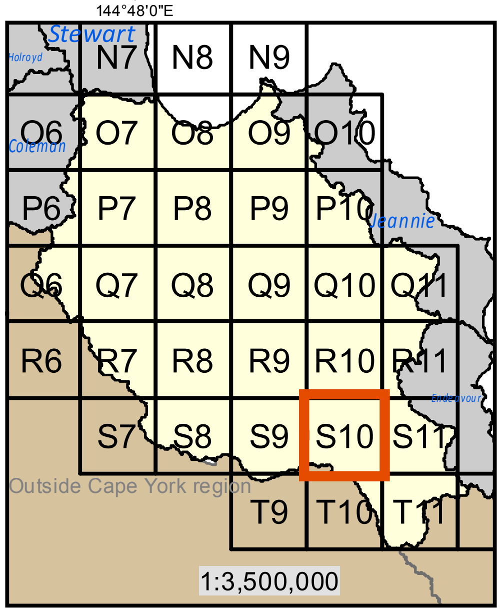
Likely

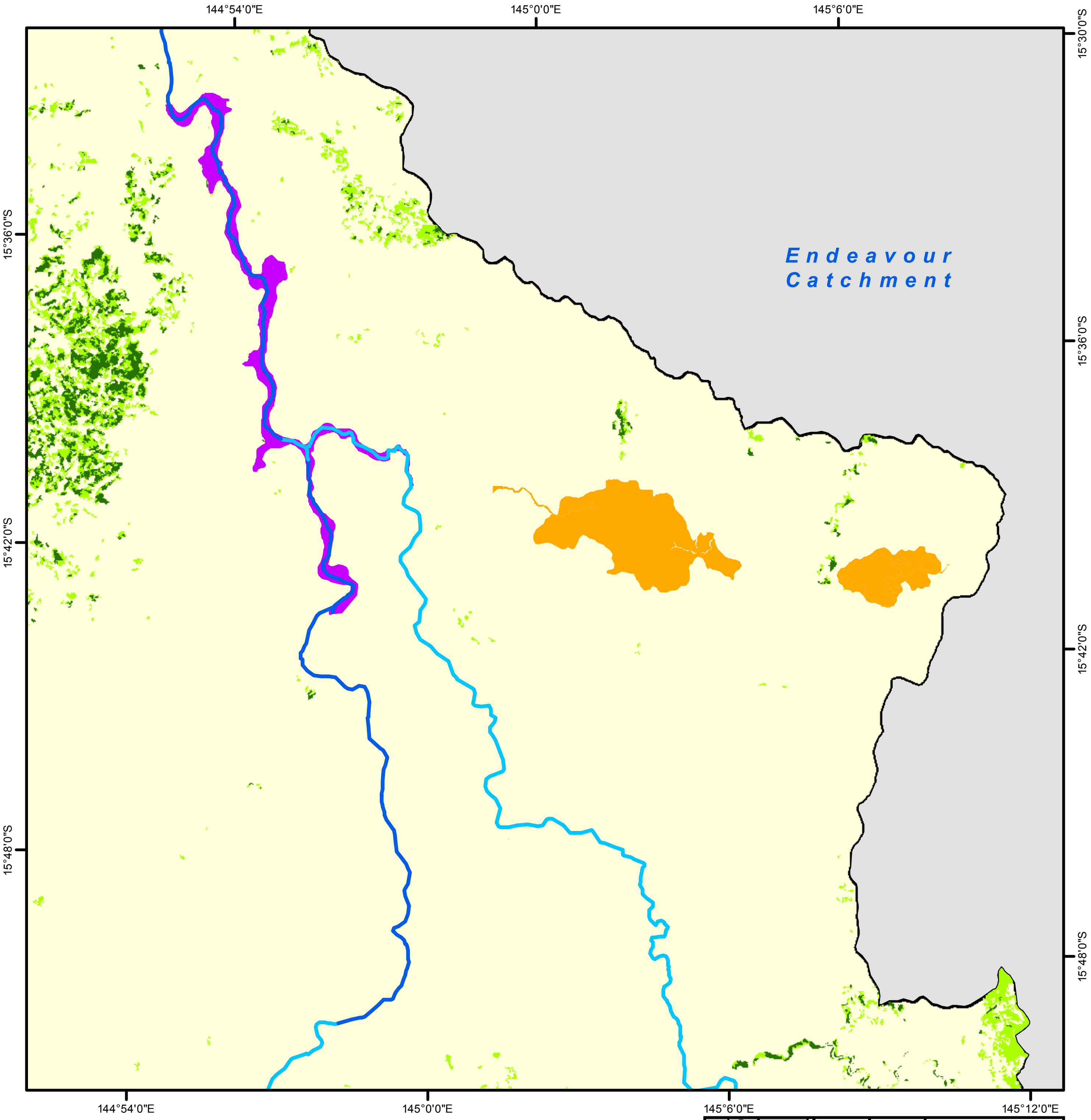
Unlikely



S10 Normanby Catchment







S11 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

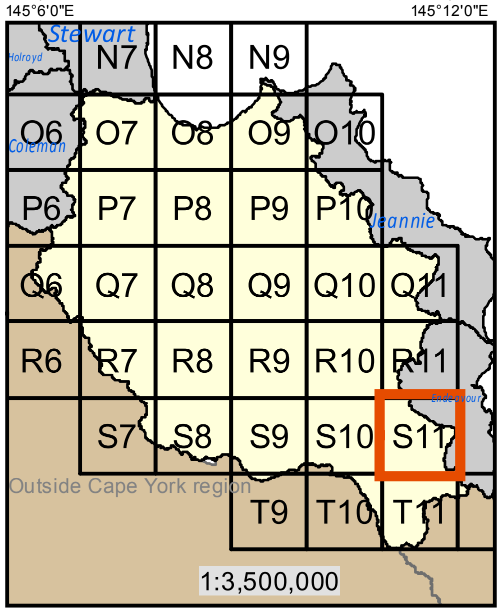
- Known Springs

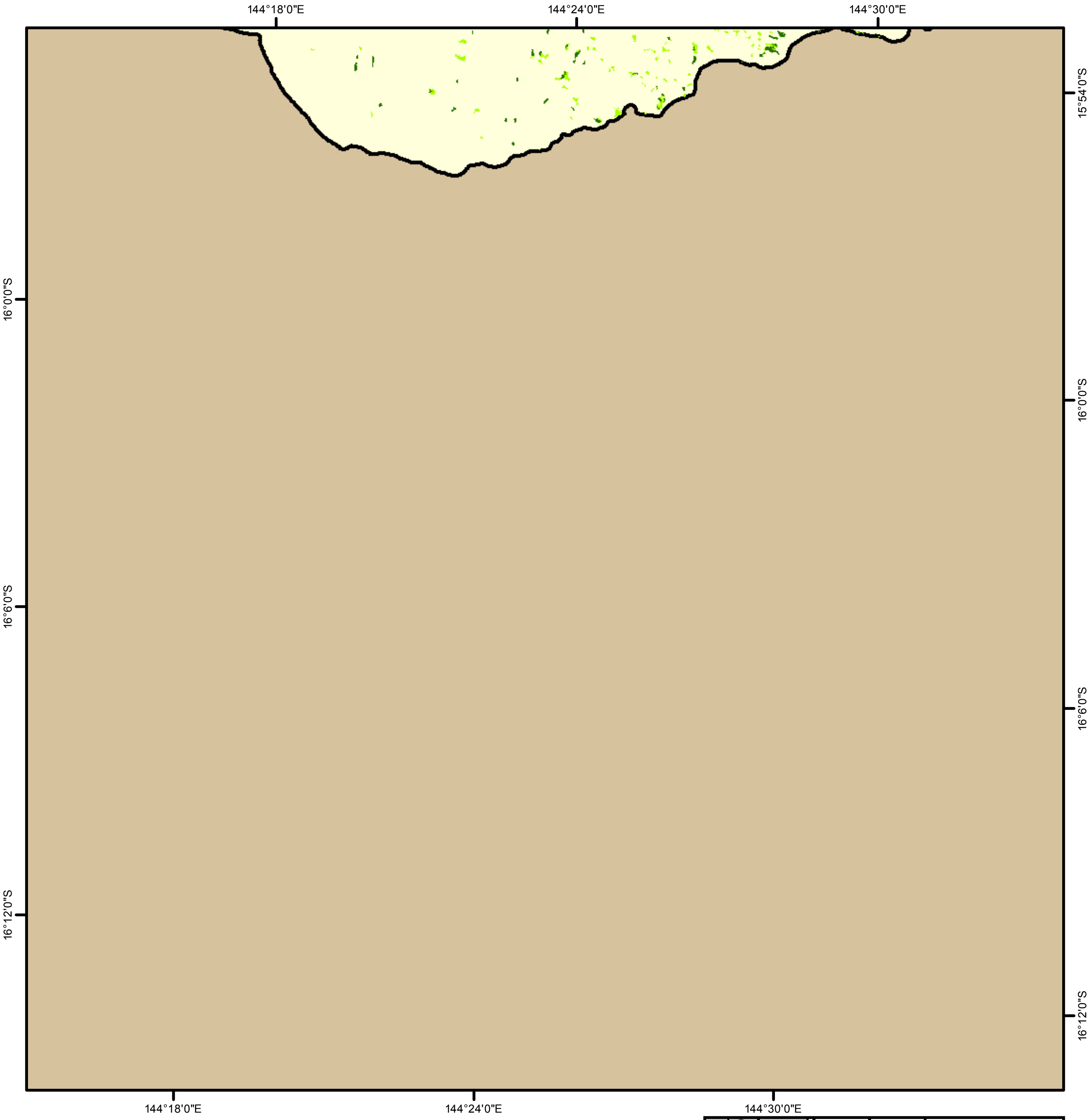
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





T9 Normanby Catchment

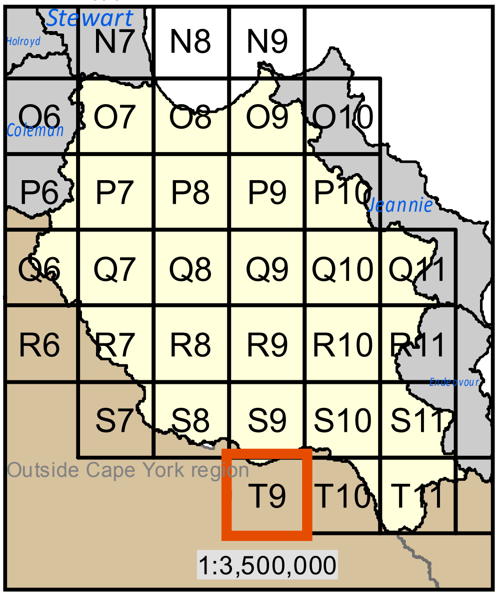
0 2 4 8 12 16 Kilometres

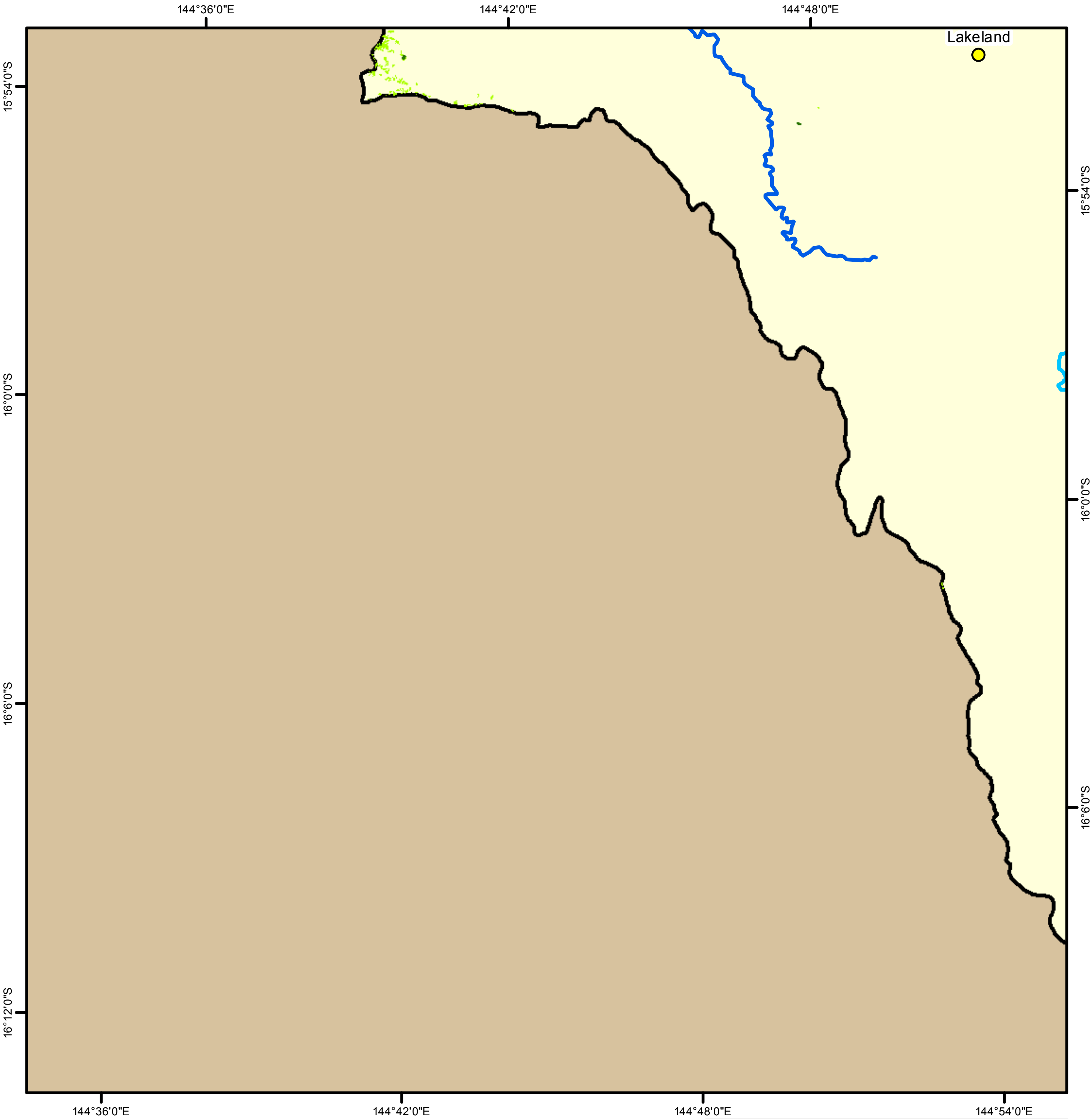
1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





T10 Normanby Catchment

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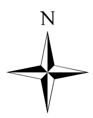


Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

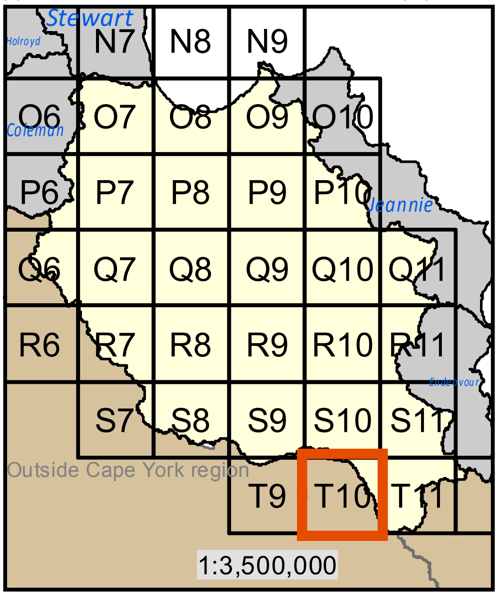
Likely

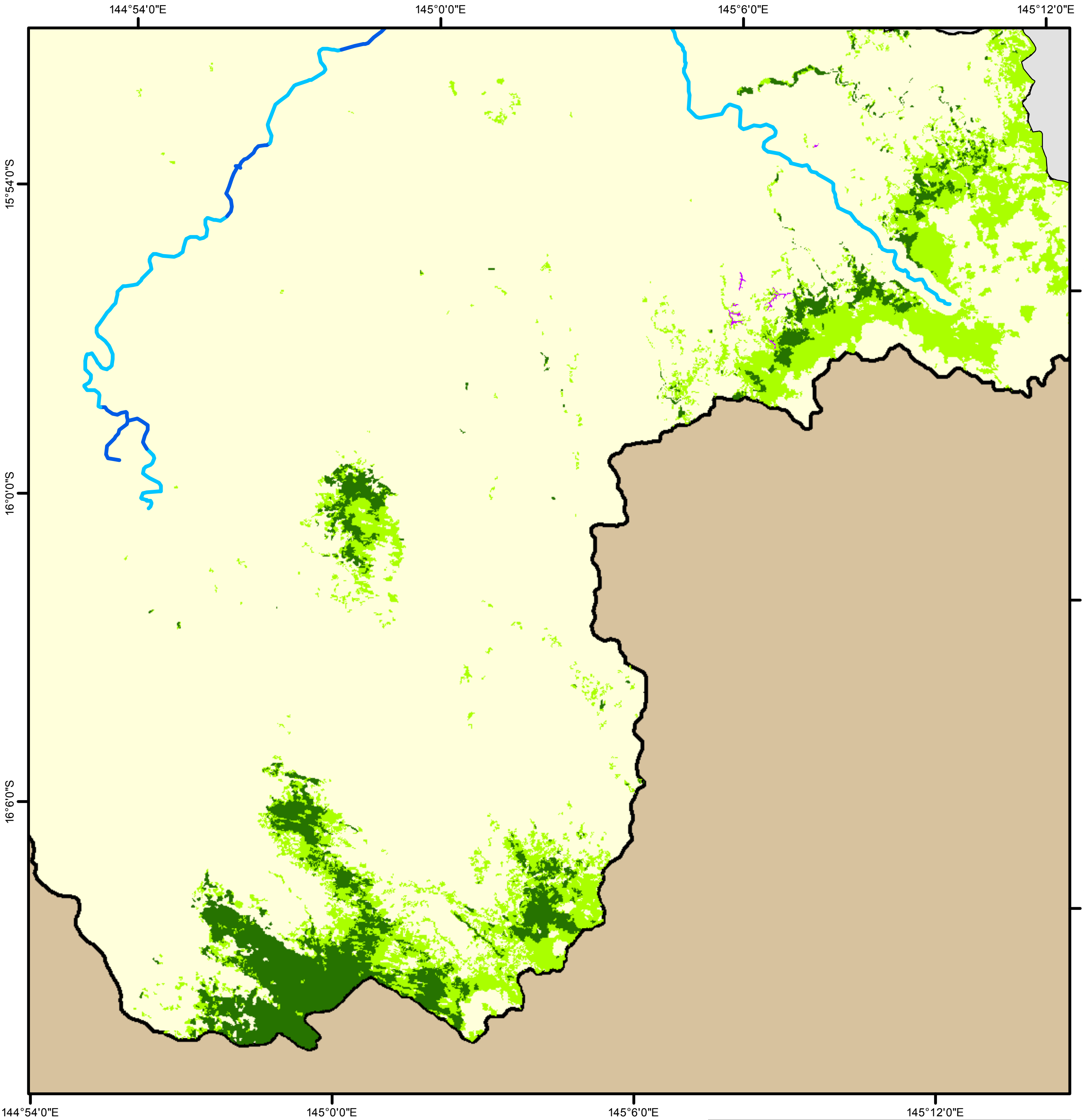
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





T11 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

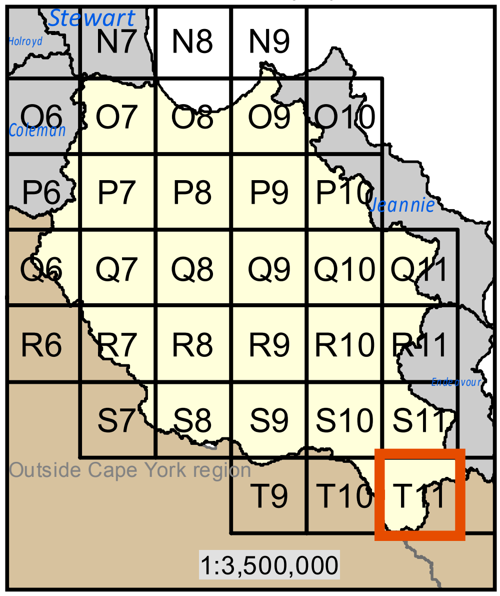
- Known Springs

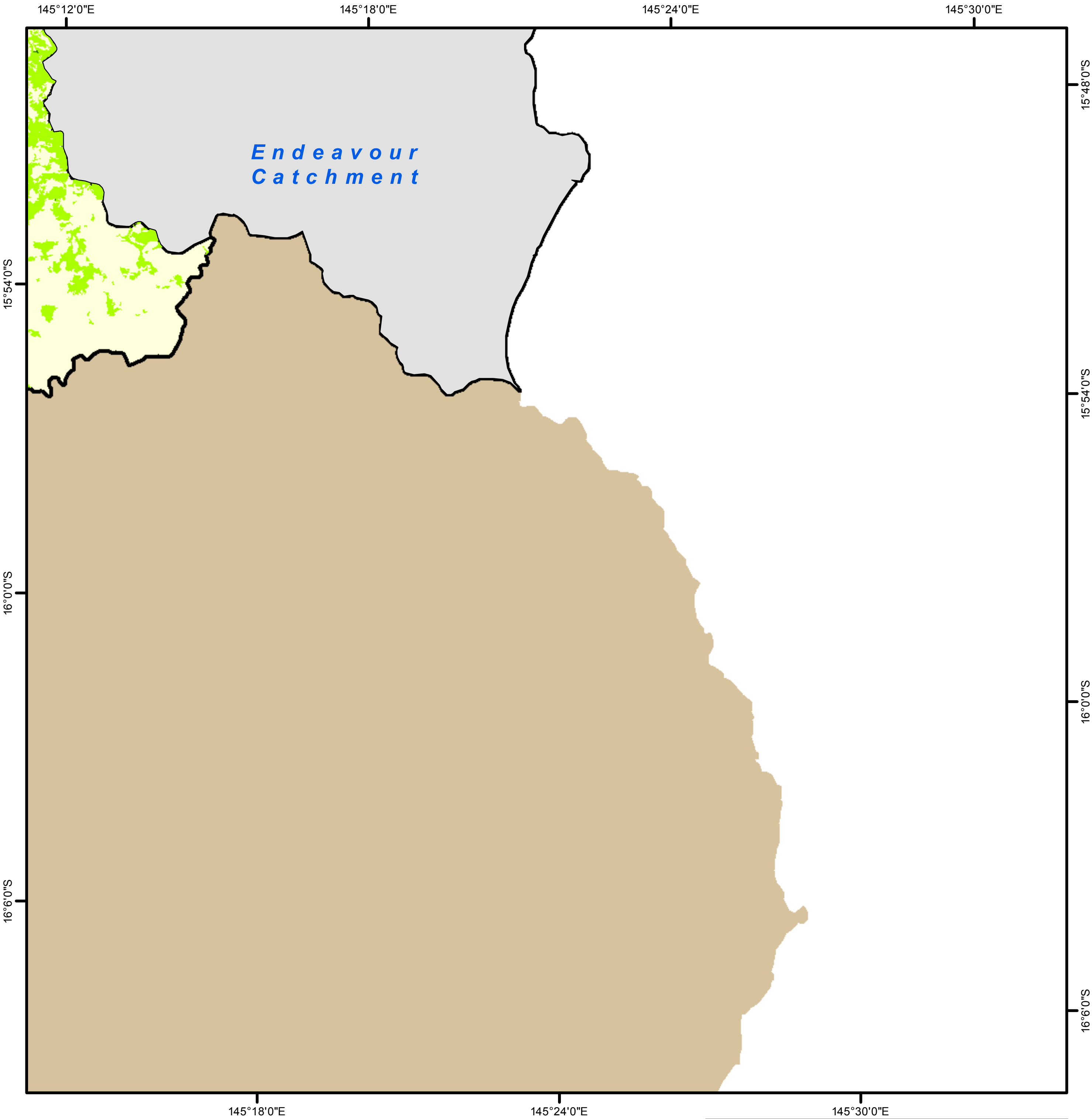
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





T12 Normanby Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

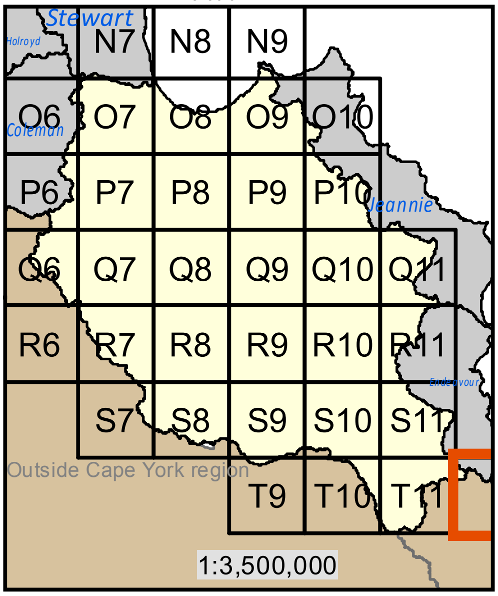
Likely

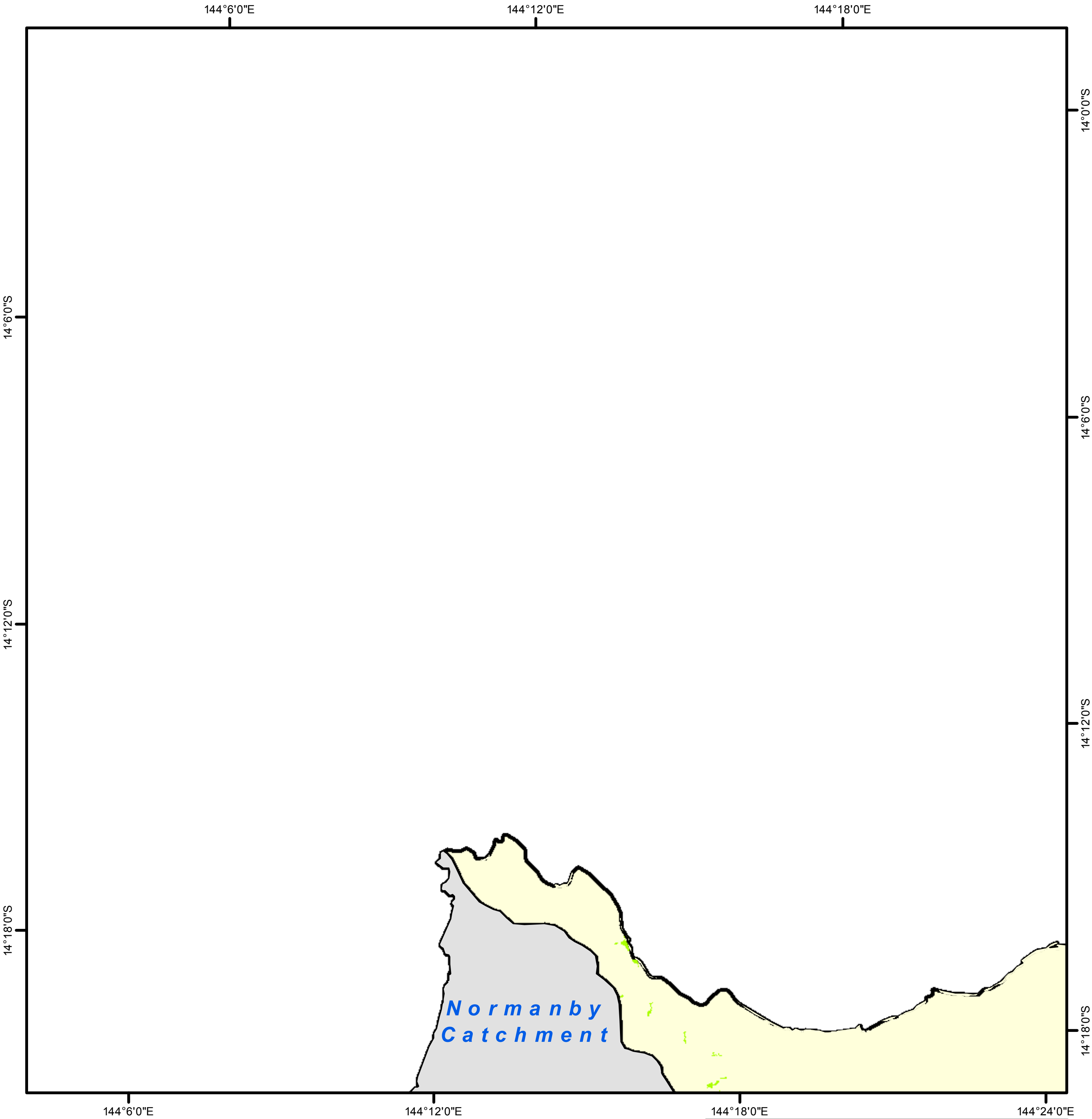
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



