Department of Primary Industries
and Regional Development

Namoi Regional Job Precinct

Intensive Livestock Agriculture Guideline
Management of odour

May 2025

dpird.nsw.gov.au

The Department of Primary Industries and Regional Development acknowledges that it stands on Country which always was and always will be Aboriginal land. We acknowledge the Traditional Custodians of the land and waters, and we show our respect for Elders past, present and emerging. We are committed to providing places in which Aboriginal people are included socially, culturally and economically through thoughtful and collaborative approaches to our work.

'On Country'
Charmaine Mumbulla, 2022

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Terms and abbreviations used in this Guideline

Term/abbreviation	Long form
DCP	Development Control Plan
DPHI	Department of Planning, Housing and Infrastructure
DPIRD	Department of Primary Industries and Regional Development
EIS	Environmental impact statement
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021*
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPI	Environment planning instrument
Gunnedah LEP 2012	*Gunnedah Local Environmental Plan 2012*
Gwydir LEP 2013	*Gwydir Local Environmental Plan 2013*
Intensive Livestock Agriculture	Definition as written under the Standard Instrument - Principal Local Environmental Plan
IPA	Identified Production Area
LEP	Local Environmental Plan
LGA	Local government area
Liverpool Plains LEP 2011	*Liverpool Plains Shire Local Environmental Plan 2011*
LUCRA-Odour	Land use conflict risk assessment for odour related matters
NSW	New South Wales
POEO Act	*Protection of the Environment Operations Act 1997*
Namoi RJP	Namoi Regional Job Precinct
SEE	Statement of environmental effects
SEPP	State environmental planning policy
SILEP	*Standard Instrument (Local Environmental Plans) Order 2006*
Tamworth LEP 2010	*Tamworth Regional Local Environmental Plan 2010*

Namoi planning framework

Intensive Livestock Agriculture in the Namoi: Policy Review

For consumption by all interested parties

This report provides a technical analysis of the industry and describes strategic opportunities to create more clarity within the planning framework

This report explores the strategic importance of intensive livestock agriculture in the region and presents the strategic and statutory planning context of the industry. It includes technical odour modelling which creates contour maps for Identified Production Areas and associated odour risk ratings.

The Policy Review evaluates planning and non-planning measures to provide more development certainty for investors.

Intensive Agriculture Guideline: Management of Odour

Primarily for use by industry, state and local governments

This document gives industry specific assessment guidance that aims to reduce conflict between land uses, allowing industry to grow and the amenity of homes to be protected

This tool supports development applications and gives assistance to prospective investors in managing land use conflict through a standardised risk assessment. This also embeds the mapping of the Identified Production Areas.

Strategic Implementation Plan

Primarily for use by state and local governments

This is a roadmap for implementing various recommendations from the Policy Review

This document recognises that there are various factors that influence implementation of the outcomes of this program of work. It allows a staged delivery of all the recommendations that have flowed on from the Policy Review.

It relies on partnerships working together to ensure that industry will thrive while ensuring long term triple-bottom sustainability is supported for residents in the Namoi.

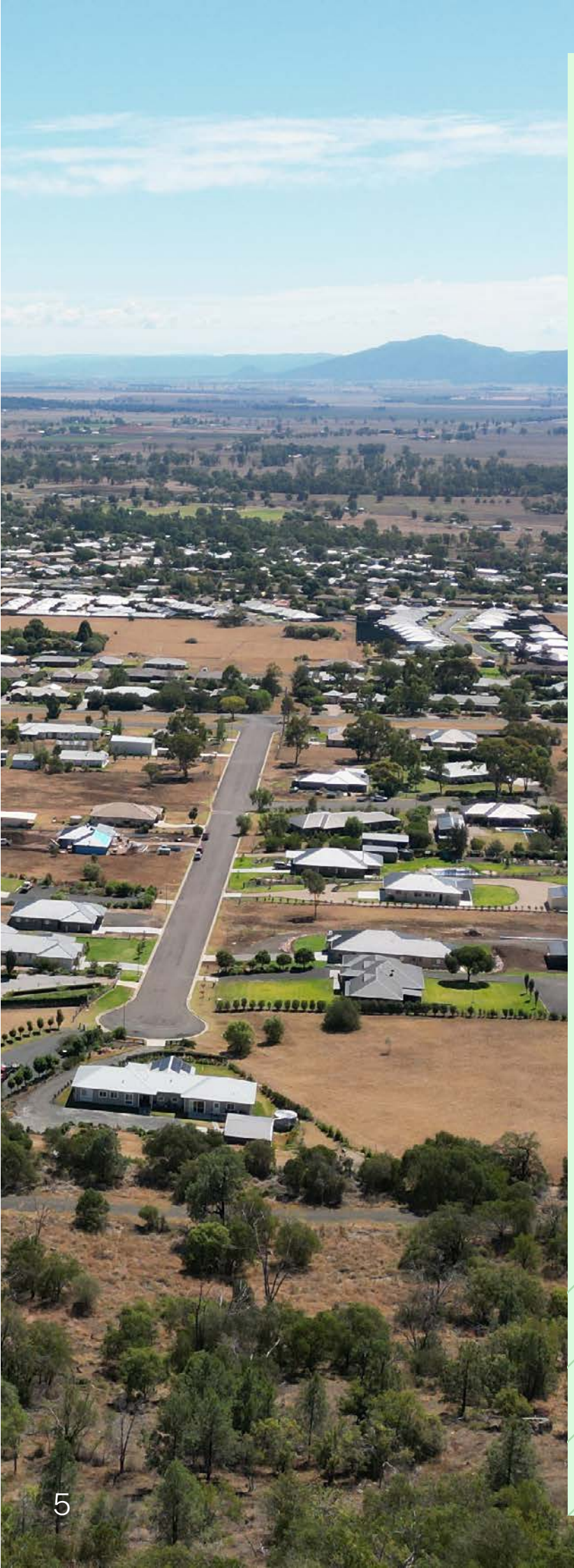
Namoi RJP Discussion Paper

For consumption by all interested parties

A legal document which outlines the 'Explanation of Intended Effect' of changes to planning legislation, for the purpose of consultation

This document outlines the intended changes to planning legislation to implement the Namoi RJP.

It recommends a new clause be introduced to relevant Local Environmental Plans to require consideration of the Namoi RJP Intensive Livestock Agriculture Guidelines in future relevant proposals within the Identified Production Areas.



1

Introduction

Aerial of Gunnedah

Land within the Namoi Regional Job Precinct is one of the most productive agricultural areas in NSW, with well-established intensive and extensive livestock, dryland and irrigated cropping operations, and large poultry and beef industries.

1.1 Purpose

NSW is a key producer of livestock, including beef, lamb, and poultry. These intensive livestock agriculture industries are rapidly growing, driven by major macro trends including rising global demand for safe and reliable agri-food, particularly in rapidly developing markets across Asia. Land within the Namoi Regional Job Precinct (Namoi RJP) is one of the most productive agricultural areas in NSW, with well-established intensive and extensive livestock, dryland and irrigated cropping operations, and large poultry and beef industries.

Agricultural and agribusiness industries are recognised at both a State and local government level as being critical to the economic prosperity of NSW's regions. In much of regional Australia, trends such as increasing global food demand, a declining and ageing population, technological advancements, and environmental sustainability are creating noticeable shifts in rural economies.

Urban expansion, peri-urban development and non-strategic rural dwellings are encroaching on agricultural land and generating land use conflict limiting the land available for intensive livestock agriculture in regional NSW. For agriculture to continue to be a vital part of the regional NSW economy and for the long term liveability of settlements, impacts of animal industries on sensitive uses, and vice-versa need to be appropriately managed. The protection of fertile and productive agricultural land, such as that in the Namoi, will ensure long-term food security and capitalise on increasing demand for agriculture products.

Addressing land use conflicts and supporting sustainable growth of intensive livestock agriculture development in the Namoi RJP provides an opportunity to provide certainty for investment and increased housing supply, promote innovation, all the while protecting the environment and community. Feedback from industry and planning authorities highlights the importance of odour as a key consideration for well-planned and comprehensively assessed intensive livestock agriculture development.

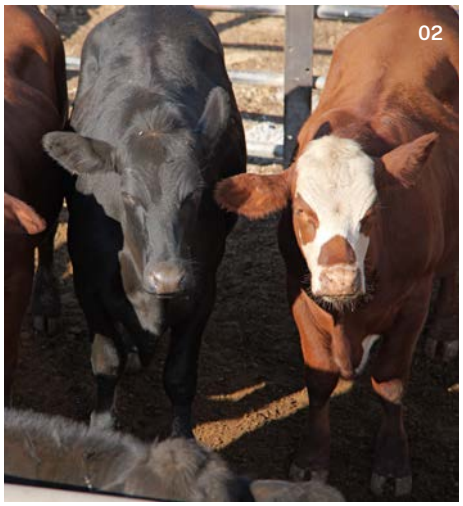
This Guideline aims to provide greater certainty to applicants and planning authorities by identifying land across four LGAs within the New England North West region on which intensive

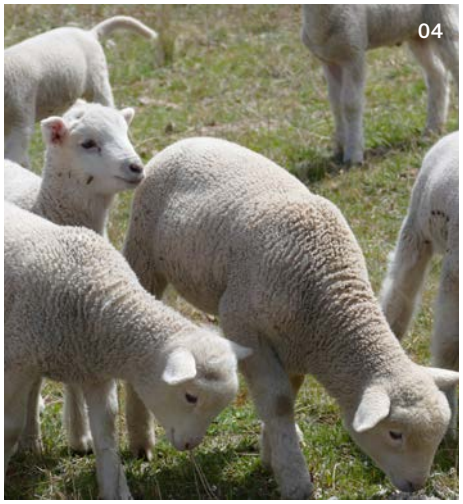
livestock agricultural activities[1] and developments are unlikely to generate odour impacts due to factors such as topography and distance to sensitive receptors.