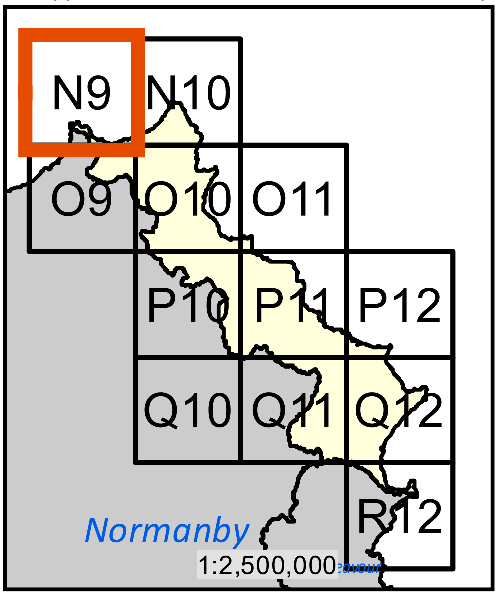


N9 Jeannie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names
Catchment

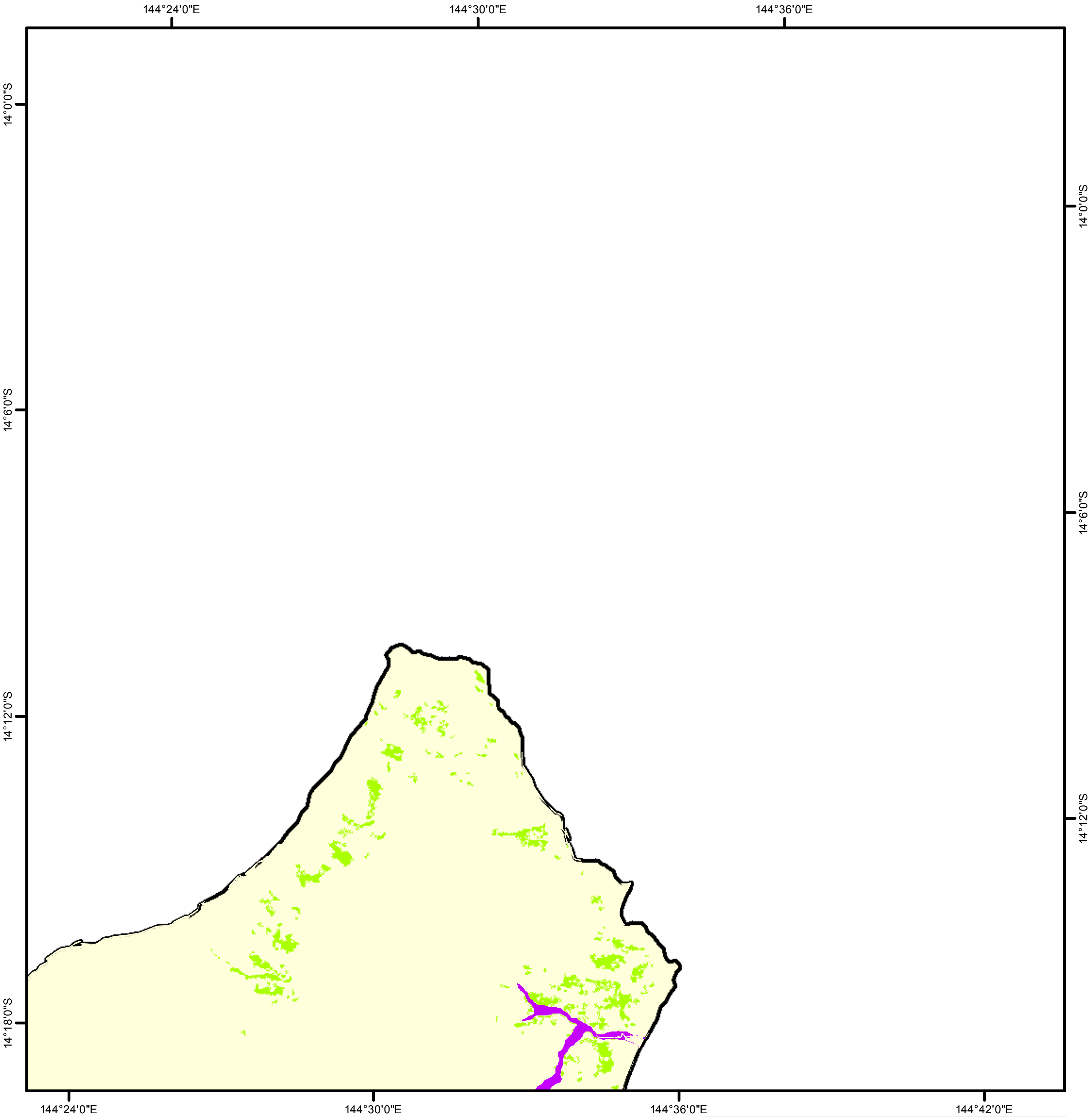
Regional Ecosystems GDE Likelihood
Highly Likely
Likely

Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs

Potential Springs
Highly Likely
Likely

Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely



N10 Jeannie Catchment

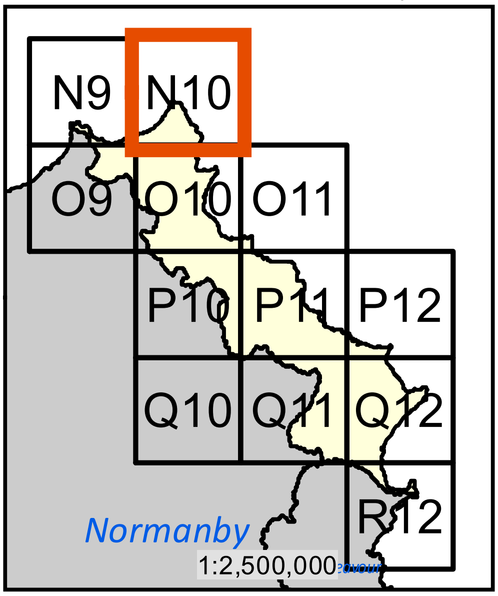
0 2 4 8 12 16 Kilometres

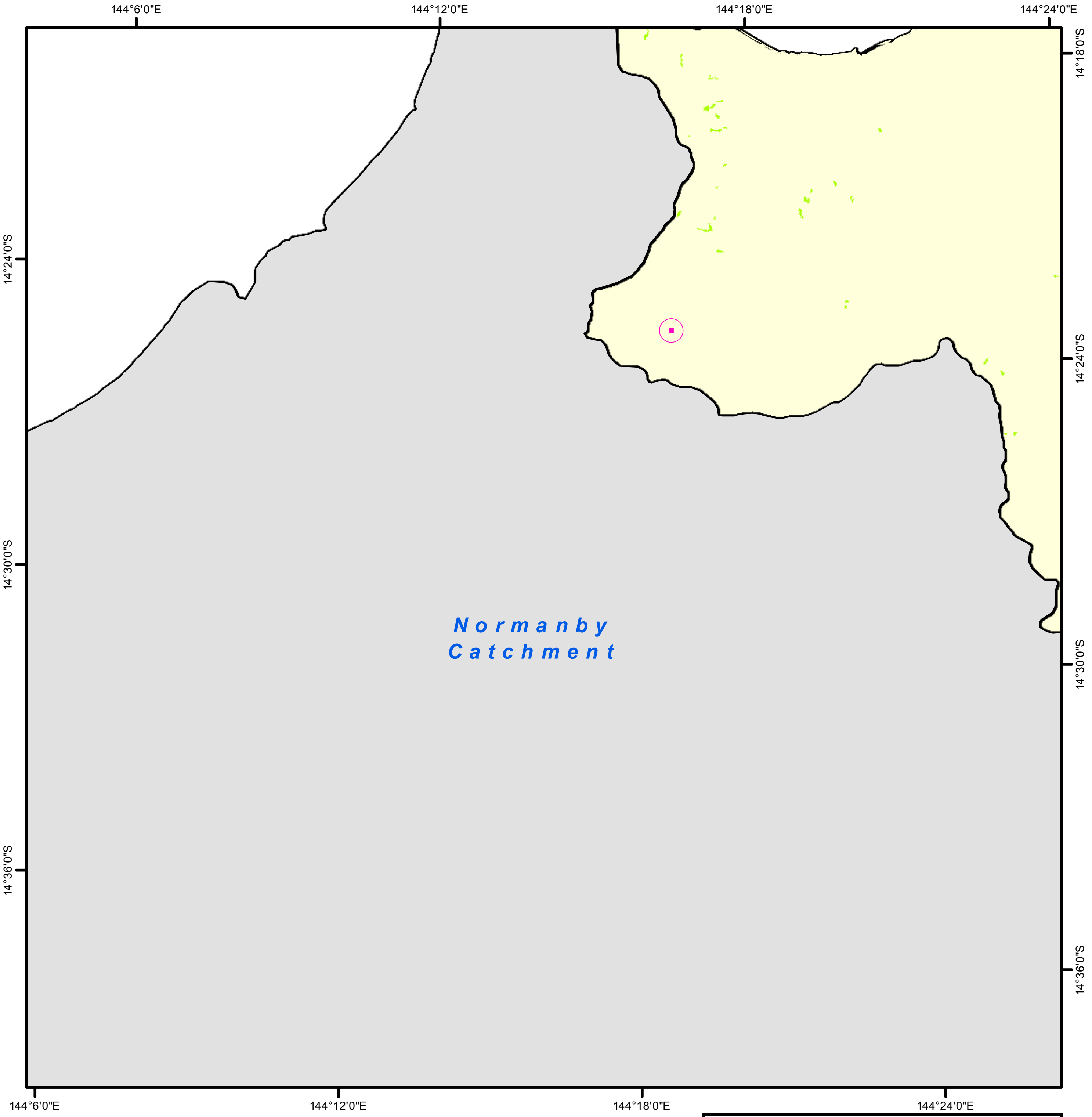
1:200,000

N

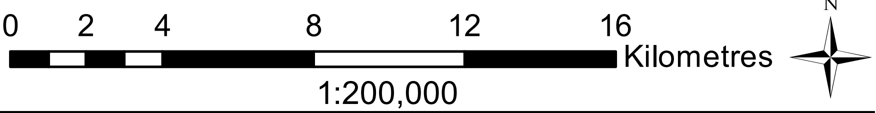
Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





O9 Jeannie Catchment



Place Names
Catchment

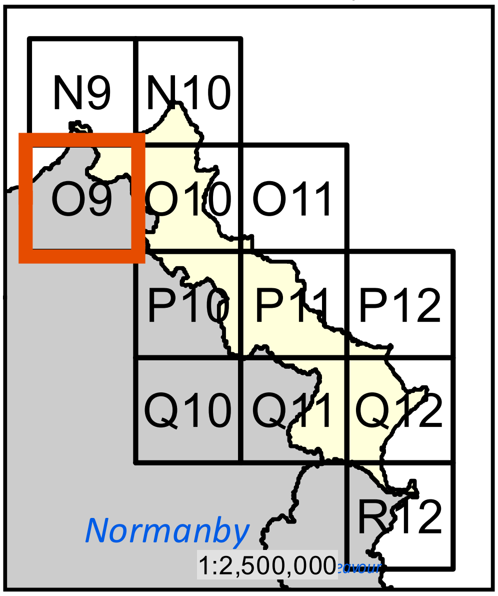
Regional Ecosystems GDE Likelihood
Highly Likely
Likely

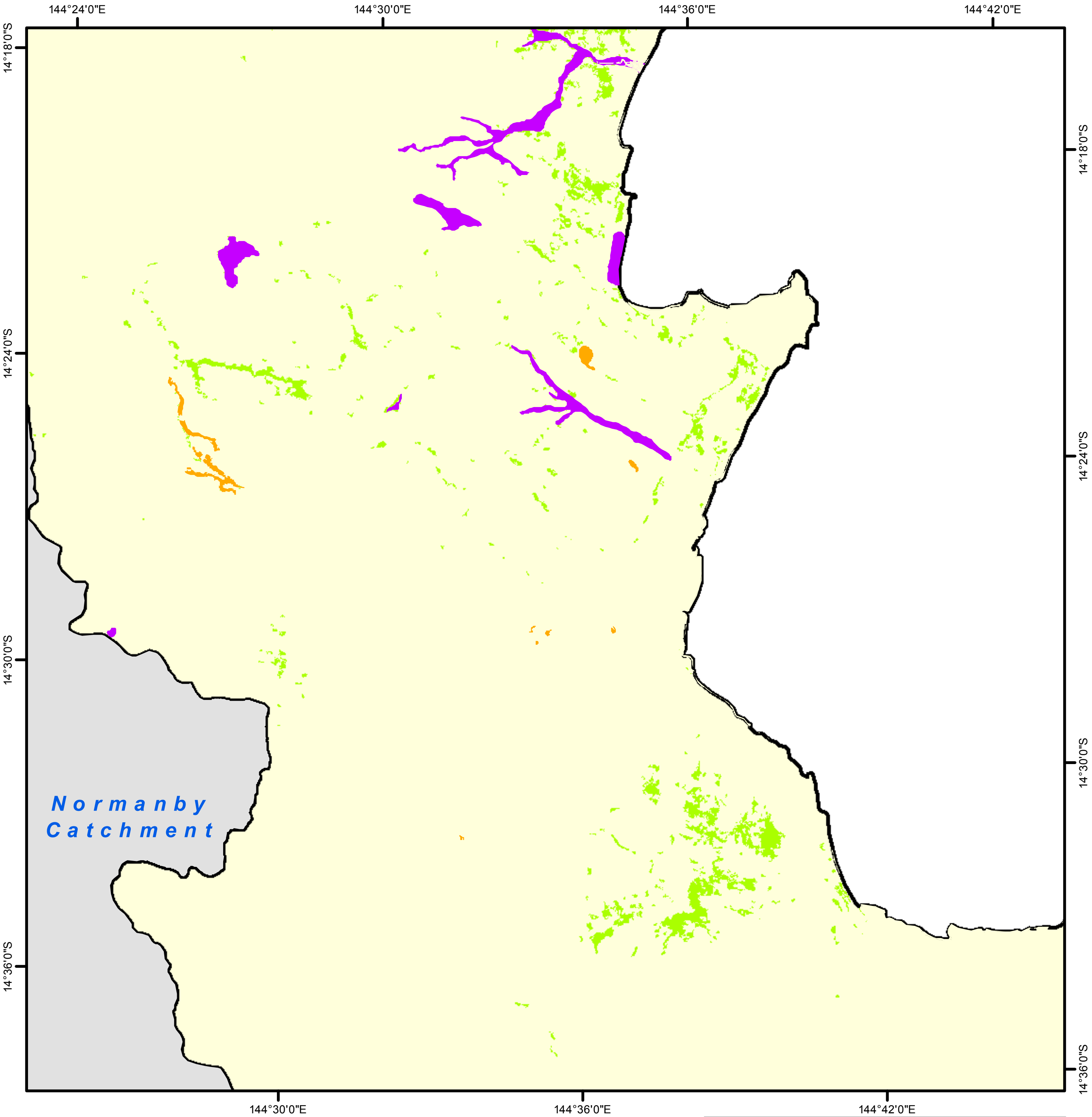
Wetlands GDE Likelihood
Highly Likely
Likely

Known Springs

Potential Springs
Highly Likely
Likely

Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





O10 Jeannie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

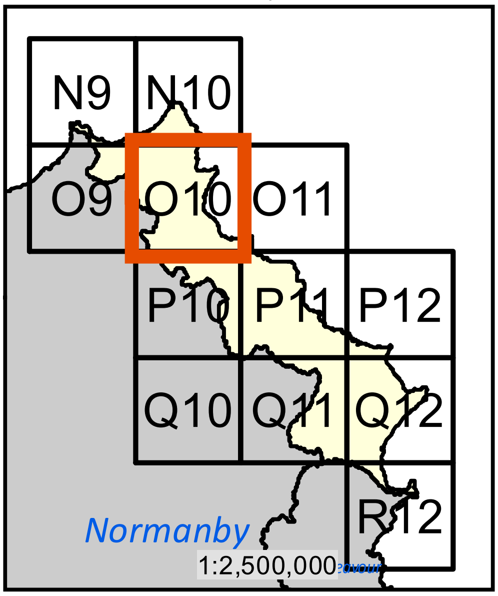
Regional Ecosystems GDE Likelihood
- Highly Likely
- Likely