Strategic odour modelling, using 'reverse amenity' methodology consistent with NSW Environment Protection Authority (EPA) approved methods for odour modelling, is utilised to determine suitability of land for intensive livestock agriculture production facilities. Other impacts, such as biodiversity, cultural values, soils and transport, design, siting, and management remain subject to site specific assessments for each proposal and will be guided by the Planning Guidelines – Intensive Livestock Agriculture Development (released by the former Department of Planning and Environment in 2019).

A risk-based approach to site selection is adopted to ensure that all applicable development applications submitted for intensive livestock agriculture are supported by an appropriate level of odour assessment, prepared to a high standard and endorsed by planning authorities. The benefits of this evidence-based risk assessment, include more efficient early site selection, greater certainty of appropriate level of odour assessment for development applications, and better planning to minimise potential land use conflicts.

In addition to utilising odour modelling to guide site selection, it is recognised that production facilities can be responsibly established, managed, and operated without adversely impacting on sensitive uses through careful siting, design, and ongoing management.





01 Aerial of Gunnedah landscape
02 Gunnedah Saleyards
03 Chicks at ProTen Farms, Tamworth
04 Lambs in Tamworth

1 Intensive livestock agriculture means the keeping or breeding, for commercial purposes, of cattle, poultry, pigs, goats, horses, sheep or other livestock, and includes any of the following – dairies (restricted), feedlots, pig farms and poultry farms. It does not include extensive agriculture, aquaculture or the operation of facilities for drought or similar emergency relief.

1.2 Namoi RJP

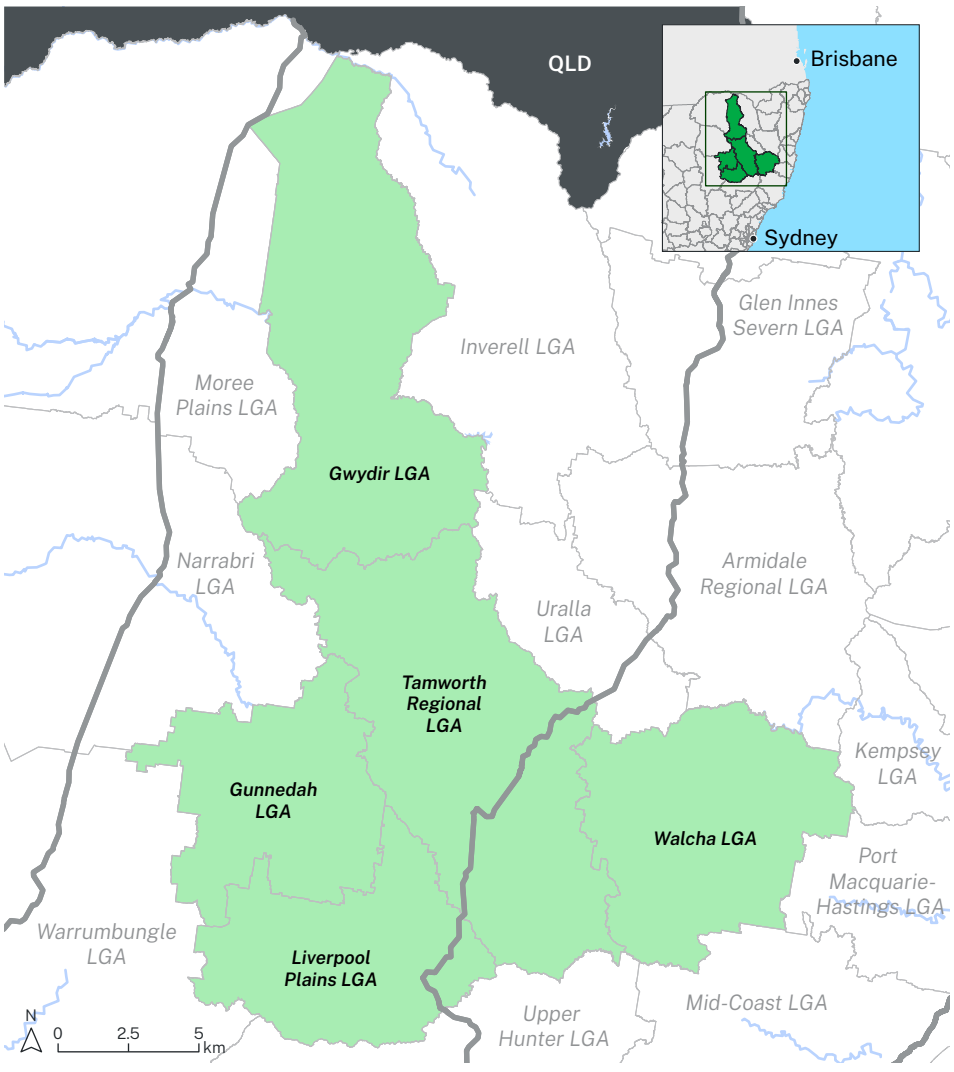
Regional Job Precincts are areas of regional NSW which have been identified as potential growth areas for industry. Initiatives for Regional Job Precincts aim to tailor planning reform to support regional economic development and engine industries to create jobs in regional NSW. Locations cover a diverse range of locations and investment opportunities and were selected based on site suitability and potential to deliver economic benefits to their regions.

The Namoi RJP (Figure 1) is located in the New England North West region of New South Wales (NSW) and includes the following local government areas (LGA):

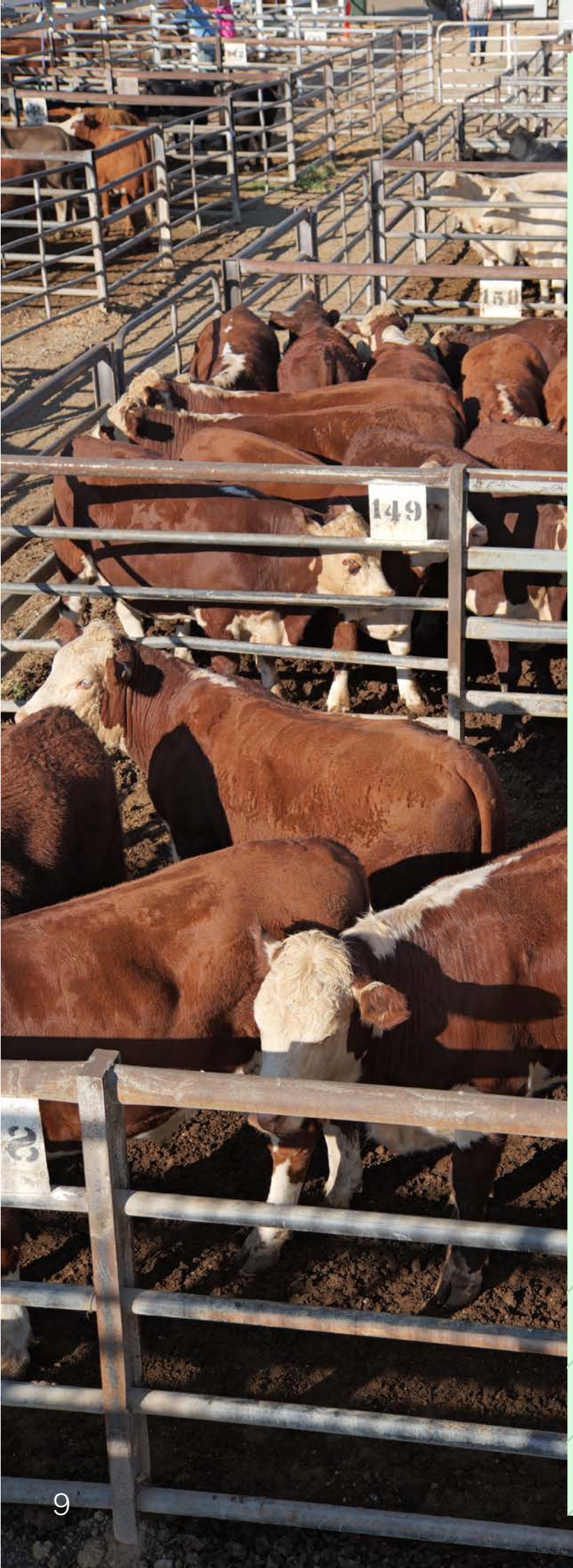
1. Gunnedah
2. Gwydir
3. Liverpool Plains
4. Walcha[3]
5. Tamworth.

The Namoi RJP will drive sustainable intensive agriculture and livestock production through bespoke planning initiatives. To ensure continued investment in intensive livestock within the Namoi region and assist operators with site selection, a known evidence base has been developed through engagement with industry, stakeholders, and State and local government. As a significant part of the livestock sector, beef and poultry operations have been used as the basis for developing strategic odour modelling methods, which have resulted in the identification of suitable areas of production. These have been called 'Identified Production Areas' and are consistent with Recommendation 4 of the NSW Agriculture Commissioner's 2021 Report 'Improving the Prospects for Agriculture and Regional Australia in the NSW Planning System'.

Figure 1 Namoi RJP



3 Identification of investigation areas for intensive livestock agriculture was based on land tenure, current zoning, biophysical attributes of land that makes it suitable for intensive agriculture as well as locational, infrastructure and utility requirements. At the time of publication, land meeting the criteria for intensive livestock agriculture suitability was not identified in Walcha. Accordingly, no Identified Production Areas are present in the Walcha LGA.



2

Application of the Guideline

Gunnedah Saleyards

2.1 Land to which this Guideline applies

Each of the following local environmental plans (LEP) include an Identified Production Area (IPA) map:

- *Gunnedah Local Environmental Plan 2012* (Gunnedah LEP 2012)
- *Gwydir Local Environmental Plan 2013* (Gwydir LEP 2013)
- *Liverpool Plains Shire Local Environmental Plan 2011* (Liverpool Plains LEP 2011) and
- *Tamworth Regional Local Environmental Plan 2010* (Tamworth LEP 2010).

This Guideline applies to development for the purpose of intensive livestock agriculture and associated uses on land within a mapped IPA. The Identified Production Areas are provided in Appendix 1.

→ **NOTE**

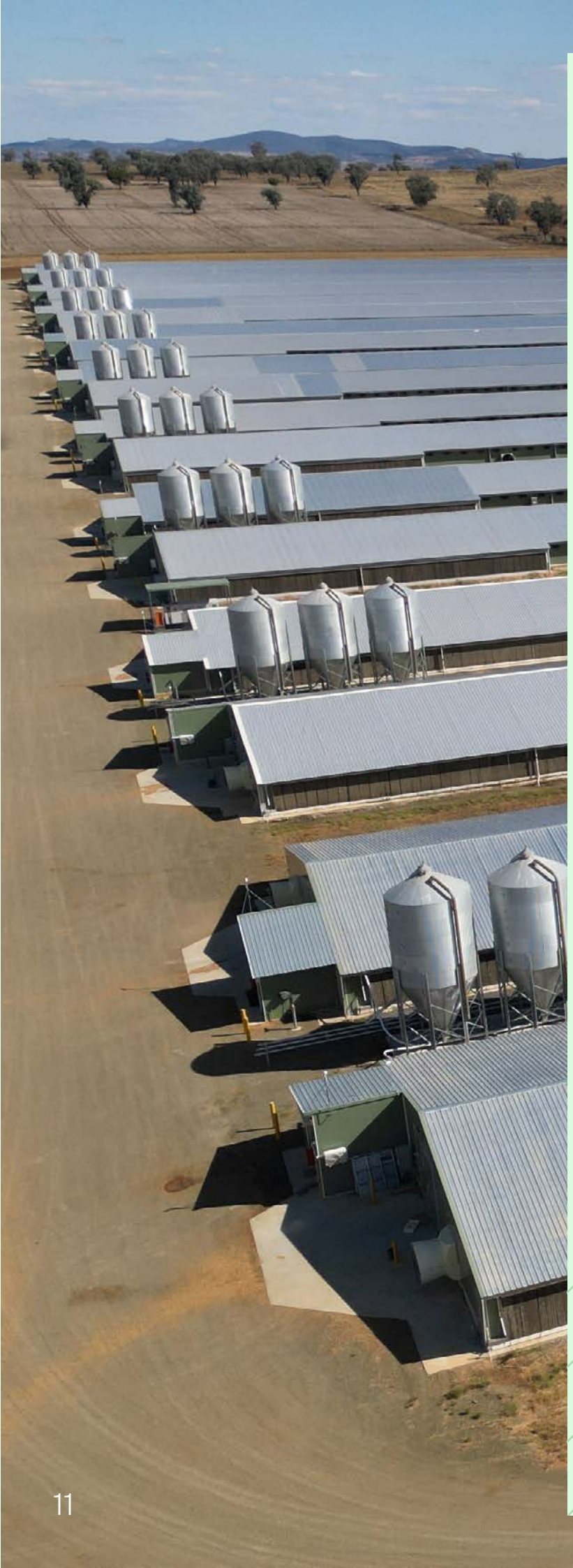
Land within an IPA boundary demonstrates land potentially suitable for development of intensive livestock agriculture, specifically considering potential for community amenity impacts from odour emissions (Section 3). The IPA boundary does not restrict development applications for intensive livestock agriculture that are outside or extend beyond these boundaries. Development applications for intensive livestock agriculture on land outside the IPA boundary would be required to demonstrate site suitability based on site-specific odour modelling following the EPA requirements.

2.2 Development subject to this Guideline

This Guideline must be considered by all proponents intending to establish, expand, or modify an intensive livestock agriculture development on land identified as an IPA.

Proponents should engage with local councils, DPIRD, and the EPA in the early stages of scoping and site selection. Proponents are encouraged to submit applications for the entirety of the proposed intensive livestock agriculture development and not split development areas into separate stage applications. This will allow the full implications of intensive livestock agriculture development to be understood and suitable land planned for.

Gunnedah Saleyards



3

Identified Production Areas

Poultry sheds at ProTen Farms

3.1 Strategic intent

Over the long-term, inappropriate siting or design of intensive livestock agriculture development or inappropriate development near intensive livestock agriculture can result in unnecessary constraints on production facility operations and negative impacts on community amenity. These impacts need to be managed in a balanced and transparent way, while reinforcing the primacy of productive agriculture on land zoned for primary production.

Site selection for intensive livestock agriculture development that is subject to this Guideline is required to demonstrate appropriateness of the project site to minimise the risk of land use conflict (Section 4). Odour is a key factor in the risk of land use conflict and a key indicator of the suitability of land for intensive livestock agriculture. Utilising strategic odour modelling completed for cattle feedlots and chicken farms, land that is potentially suitable for intensive livestock agriculture in the Namoi Region is included within an IPA (Section 3.3).

IPAs represent land that is important to protect for long term sustainability of intensive livestock agriculture. To facilitate long term sustainability of commercial scale poultry farming and beef feedlots in Namoi, development in the IPAs should:

1. avoid conflict with residential dwellings and other development that is potentially sensitive to odour
2. ensure appropriate siting of intensive livestock agriculture to minimise potential odour impacts on existing sensitive receptors.

Goonoo Goonoo Station, Tamworth
Courtesy of Destination NSW

3.2 How are IPAs identified?

IPAs are derived from two key technical inputs:

intensive livestock agriculture investigation area spatial analysis

strategic odour modelling for each investigation area.

3.2.1 Investigation areas

To identify land that is potentially suitable for intensive livestock agriculture, spatial criteria and thresholds were developed. From this, investigation areas were identified, and these investigation areas became the focus for strategic odour modelling. The investigation areas are provided in Appendix 2. The established criteria and thresholds are described in Table 1.

Table 1 Intensive livestock agriculture investigation area criteria

Criteria	Thresholds	Data source
Planning zones	• RU1 Primary Production • RU4 Primary Production Small Lots • E3 Productivity Support	NSW SEED Portal
Land tenure	Only land in private ownership (all public estate land excluded)	NSW SEED Portal
Flood hazard	Exclude all land affected by 1 in 100 year flood extent	NSW SEED Portal
Irrigation water access	Exclude land greater than five kilometres from a surface water source Eastern Great Artesian Basin Gunnedah-Oxley Basin Murray Darling Basin Groundwater Source	DPHI Water
Slope	Less than 10% slope (preferred)	NSW Elevation Data Service
Property size	Greater than 300 hectares (preferred)	NSW Spatial Collaboration Portal
Power generation, transmission, and distribution (three phase power)	Access to three phase power	Essential Energy
Road capacity	Suitable for B-double trucks	Transport for NSW
Vegetation	• Substantially cleared land • Category 2 regulated land under the *Local Land Services Act 2013* Must not be category 2-vulnearble regulated land or category 2-sensitive regulated land under the *Local Land Services Act 2013*	NSW SEED portal State Vegetation Type Map: Border Rivers Gwydir / Namoi Region Version 2.0. VIS_ID 4467) excluded land was identified as having vegetation types: forests, woodlands, shrublands, wetlands
Sensitive receivers (dwellings)	No specific thresholds	NSW Spatial Collaboration Portal (address points)

3.2.2 Strategic odour modelling

Beef and poultry comprise a significant portion of the sector in the Namoi region, and based on this, the strategic odour modeling has been completed for these uses at the specified farm sizes. Odour modelling establishes an empirical evidence base for identifying land within the investigation areas that is suitable for intensive livestock agriculture, considering the potential for odour amenity impacts. The modelling process employed a technique known as 'reverse amenity' modelling to identify appropriate buffers to minimise the risk of odour impacts on dwellings. This technique enables the calculation of the optimal distance between dwellings and intensive livestock agriculture farms of varying sizes.

It is noted that layer farms generate significantly less odour than broiler farms, thus require less buffer land to operate without adverse impacts. Data from Jiang and Sands (1998) and Pollock (2003) both show that on a per bird basis, odour emissions from chicken egg-layer farms are approximately 0.4 times that of broiler farms.

Odour modelling was carried out for the following farm sizes:

Beef cattle feedlot farm — 999 head and 2,000 head

Meat chicken farm — 400,000, one million and two million birds

Layer chicken farm — one million birds

The following modelling methodologies (consistent with EPA methodology) were adopted:

1. **Conservative 'Level 1'** impact assessment modelling of the six intensive agriculture investigation areas for feedlots and poultry (meat and egg) farms. 'Level 1' impact assessment modelling identified that more detailed 'Level 2' modelling was needed for assessing meat poultry farm
2. **'Level 2' modelling** was undertaken in accordance with the EPA technical notes and approach to Odour Impact Assessment for meat chicken farms. This approach provides a more realistic prediction of the extent of odour compared to the Level 1 assessment and is typically applied for specific projects requiring odour impact assessment. In order to conduct the modelling uniformly across the large Namoi investigation area region, it was necessary to represent farms as a single point, with the points arranged in a regular spatial grid pattern. The model parameters used for the Level 2 modelling are described in Figure 2.