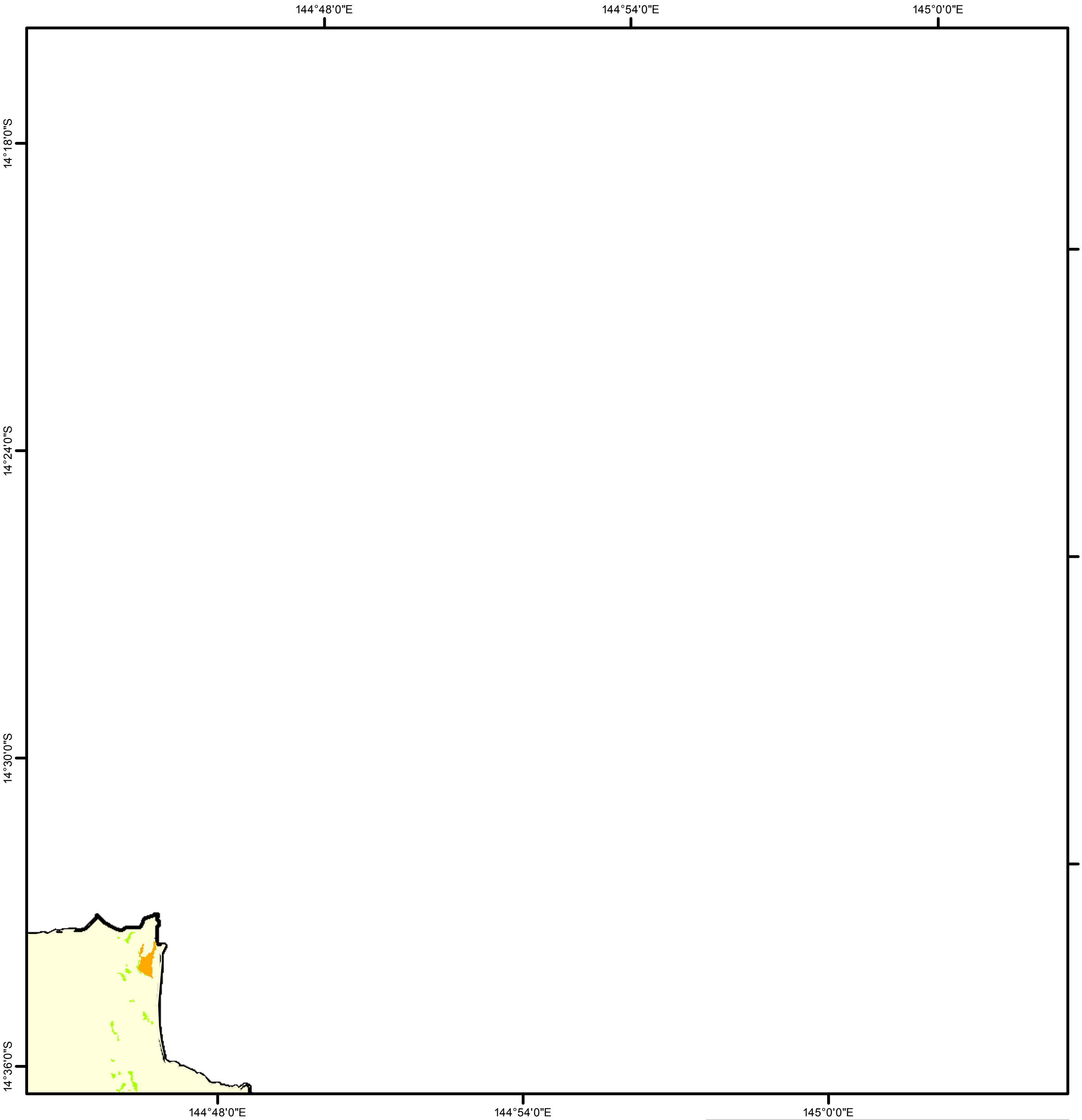
Wetlands GDE Likelihood
- Highly Likely
- Likely

- Known Springs

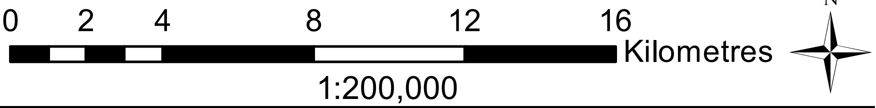
Potential Springs
- Highly Likely
- Likely

Baseflow Stream GDE Likelihood
- Highly Likely
- Likely
- Unlikely

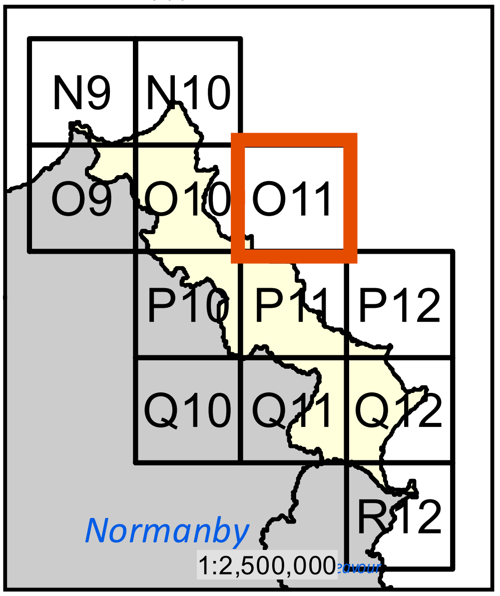


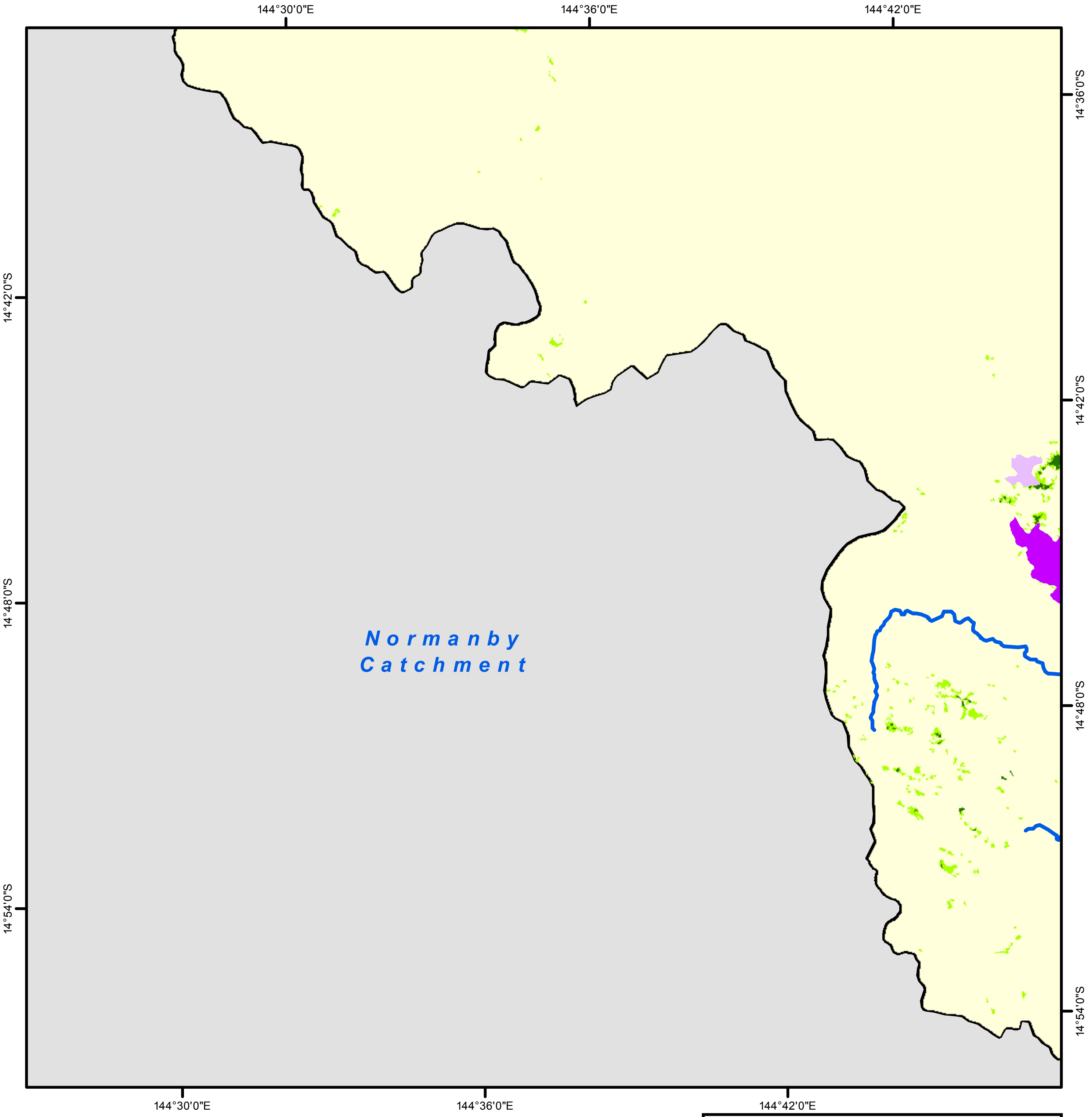


O11 Jeannie Catchment



Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





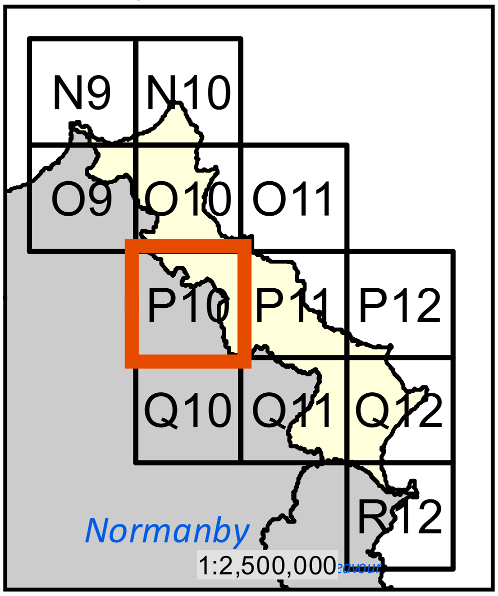
P10 Jeannie Catchment

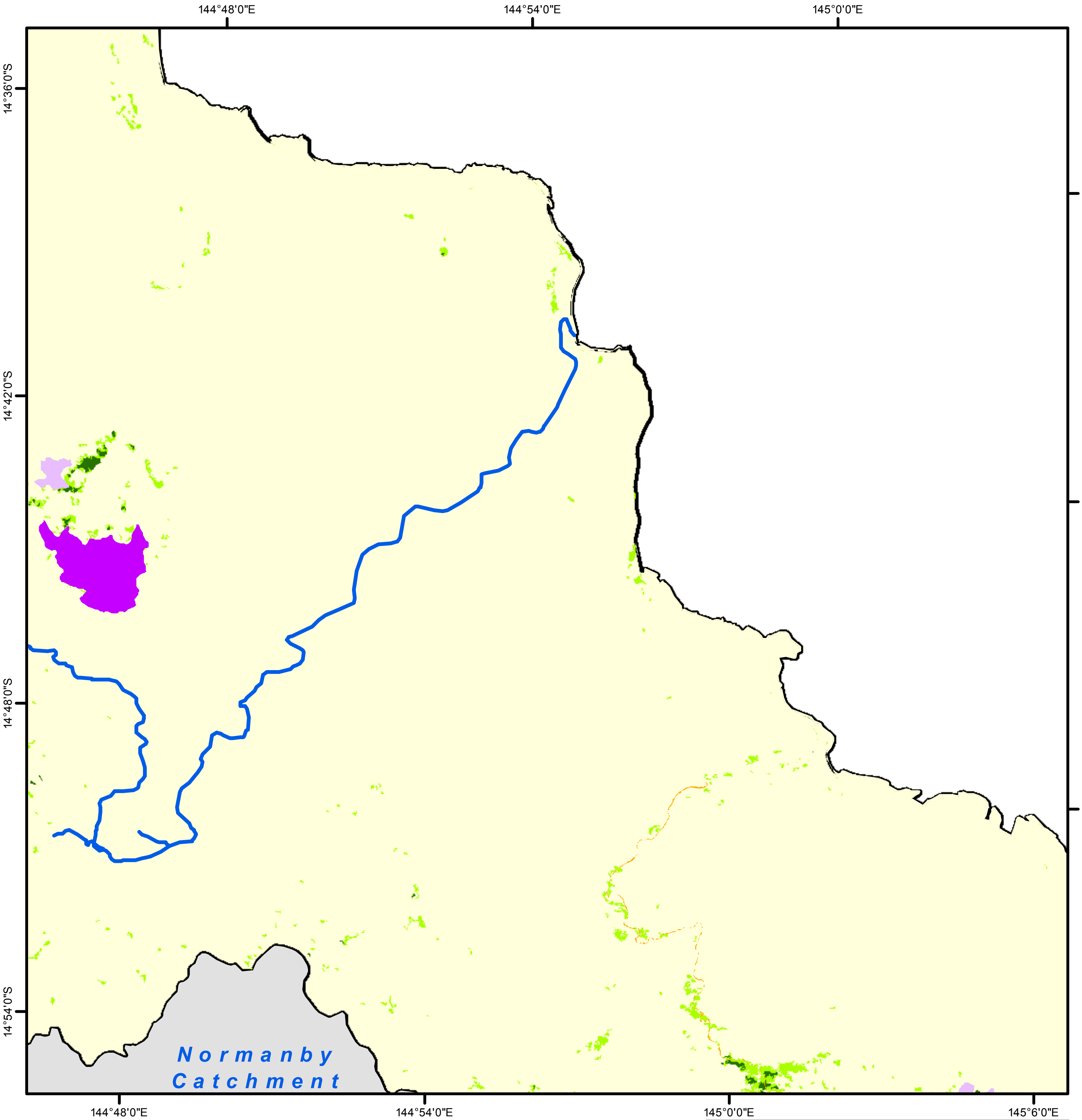
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