The outcome of the modelling is a series of contour maps that identify land suitable for intensive livestock agriculture, based on odour factors, for various scales and types of production facilities (see Appendix 3: Odour contour maps). These odour contour maps are combined to form a consolidated IPA boundary within each of the investigation areas. See Appendix 3: Odour contour maps for IPA boundary and odour contour maps. Results indicate that there is generally unconstrained land upon which significant production facilities can be occur without undue impact on existing receptors in the surrounding area. However, the modelling also shows that much of the land is constrained from being readily developable for large scale intensive agriculture due to its proximity to residential dwellings. Despite these constraints, there is opportunity for land containing dwellings to be purchased and incorporated into production facilities, thereby ceasing to be sensitive receptors.

It should be noted that potential noise and air quality impacts from intensive livestock agriculture operations are likely to be less than the separation distance required to sensitive receptors for odour.

4 Modelling undertaken by Todoroski Air Sciences Pty Ltd

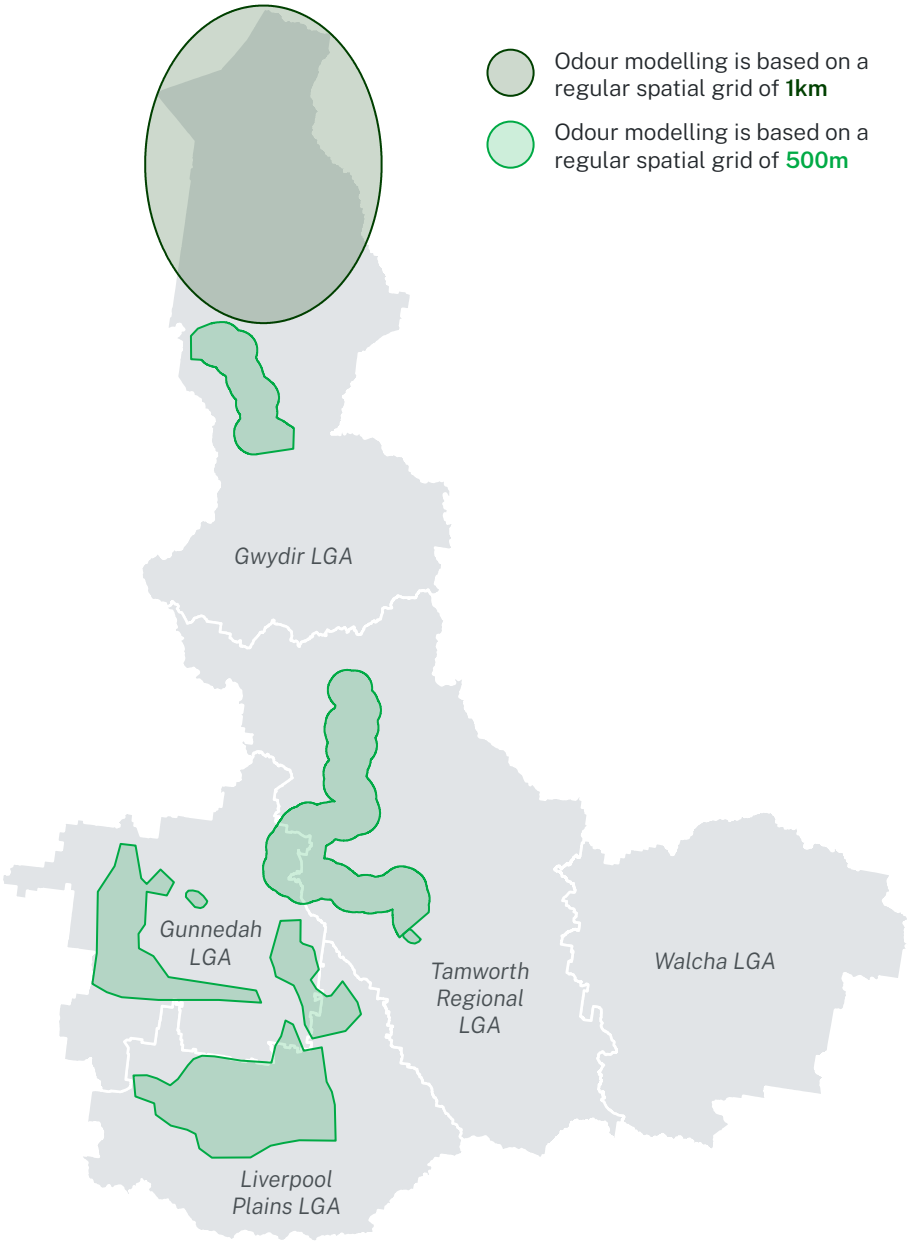
Figure 2 Strategic odour model parameters (level 2 modelling) – meat chicken facilities

6

Investigation areas modelled to determine potential suitability of land for intensive livestock agriculture production facilities

0.4, 1 and 2

million birds: farm sizes modelled in each of the grids. Odour model calculates odour emissions from a single source (assumes an 8 shed complex) for farm sizes



ProTen Farms, Tamworth

3.3 Identified Production Area maps

Based on the odour modelling throughout investigation areas, the land potentially suitable for intensive livestock agriculture is consolidated to determine IPAs.

IPAs represent the land that is of high value for long term sustainability of the intensive livestock agriculture industry in the Namoi region. IPA maps can be found in the relevant local environmental plan.

3.4 Odour contour maps

A series of odour contour maps are provided in Appendix 3, which present outcomes of odour modelling for various types and scales of intensive livestock agriculture development in Namoi region.

The odour contour maps inform the preparation of a land use conflict risk assessment for odour related matters (LUCRA-Odour). The LUCRA-Odour is a tool to determine the potential site suitability of intensive livestock agriculture production facilities based on strategic odour modelling and is used to determine the level of impact assessment required as part of the development application.

Barraba Silos

4

Preparing a land use conflict risk assessment

4.1 Requirement for a land use conflict risk assessment

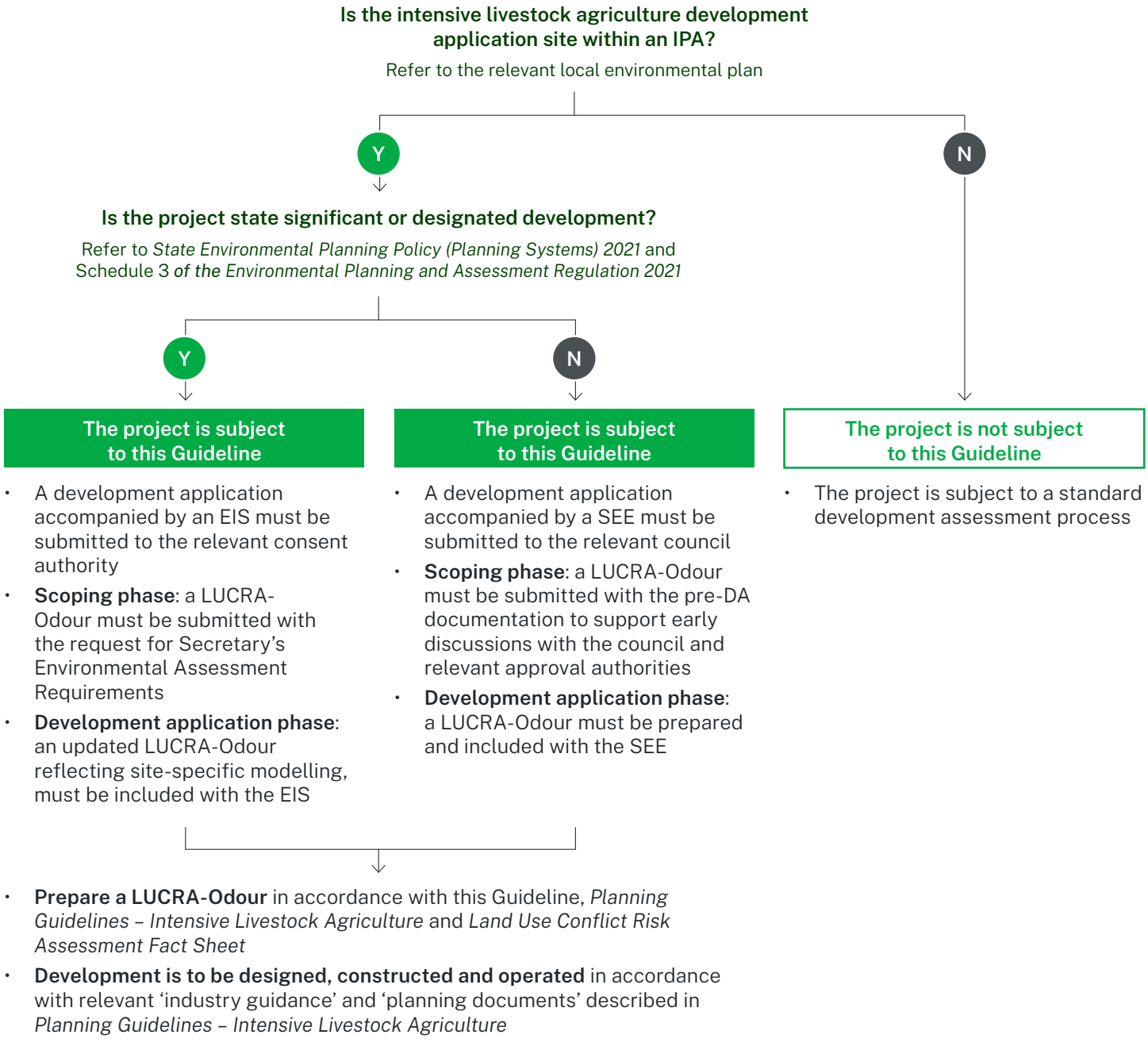
Proponents of intensive livestock agriculture development in the Namoi region are required to prepare a LUCRA-Odour to support applications for development consent on land within an Identified Production Area.

Figure 3 describes how to use this Guideline to support site selection and preparing an odour risk assessment for an intensive livestock agriculture development application.