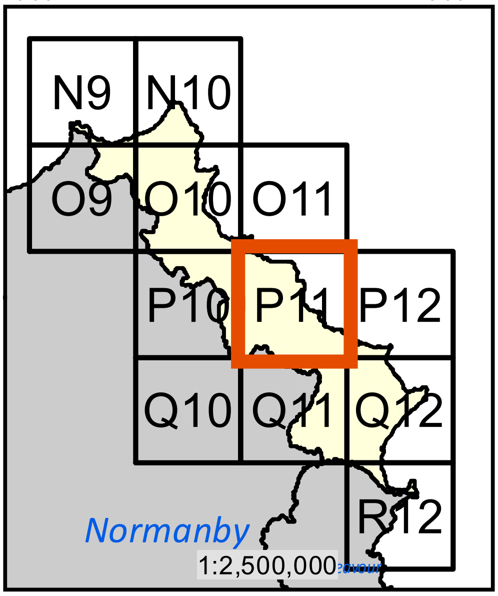
P11 Jeannie Catchment

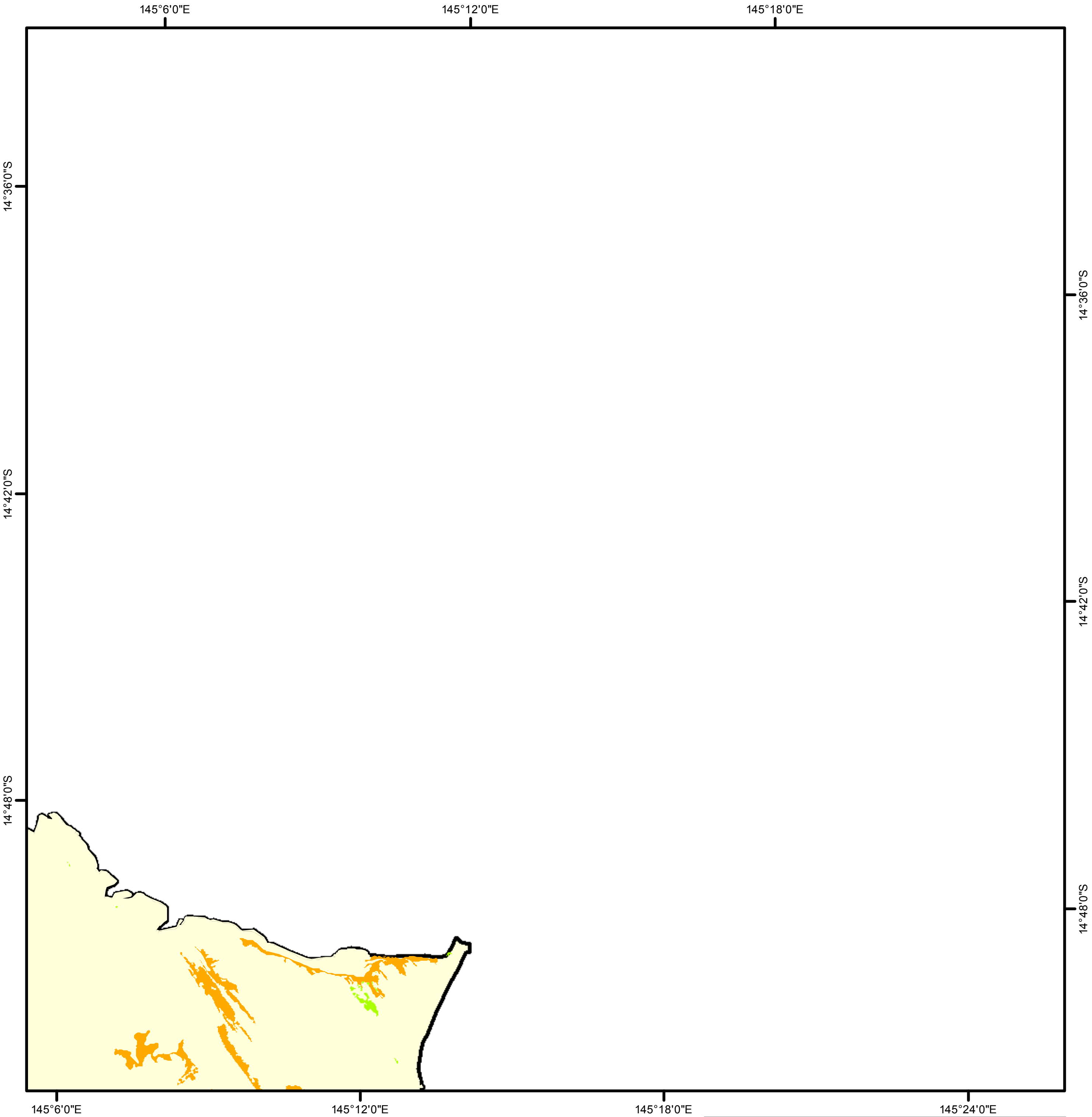
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





P12 Jeannie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

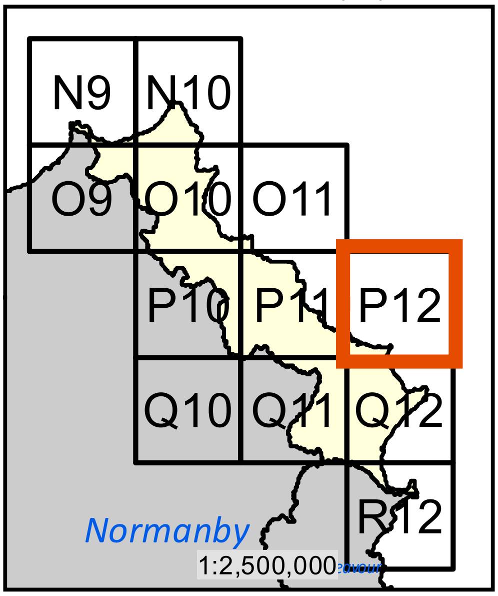
Likely

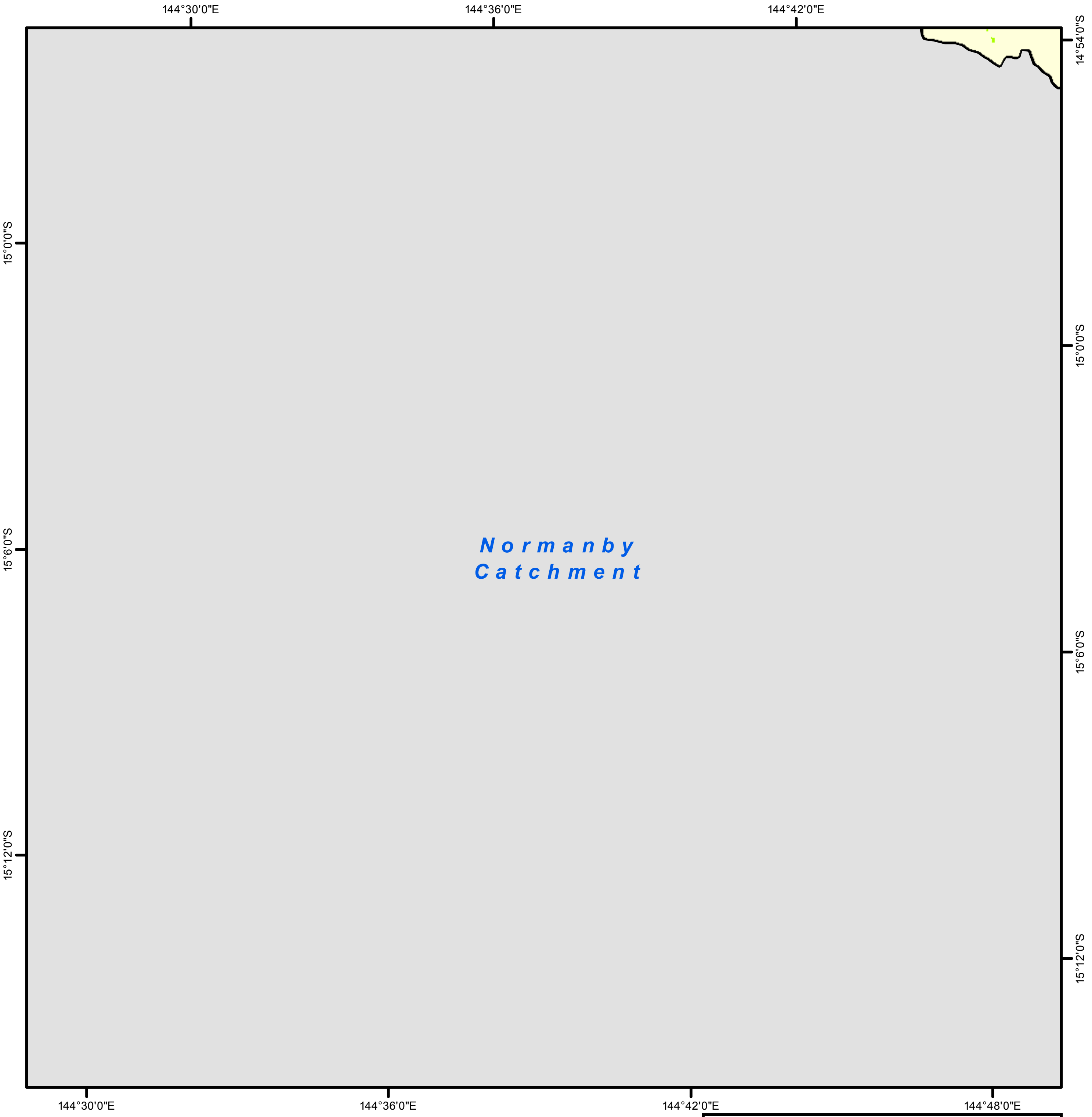
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





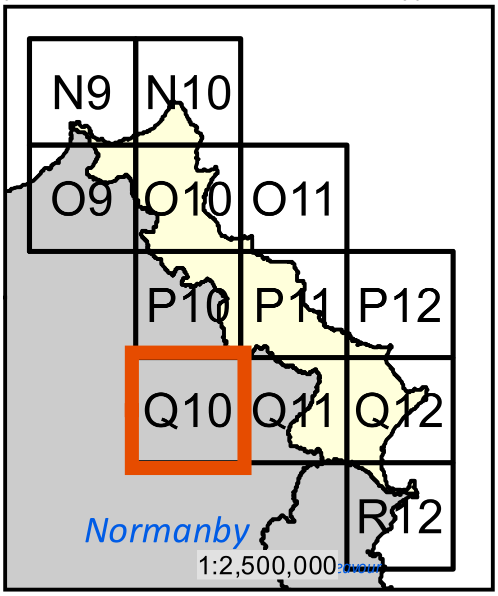
Q10 Jeannie Catchment

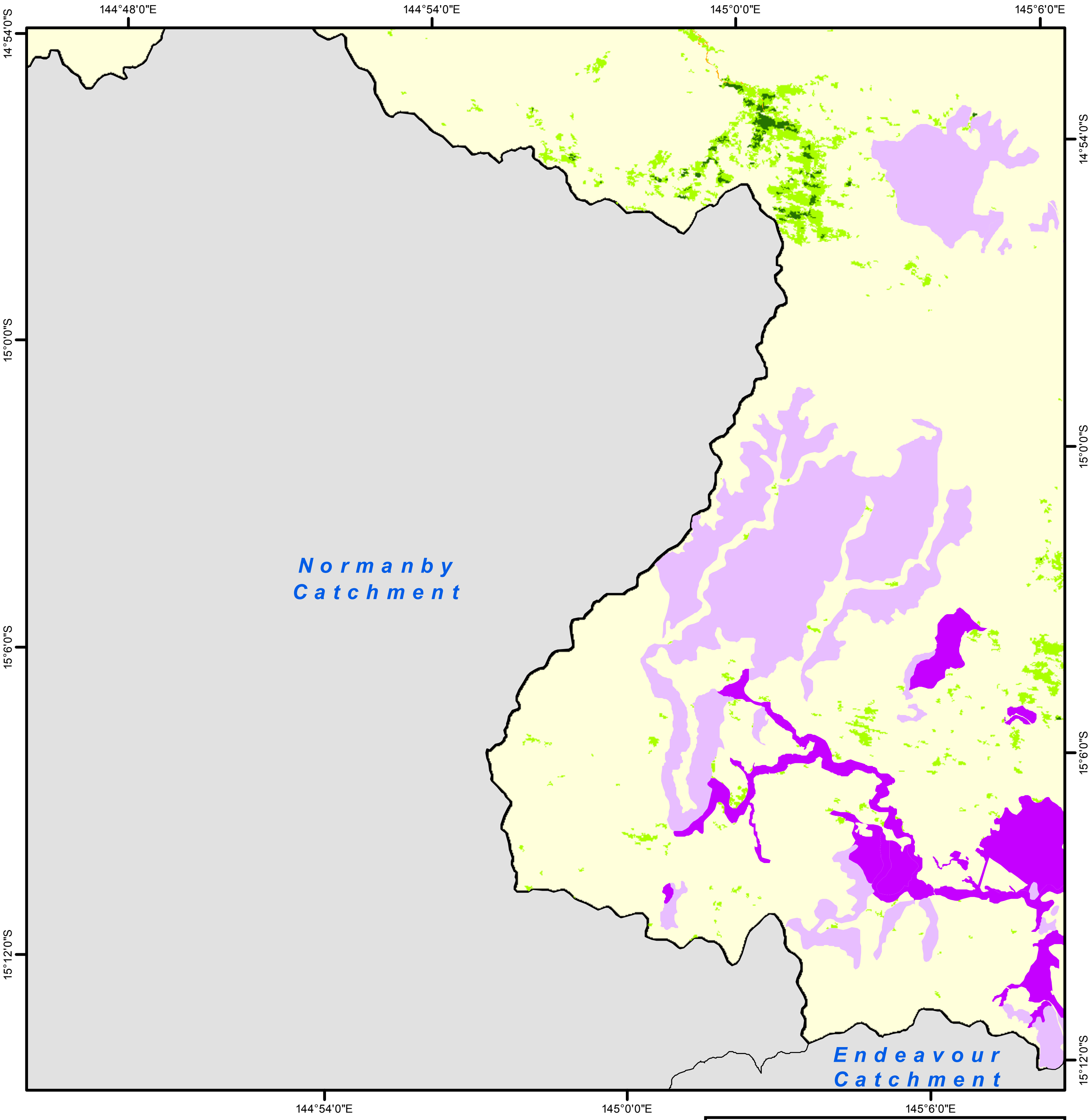
0 2 4 8 12 16 Kilometres

1:200,000

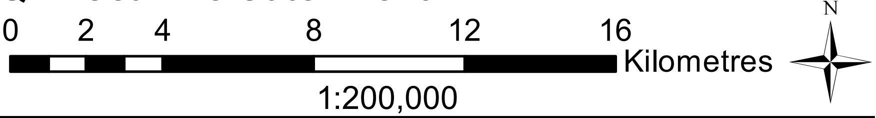
N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