The LUCRA-Odour must be prepared in a manner consistent with the relevant parts of Planning Guidelines Intensive Livestock Agriculture Development (DPHI) and the Land Use Conflict Risk Assessment Guide Fact Sheet (Department of Primary Industries).

Regular and detailed discussions are encouraged throughout each stage of site selection and preparation of development application between the proponent, the local council, and EPA. Site specific assessment will be required to consider unique site or design conditions of each proposed development site.

Figure 3 Namoi intensive livestock development application process



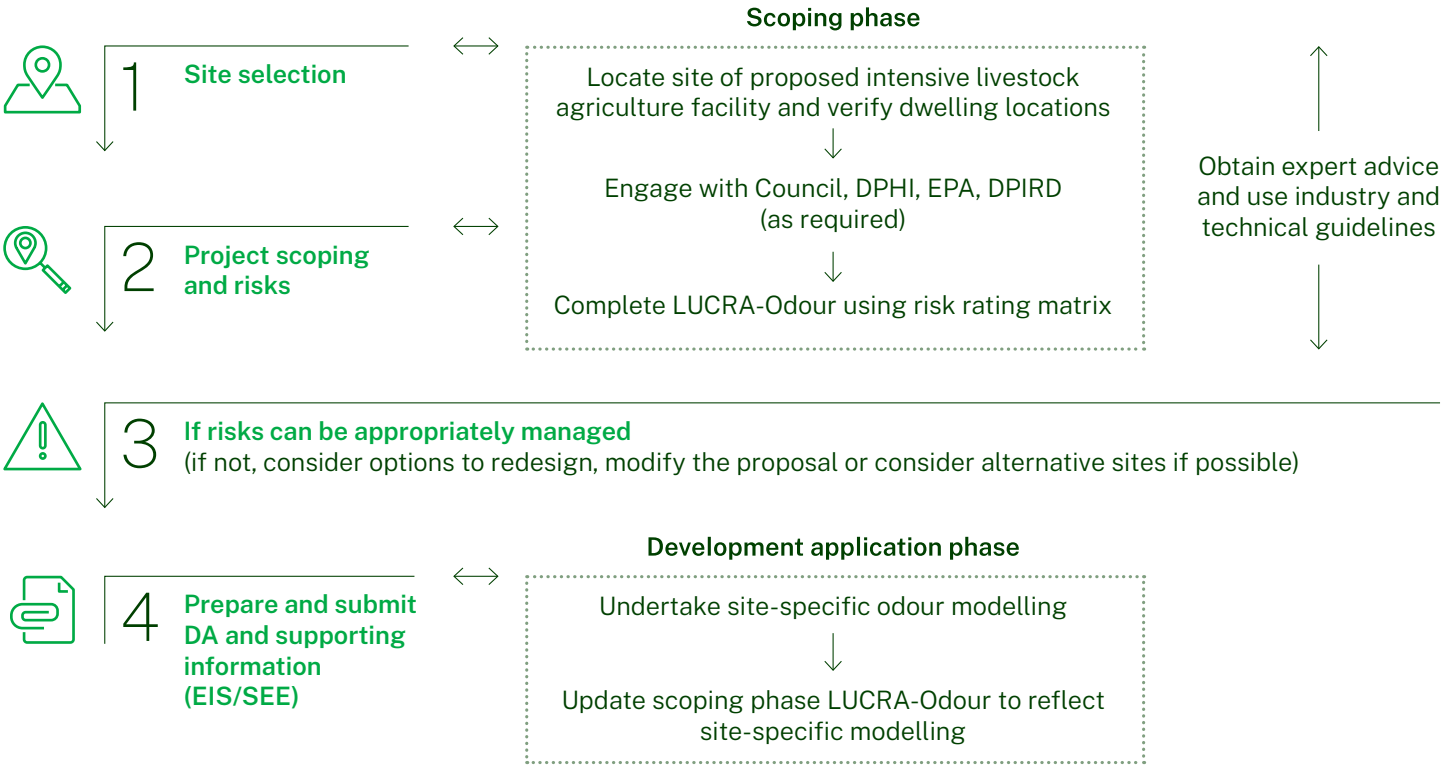
4.2 Preparing a LUCRA-Odour

4.2.1 Overview of process

Key steps in preparing a LUCRA-Odour for development applications for new or upgrades to existing intensive livestock agriculture facilities are illustrated in Figure 4 and described in the following subsections.

Note: Aligns with the process for development applications described in *Planning Guidelines - Intensive Livestock Agriculture Development*

Figure 4 Overview of process for preparing a LUCRA-Odour



4.2.2 Scoping phase LUCRA-Odour

In preparing a scoping phase LUCRA-Odour, the applicant is required to:

1. **verify the number and locations of existing dwellings** within the area of influence of the project. Dwellings used in the odour modelling are identified on the contour maps (Appendix 3). Verification of dwelling locations determines whether the odour modelling is sufficiently accurate to support assessment of the risk of odour impacts on sensitive receptors
2. **engage** with council, DPHI, NSW EPA and DPIRD as required
3. **complete a LUCRA-Odour** focusing on odour impacts as part of the scoping phase using the risk rating matrix (Table 2):
   a. determine the appropriate contour for proposed farm type and scale using the maps provided in Appendix 3
   b. if proposed farm scale is greater than the corresponding contour, either:
      i. consider alternative sites, or
      ii. extinguish the dwelling constraint
   c. identify the level and detail of mitigations to be incorporated into the site specific model.

To assist the applicant, a worked example of how to utilise the odour contours to inform a LUCRA-Odour is provided in Section 4.4.

Note: If the development is outside the assumptions of the odour modeling, early engagement with the Consent Authority is encouraged, as well as review of this Guideline, the Planning Guidelines - Intensive Livestock Agriculture Development (DPHI) and the Land Use Conflict Risk Assessment Guide Fact Sheet.

4.2.3 Development application phase

Based on the odour contour maps, the development assessment (via SEE or an EIS) should include the following:

1. **site-specific odour modelling** to reflect site specific factors – including to identify appropriate buffer/separation distances
2. **updated LUCRA-Odour** that reflects the site-specific modelling as well as the development design and mitigation measures proposed.

4.3 LUCRA-Odour ratings

Table 2 describes the probability and consequence ratings for certain cattle feedlot and chicken farm developments in the IPA. Using the maps provided in Appendix 3, the applicant must locate the proposed facility according to the relevant type of farm and the relevant contour.

Table 2 LUCRA-Odour risk rating matrix

Relevant contour	LUCRA probability rating (Table 3)	LUCRA consequence rating (Table 4)
0 Farm location is entirely within the '**0 dwellings**' contour for the relevant scale and type of farm	**Initial probability is rare**	**Initial consequence of odour impact is minor/negligible.**
1 Farm location is entirely within the '**1 dwelling**' contour for the relevant scale and type of farm	**Initial probability of odour impact is likely.** If able to, extinguish dwelling as a sensitive receptor, probability becomes rare (subject to adopting appropriate odour mitigation measures). **Note:** Applicant can identify dwellings based on mapping for initial site suitability	**Initial consequence of odour impact is moderate.** Where proposed facility is consistent with relevant 'industry guidance' and 'planning documents', the consequence of odour impact is minor.
2 Farm location is entirely within the '**2 dwellings**' contour for the relevant scale and type of farm	**Initial probability of odour impact is likely.** If able to, extinguish dwelling as a sensitive receptor, probability becomes rare (subject to adopting appropriate odour mitigation measures). **Note:** Applicant can identify dwellings based on mapping for initial site suitability	
3+ Farm location is entirely within the '**3 dwellings or more**' contour for the relevant scale and type of farm	**Initial probability of odour impact is likely.** If able to, extinguish dwelling as a sensitive receptor, probability becomes rare (subject to adopting appropriate odour mitigation measures). **Note:** Applicant may require site specific modelling to identify affected dwellings	

Note: Consistency with the requirements of relevant 'industry guidance' and 'planning documents' described in Planning Guidelines – Intensive Livestock Agriculture would minimise the consequence of impacts (as well as supporting to reduce the probability of impacts occurring).

Table 3 Measures of probability

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Source: *Planning Guidelines – Intensive Livestock Agriculture Development* (Department of Planning and Environment)

Table 4 Measures of consequence

Level	Descriptor	Description*
1	Severe	Severe and/or permanent damage
2	Major	Serious and/or long-term impact
3	Moderate	Moderate and/or medium-term impact
4	Minor	Minor and/or short-term impact
5	Negligible	Negligible or no impact

Note: *Specific descriptions of odour consequence can be found in *Land Use Conflict Risk Assessment Fact Sheet* (Department of Primary Industries – Agriculture).

Source: *Planning Guidelines – Intensive Livestock Agriculture Development* (Department of Planning and Environment)

Sheep grazing in Gunnedah

4.4 Worked example

To assist applicants, the following provides a worked example of a fictitious meat chicken farm. The characteristics of the farm are described in Table 5 and the layout illustrates in Figure 5. These reflect what could reasonably be expected of a farm of this type and scale.

Table 5 Example meat chicken farm characteristics

Meat chicken farm	3,080,000
Total sheds	56
Birds per shed	55,000
Shed clusters	4
Sheds per cluster	14
Birds per cluster	770,000

To evaluate the suitability of this farm according to the odour contours, the applicant would identify the proposed locations of each shed cluster according to the relevant scale map (Appendix 3).

In this case, the relevant scale map is the 1 million scale farm for meat chickens, because each cluster is:

1. above the 400,000 bird threshold and below the 1 million bird threshold, and
2. separated by at least 500m[5].

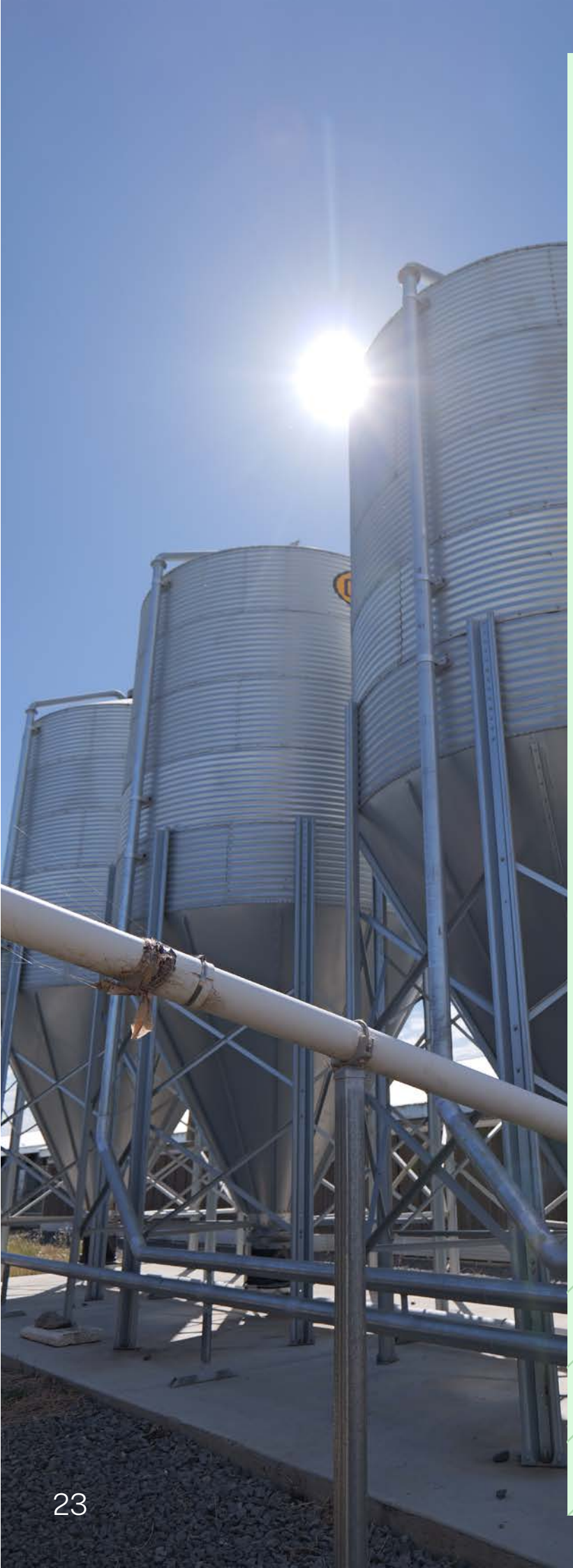
Figure 5 illustrates the described example positioned according to the odour contours at an indicative scale. This indicates the proposed 3.08 million bird meat chicken farm, made up of four clusters of 7700,000 birds each cluster, can be sited in a location that is unencumbered by dwellings. The LUCRA-Odour for this example farm would reflect that, for the purposes of site selection:

1. the initial probability of generating odour impacts on dwellings is rare, and
2. the initial consequence of odour impacts on existing dwellings is minor.

Note that site-specific operating models and innovative technologies will be addressed on a case-by-case basis.

Figure 5 Example meat chicken farm layout compared to odour contours

5 The odour modelling for IPA Numbers 1 to 6 assumes point source emissions based on a grid of 500m x 500m (Note: IPA Number 6: Gwydir North is based on 1km x 1km grid).



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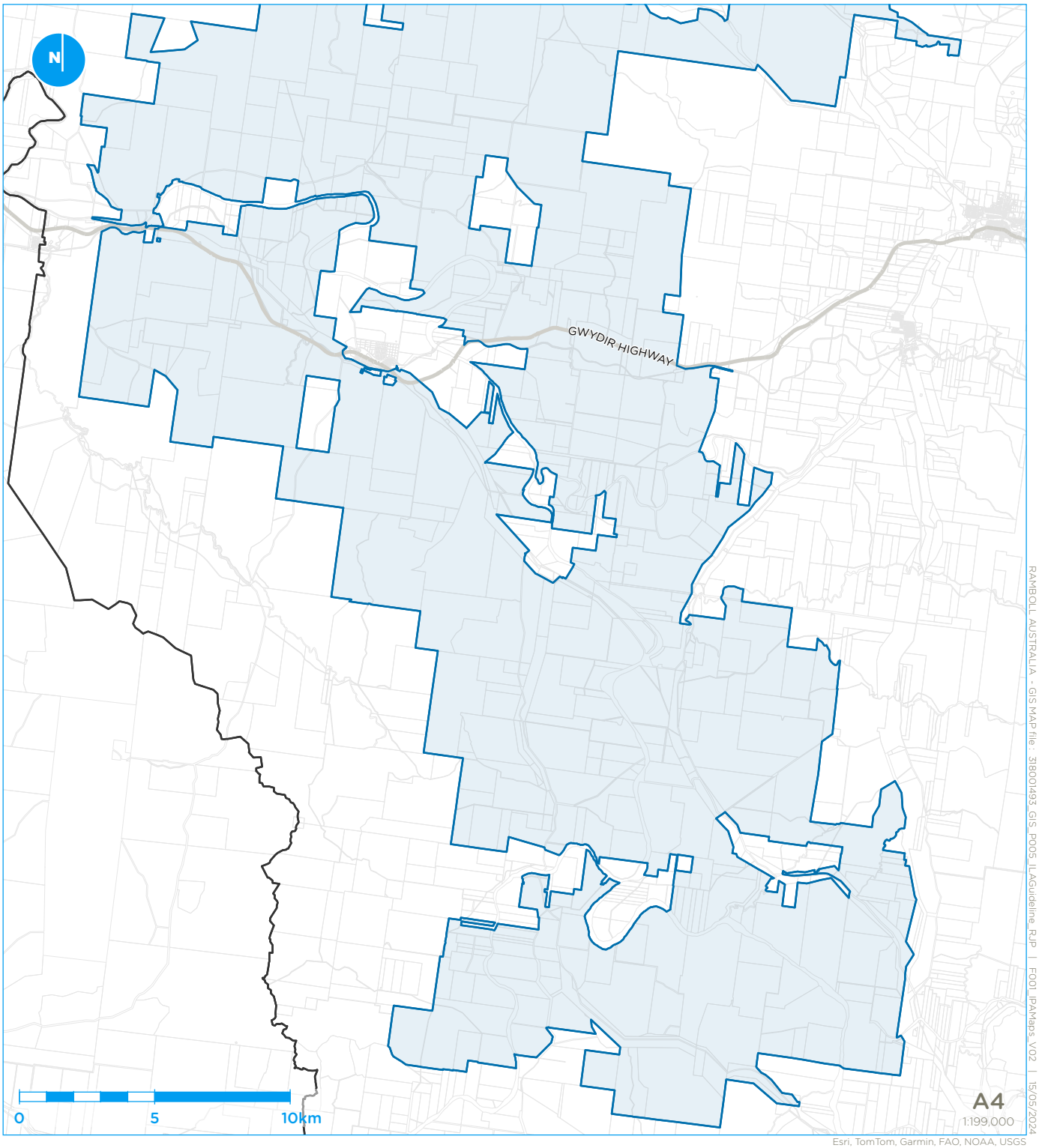
Appendices