Q11 Jeannie Catchment



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

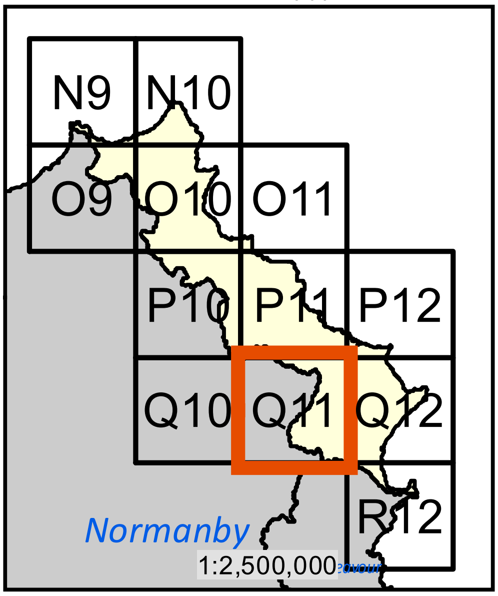
Likely

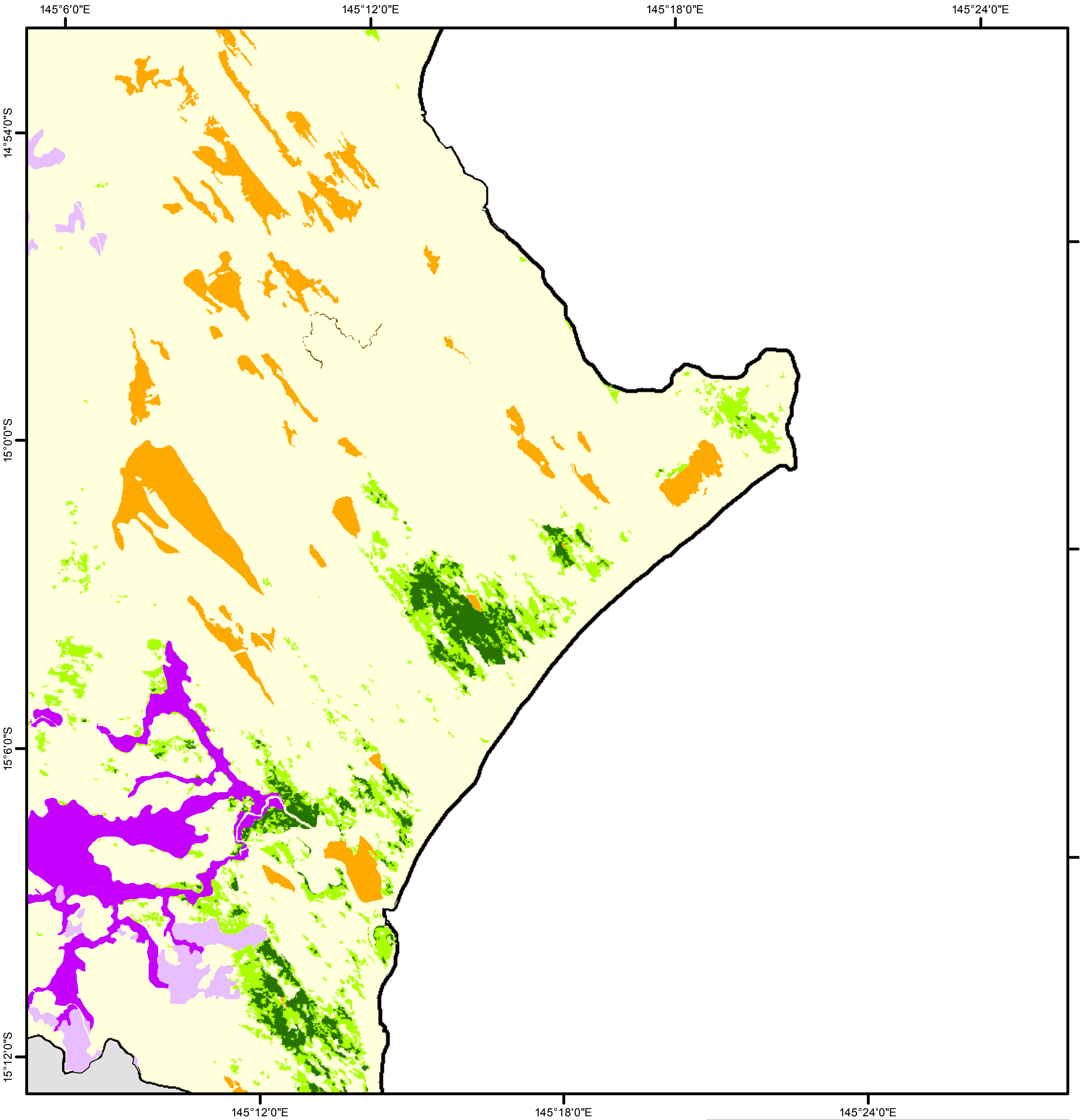
Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely





Q12 Jeannie Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

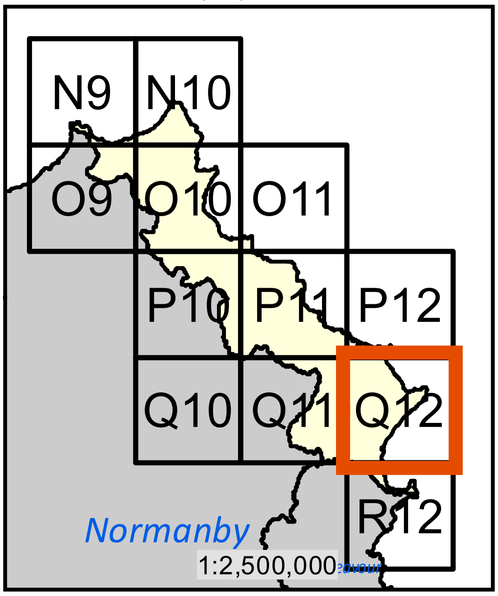
Likely

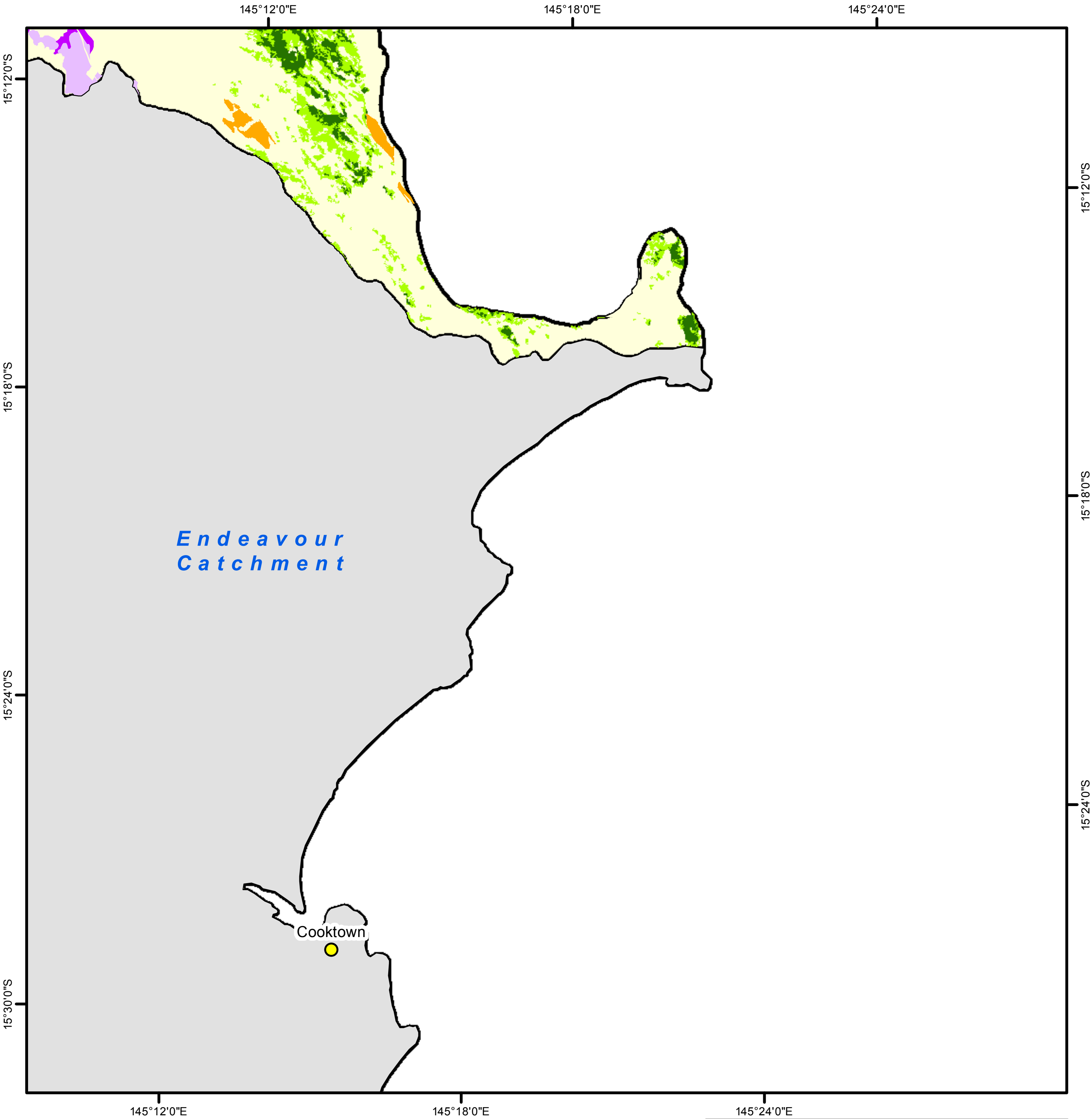
Baseflow Stream GDE Likelihood

Highly Likely

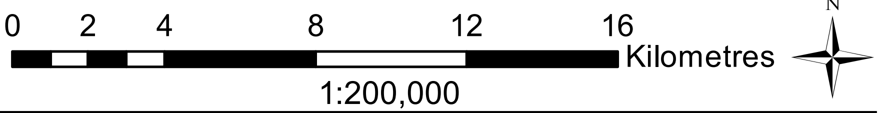
Likely

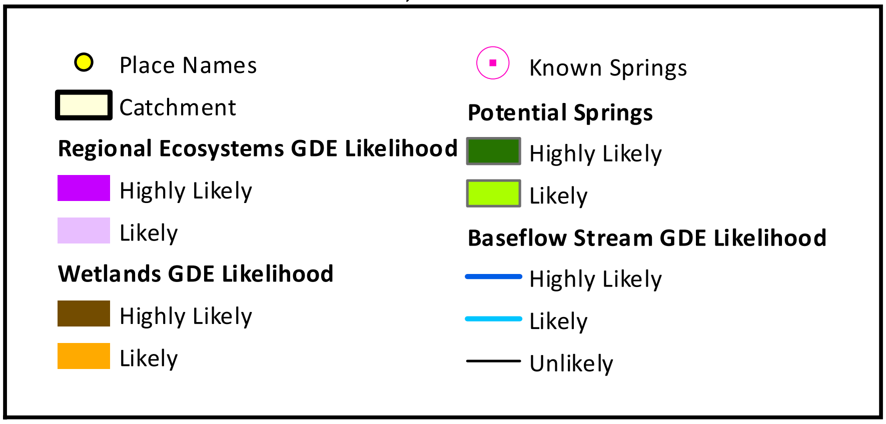
Unlikely

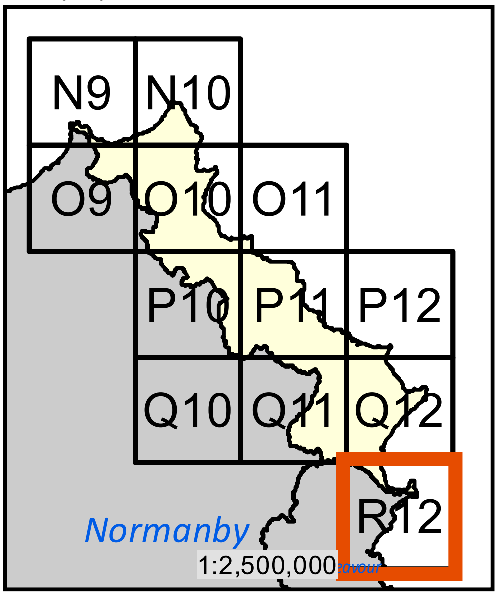


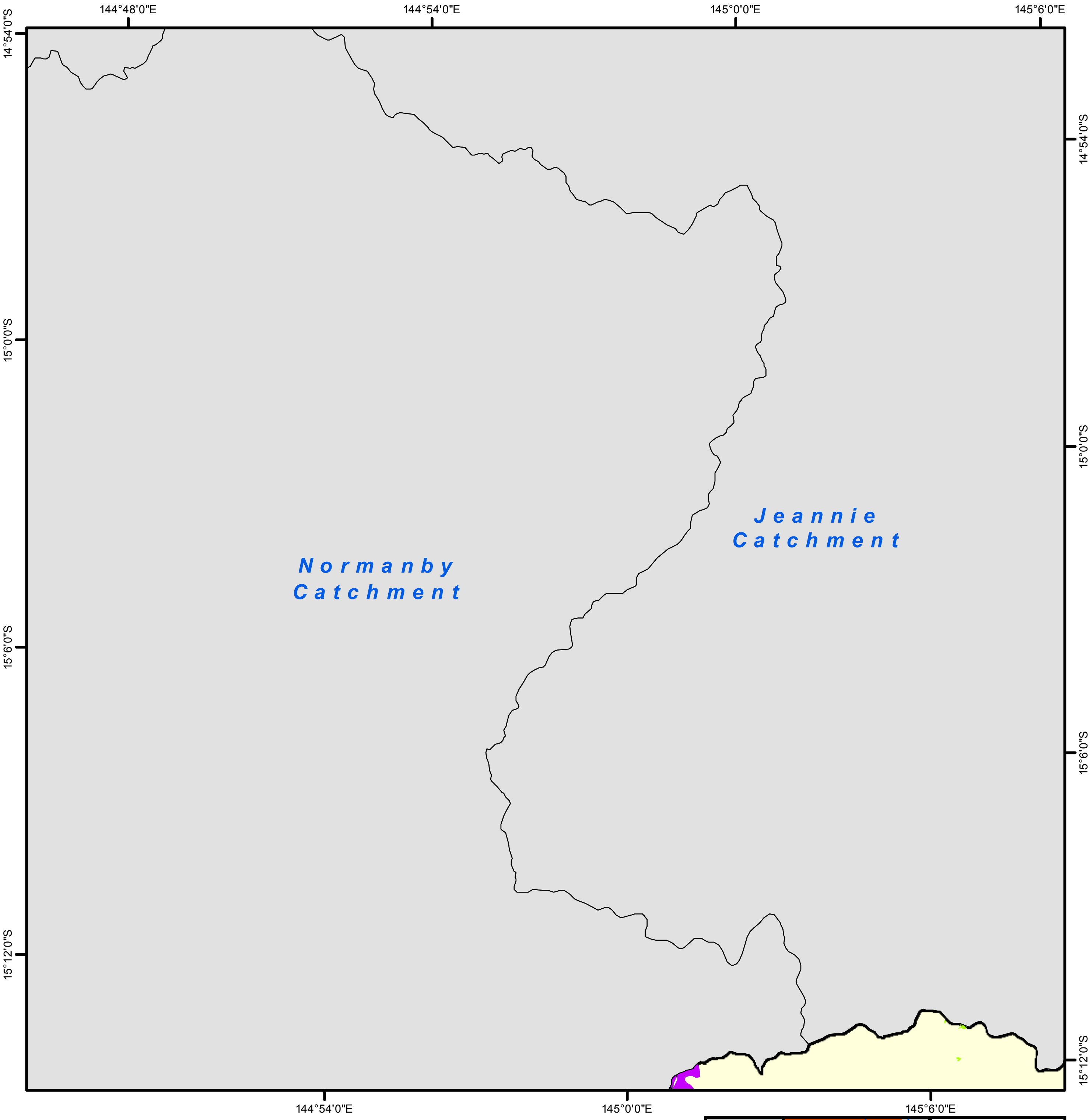


R12 Jeannie Catchment









Q11 Endeavour Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

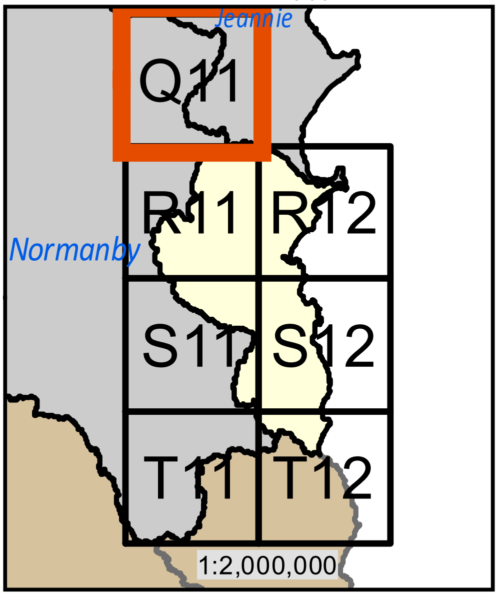
- Known Springs

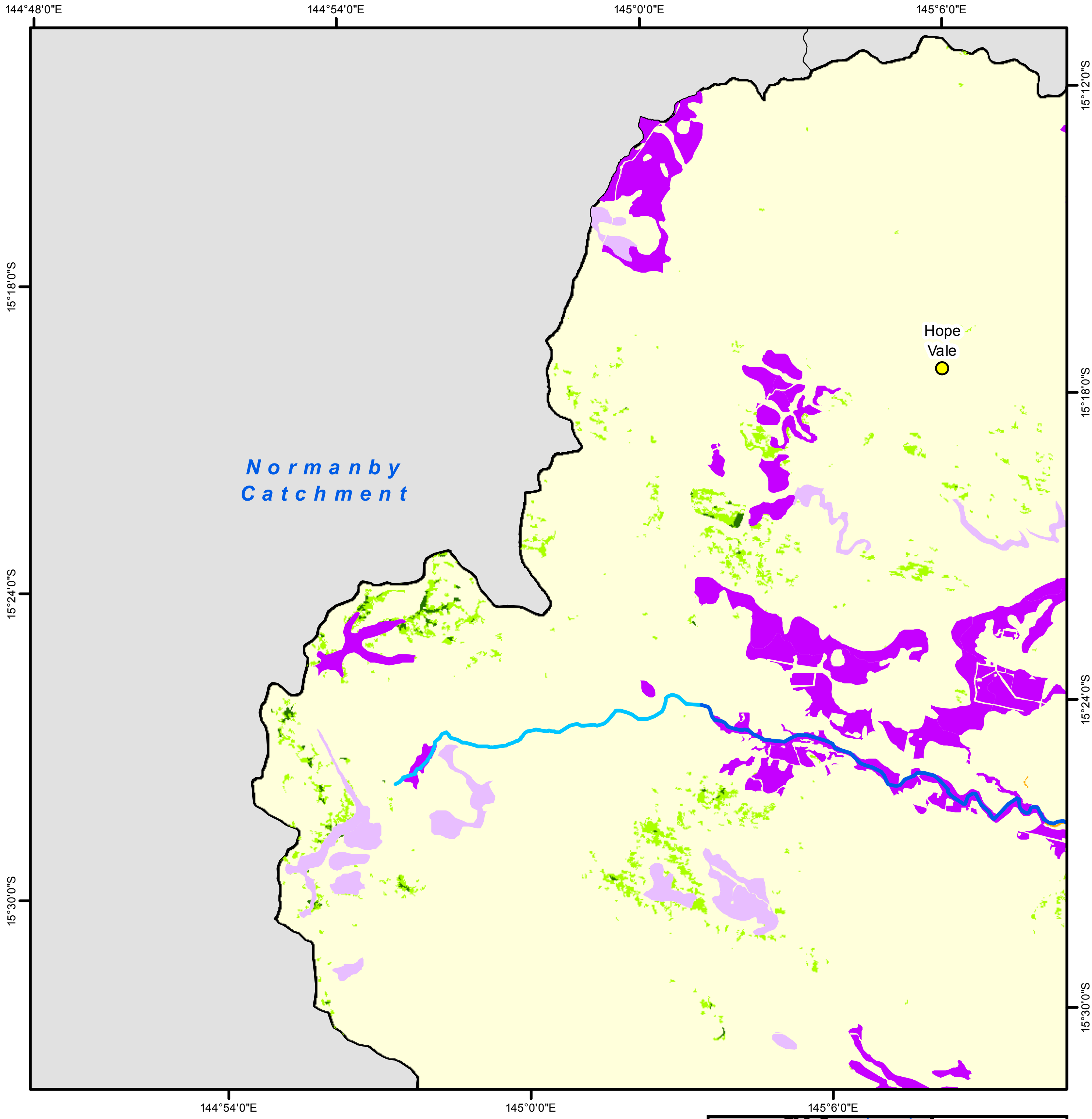
Potential Springs

- Highly Likely
- Likely

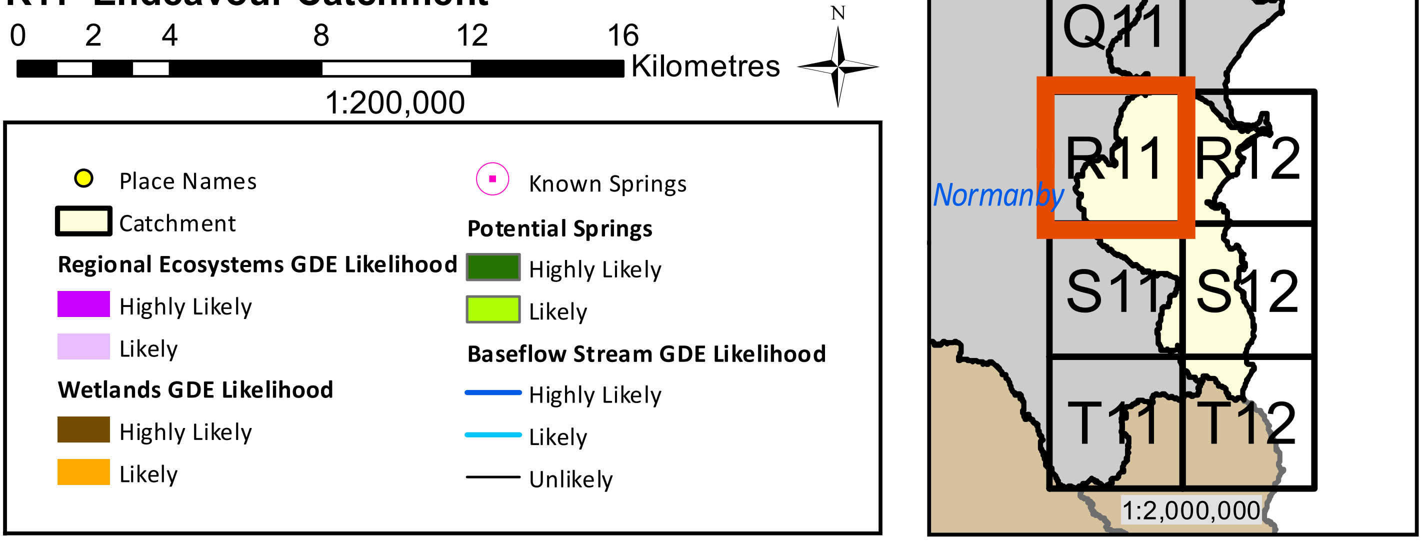
Baseflow Stream GDE Likelihood

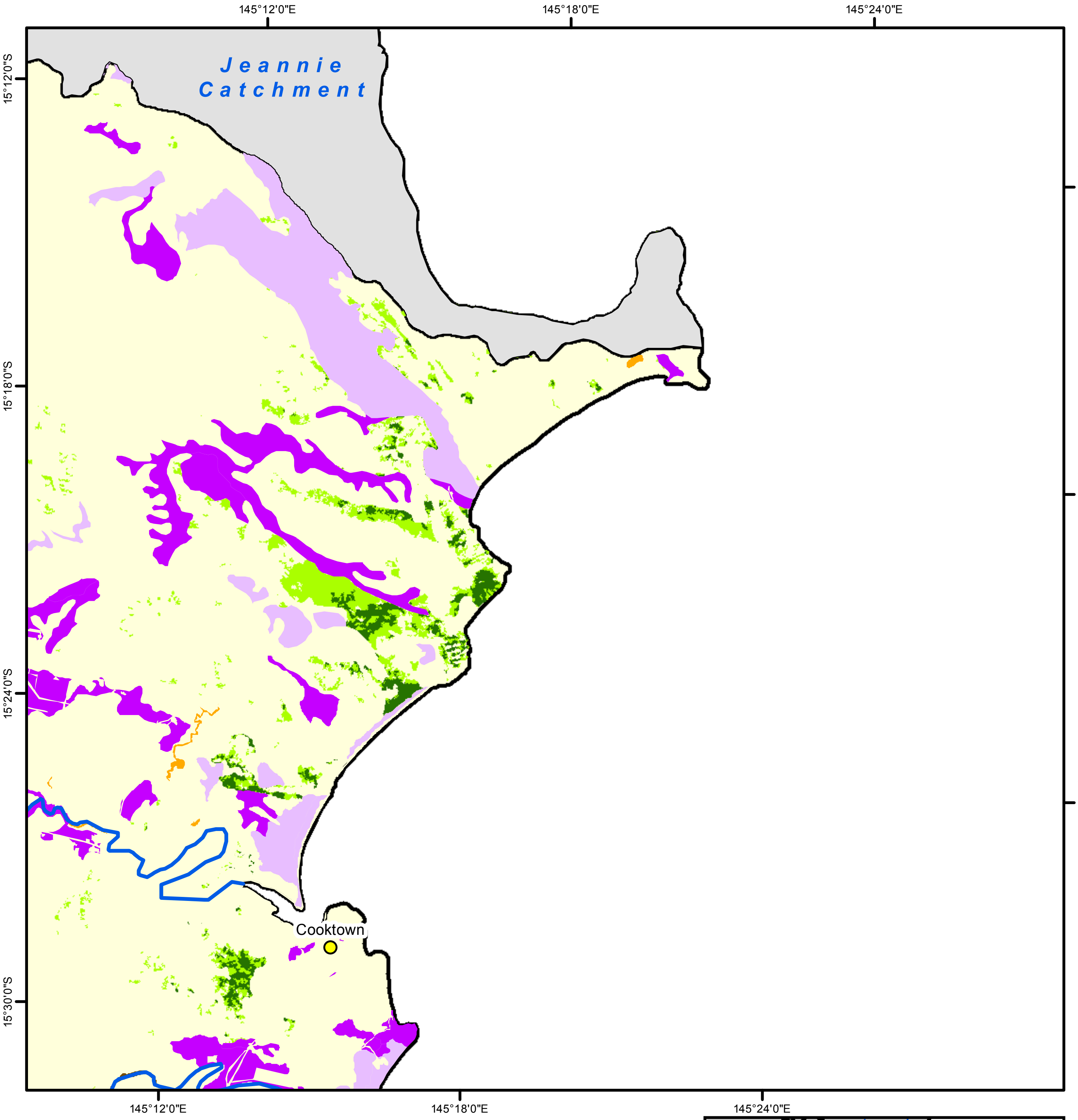
- Highly Likely
- Likely
- Unlikely





R11 Endeavour Catchment



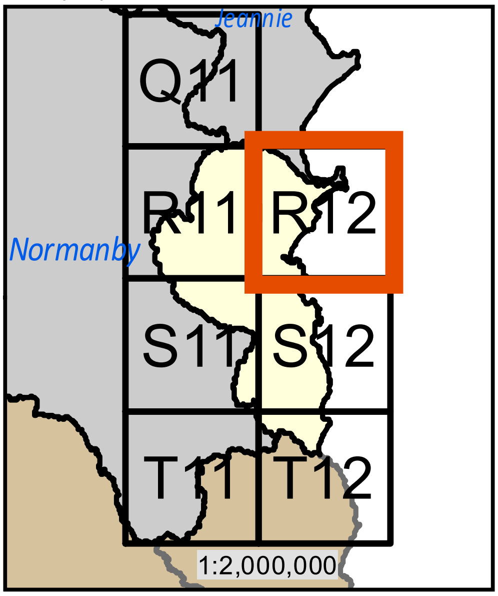


R12 Endeavour Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N



Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

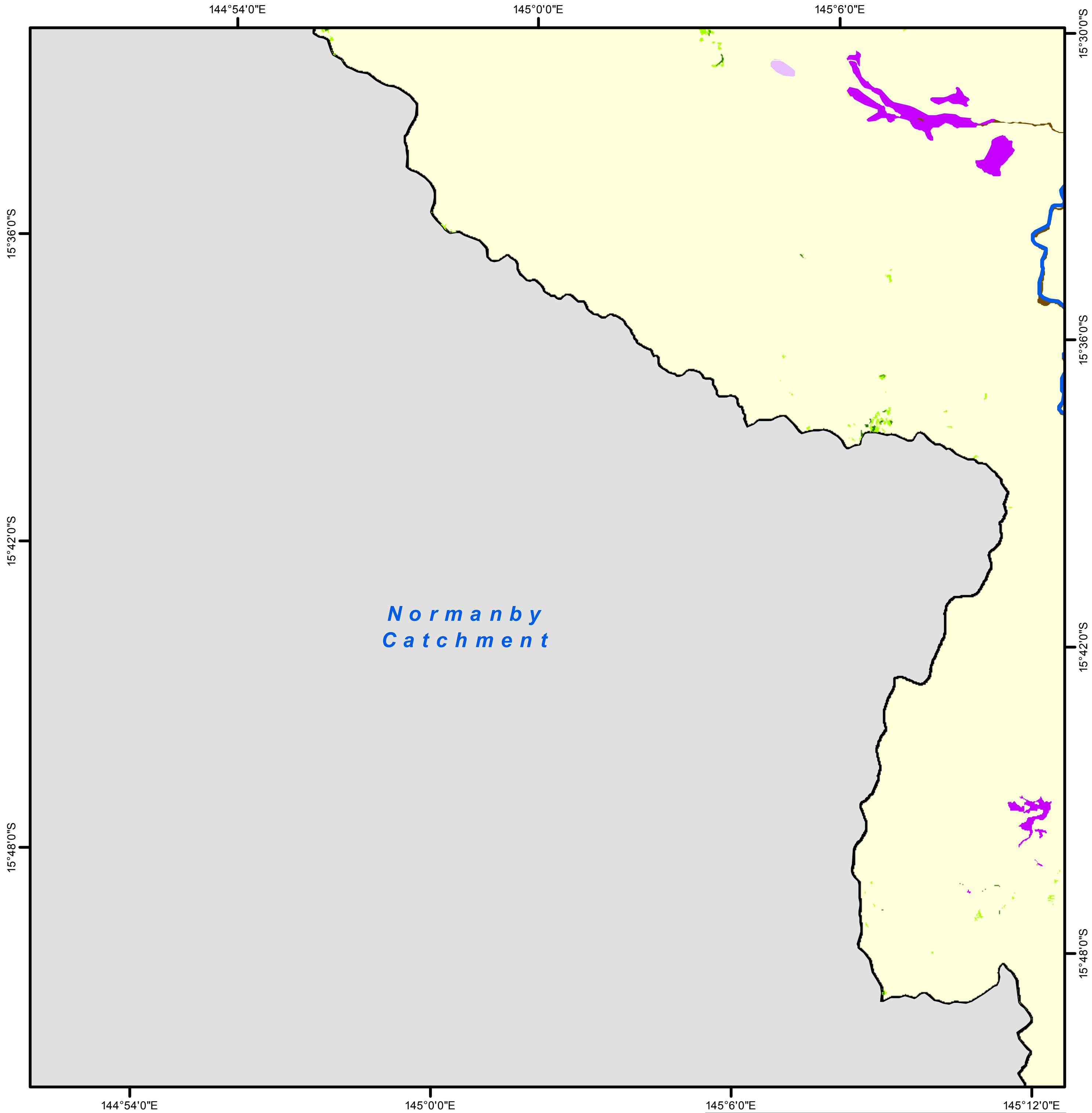
Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely



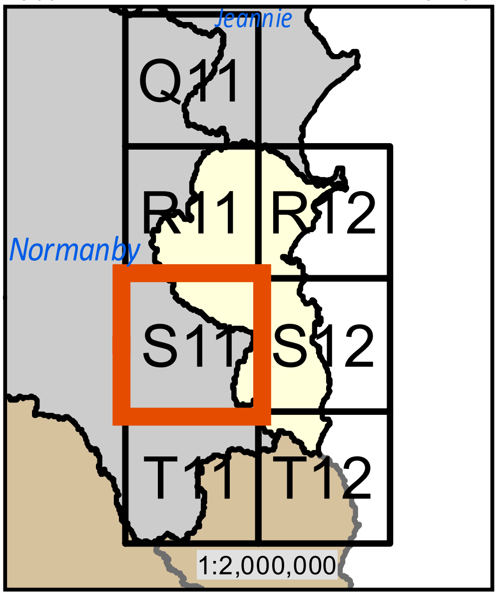
S11 Endeavour Catchment

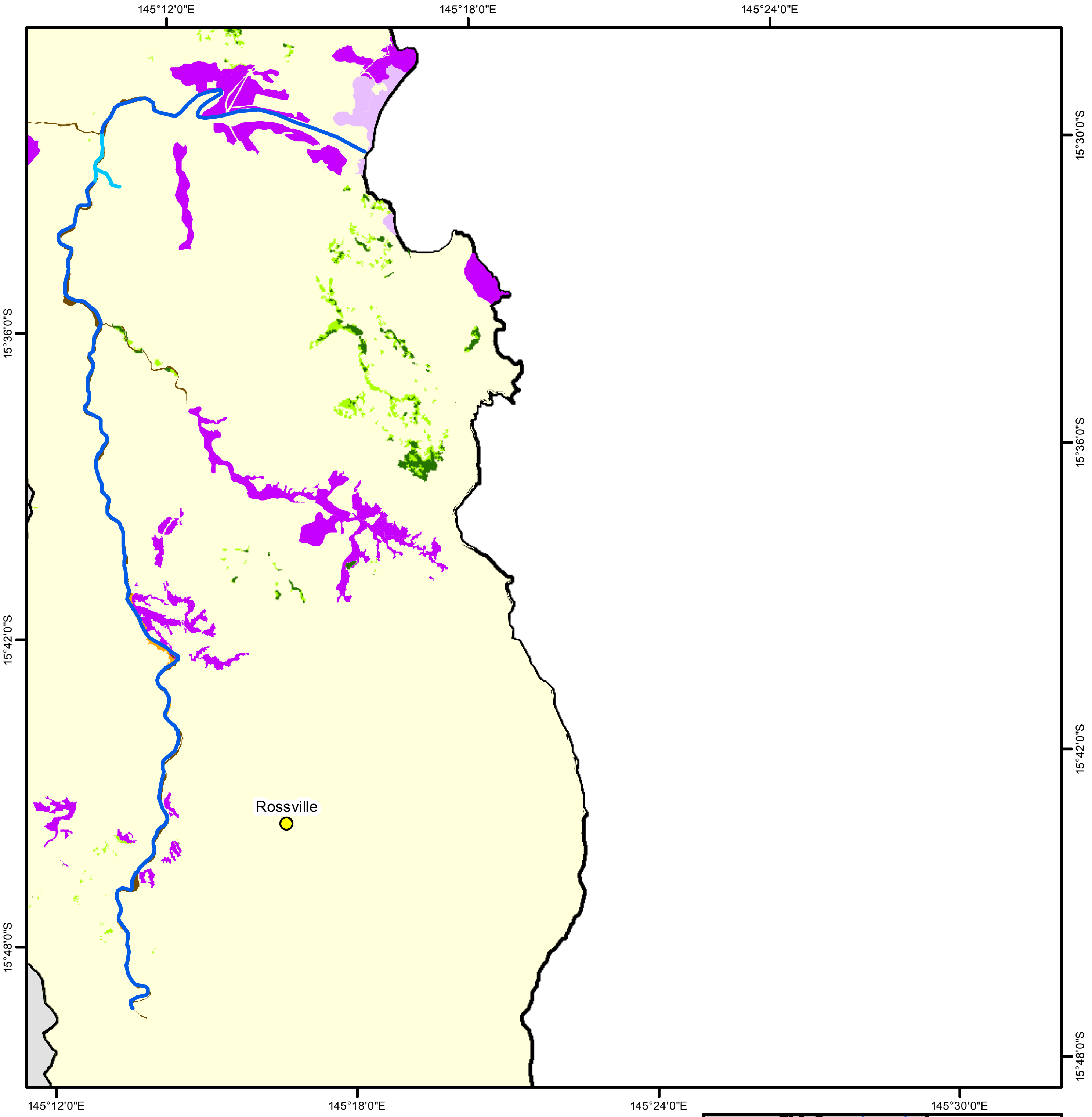
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names
Catchment
Regional Ecosystems GDE Likelihood
Highly Likely
Likely
Wetlands GDE Likelihood
Highly Likely
Likely
Known Springs
Potential Springs
Highly Likely
Likely
Baseflow Stream GDE Likelihood
Highly Likely
Likely
Unlikely





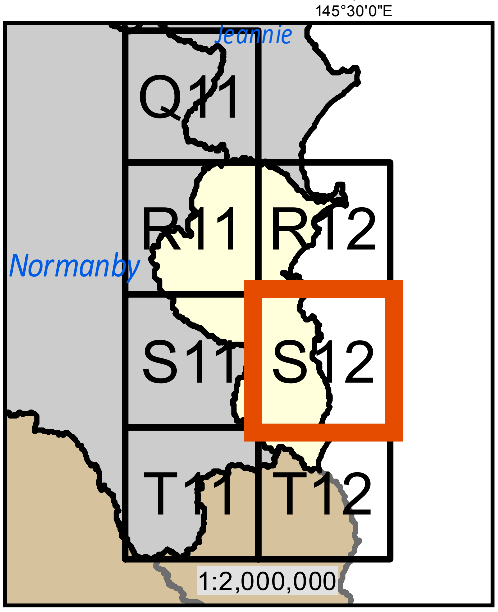
S12 Endeavour Catchment

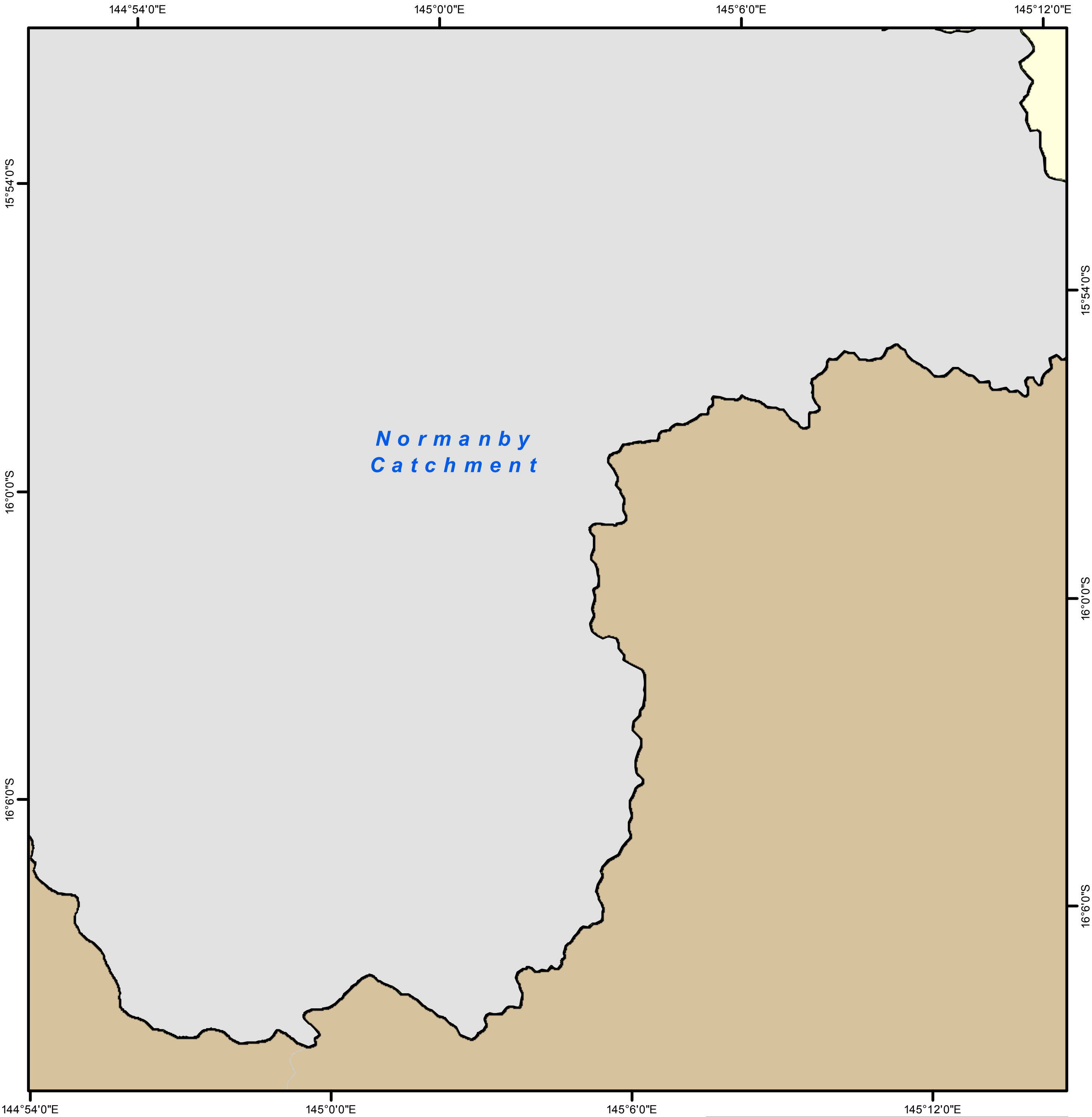
0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names	Known Springs
Catchment	**Potential Springs**
Regional Ecosystems GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	**Baseflow Stream GDE Likelihood**
Wetlands GDE Likelihood	Highly Likely
Highly Likely	Likely
Likely	Unlikely





T11 Endeavour Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

- Place Names
- Catchment

Regional Ecosystems GDE Likelihood

- Highly Likely
- Likely

Wetlands GDE Likelihood

- Highly Likely
- Likely

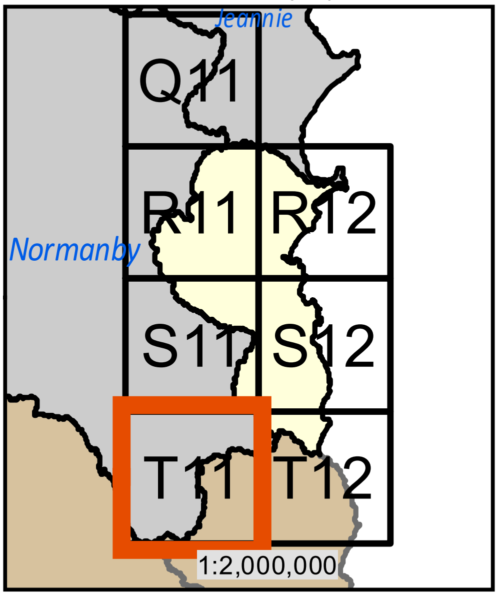
- Known Springs

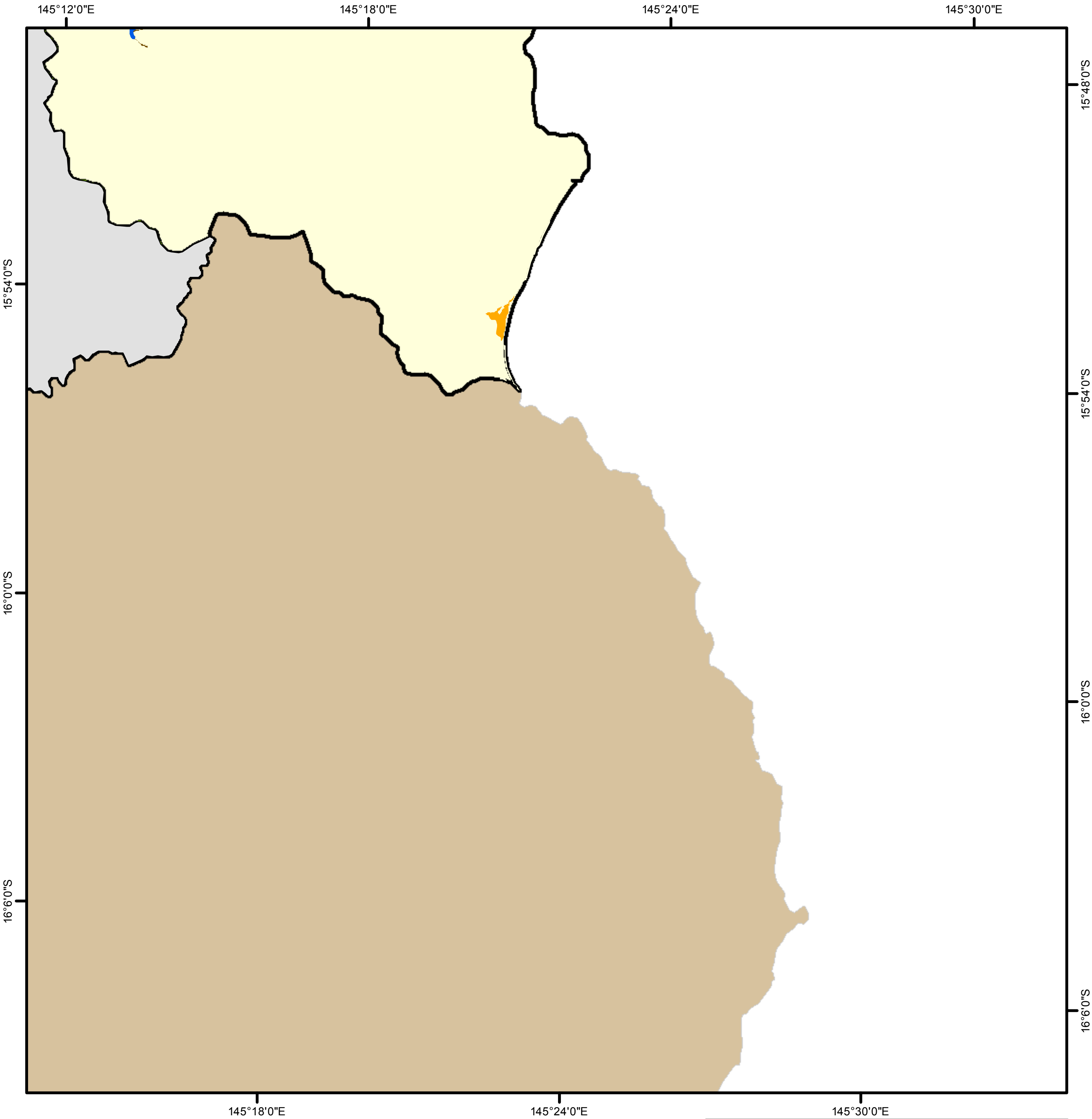
Potential Springs

- Highly Likely
- Likely

Baseflow Stream GDE Likelihood

- Highly Likely
- Likely
- Unlikely





T12 Endeavour Catchment

0 2 4 8 12 16 Kilometres

1:200,000

N

Place Names

Catchment

Regional Ecosystems GDE Likelihood

Highly Likely

Likely

Wetlands GDE Likelihood

Highly Likely

Likely

Known Springs

Potential Springs

Highly Likely

Likely

Baseflow Stream GDE Likelihood

Highly Likely

Likely

Unlikely