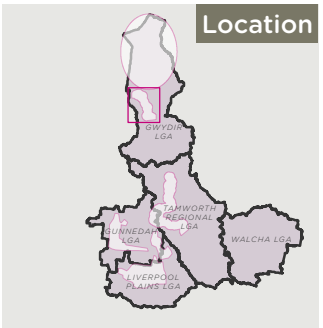
Appendix 1 Indentified Production Areas

Identified Production Area 1: Gwydir

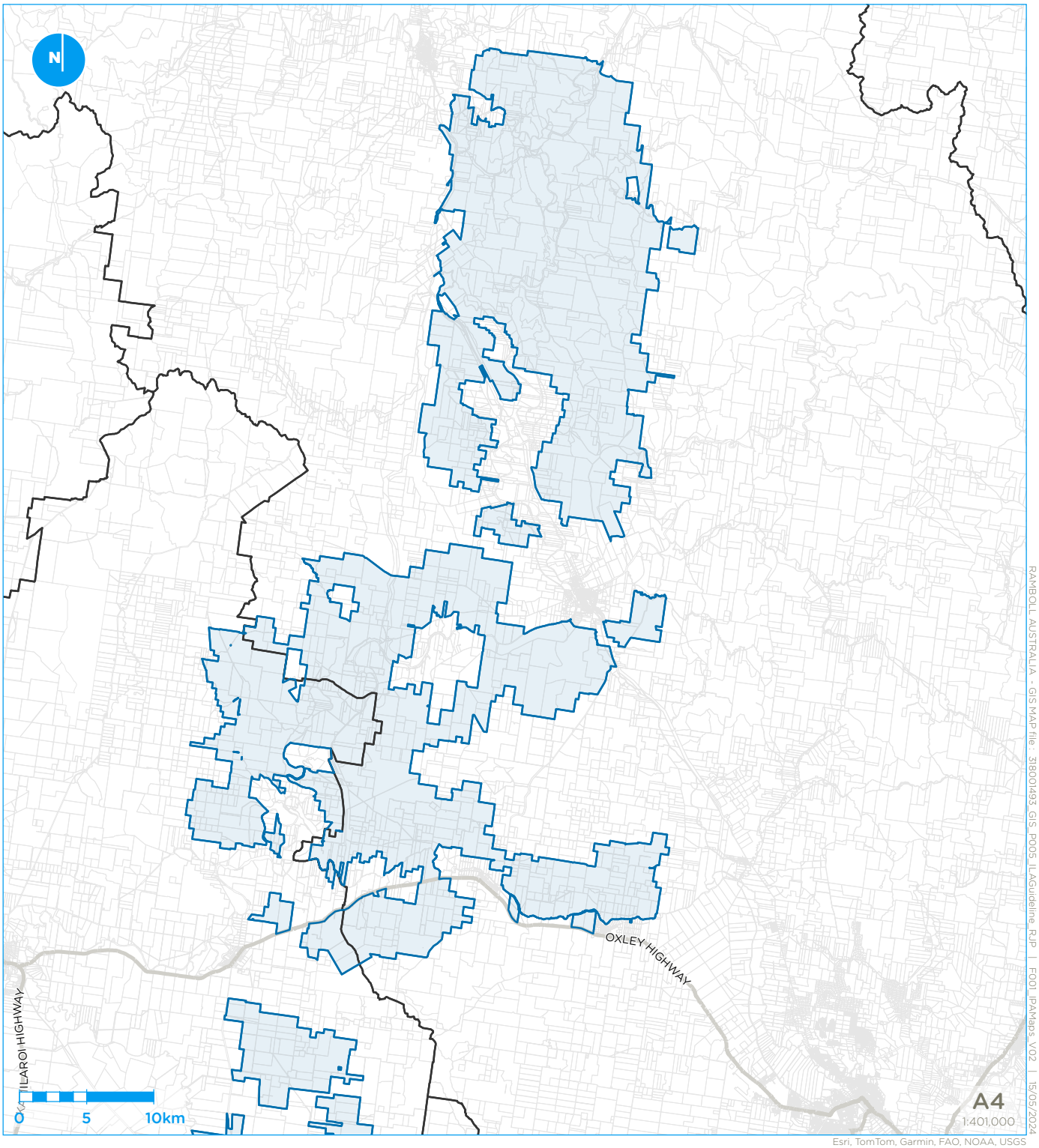


Legend

- Identified production area
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)



Identified Production Area 2: Tamworth



Legend

- Identified production area
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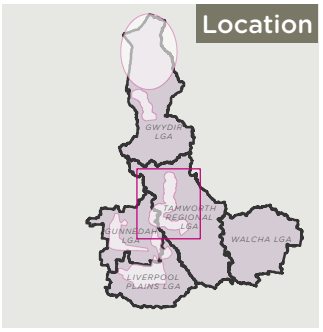
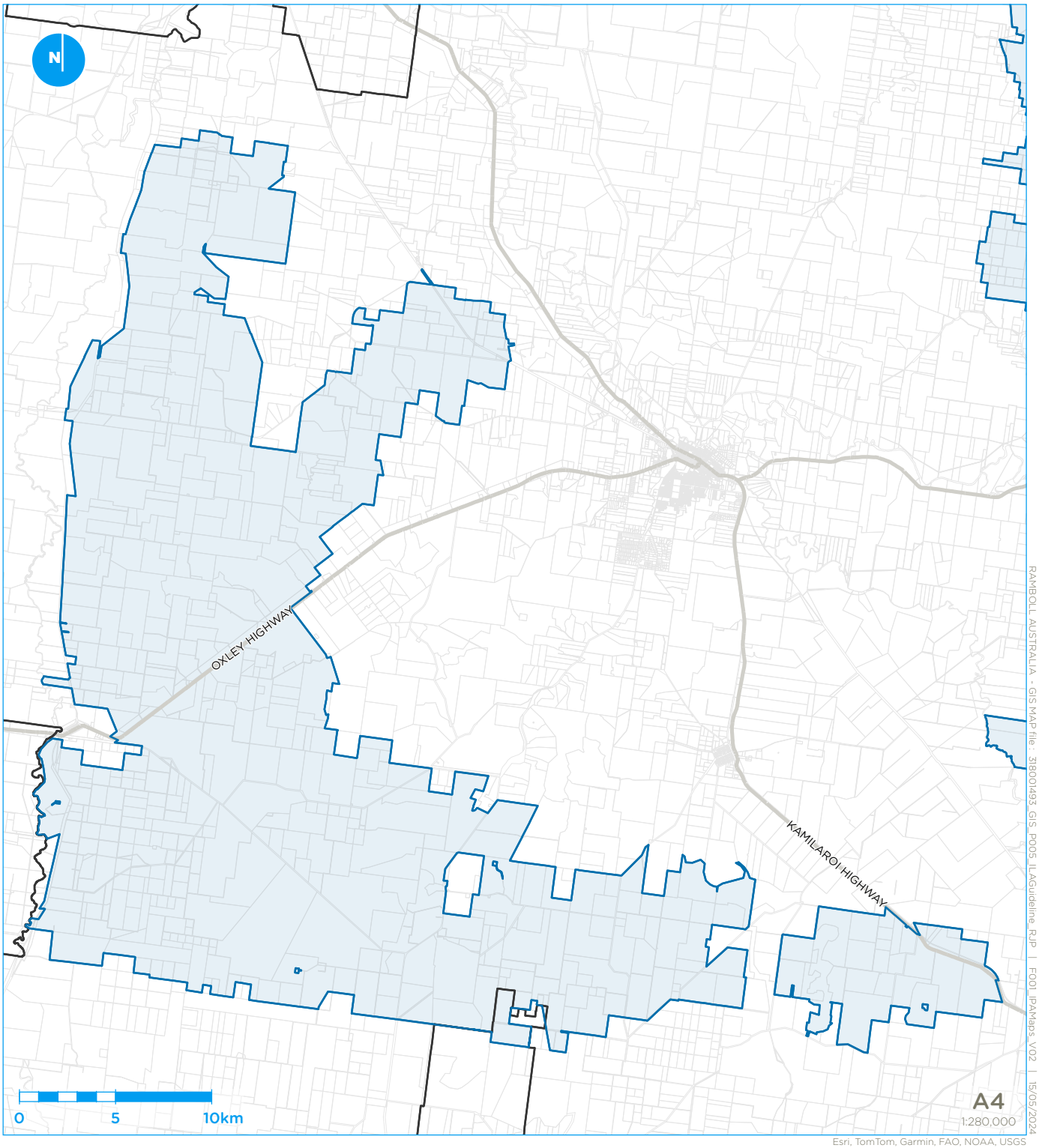
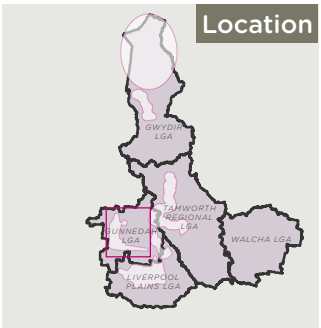


Identified Production Area 3: Gunnedah

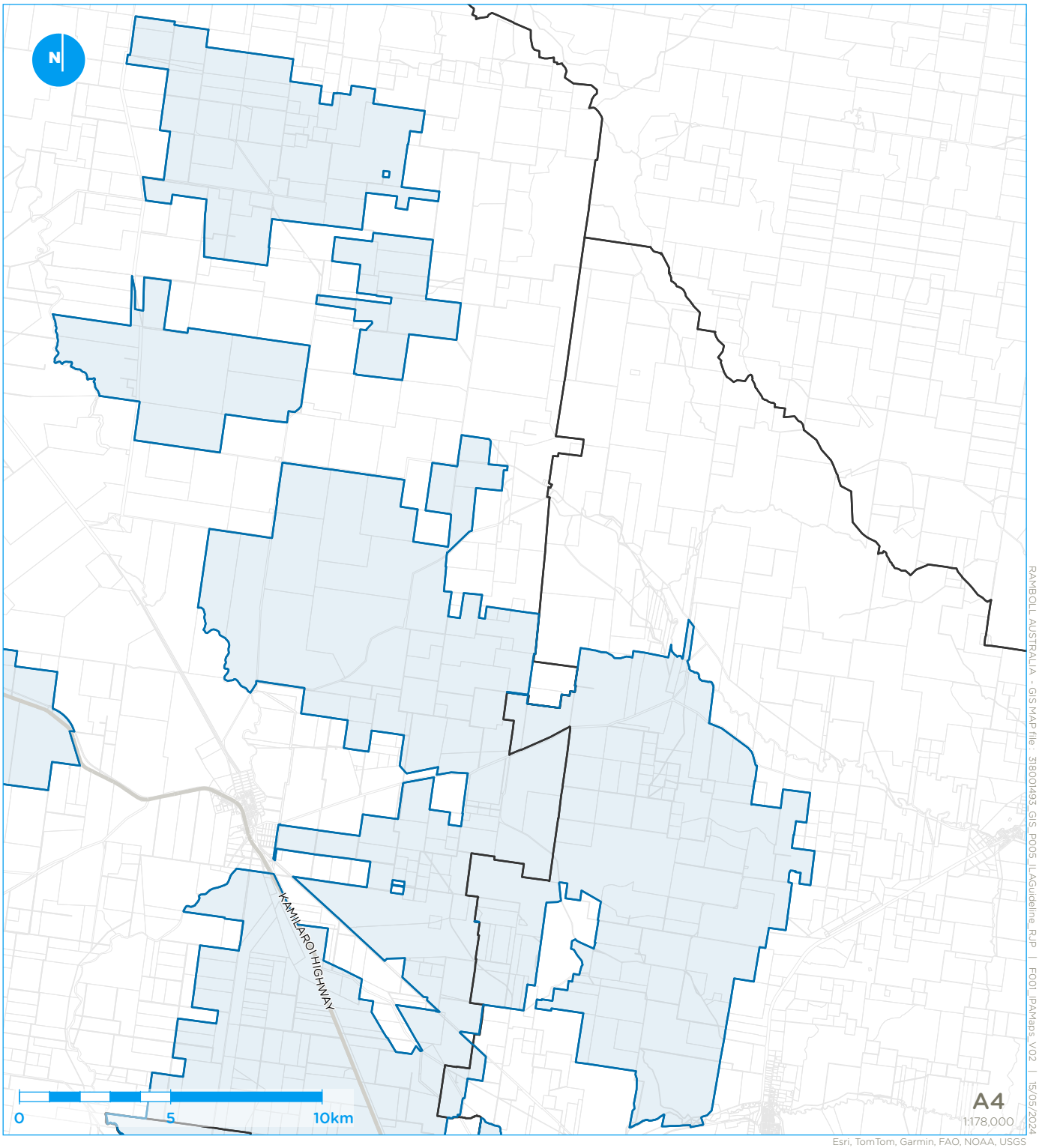


Legend

- Identified production area
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

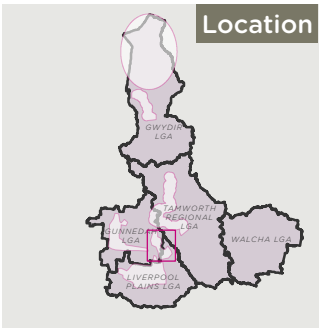


Identified Production Area 4: Gunnedah & Liverpool Plains

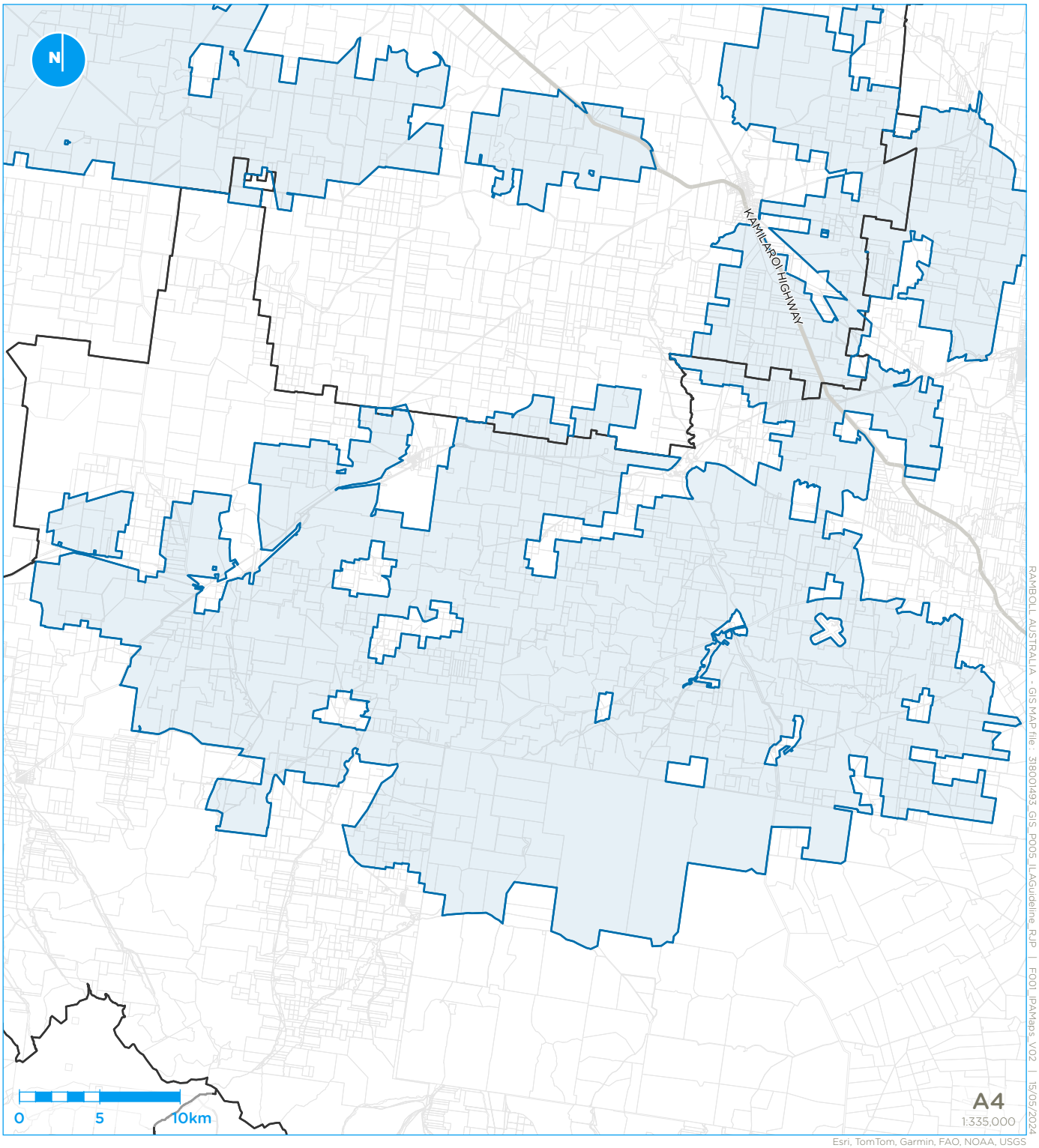


Legend

- Identified production area
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

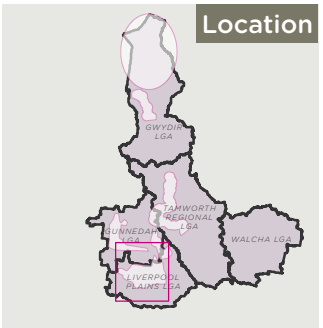


Identified Production Area 5: Liverpool Plains

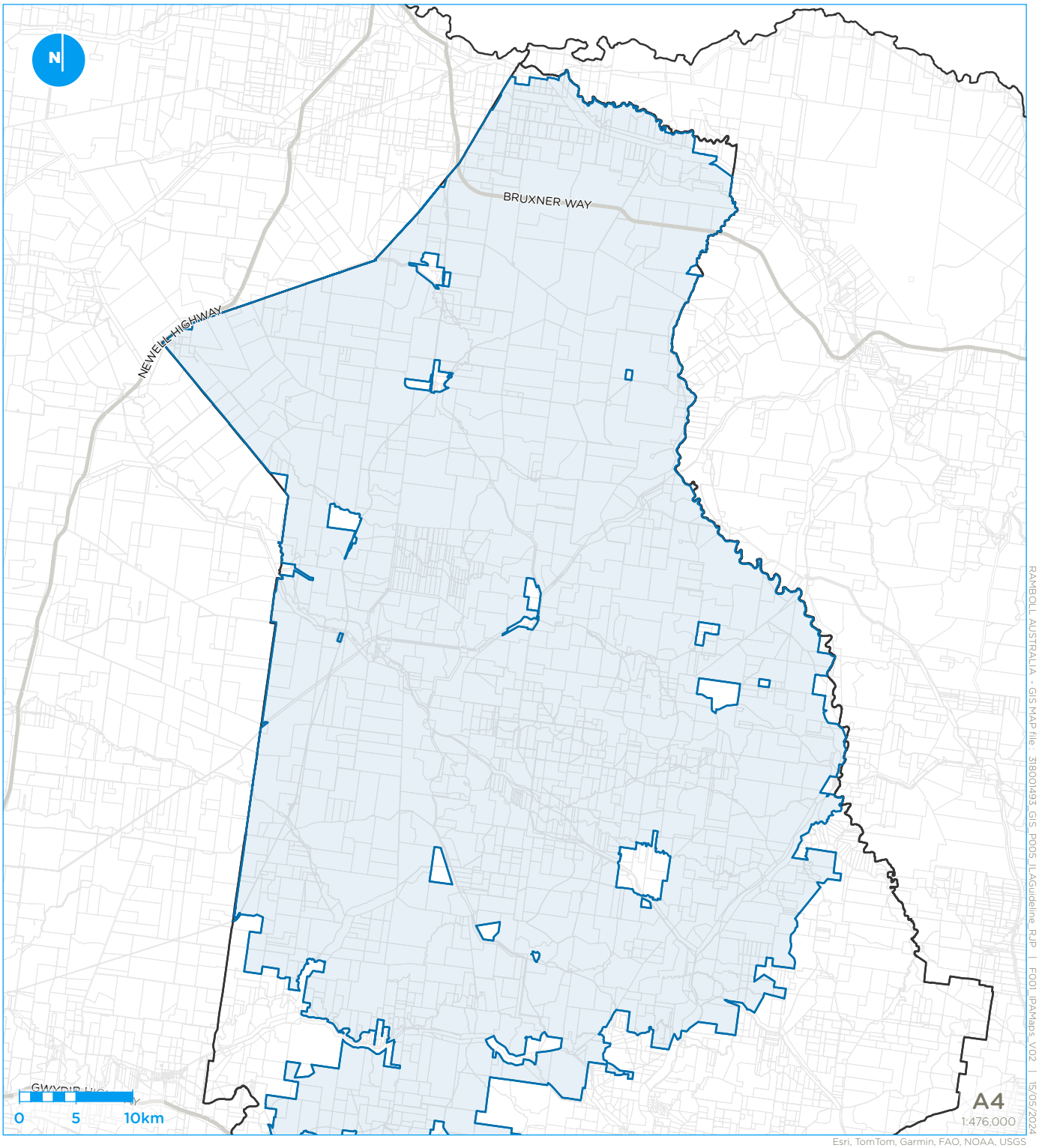


Legend

- Identified production area
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

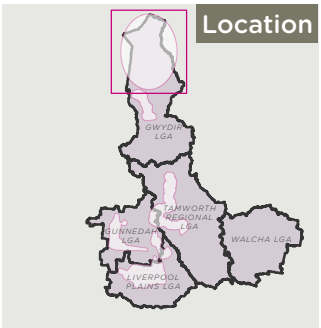


Identified Production Area 6: Gwydir North



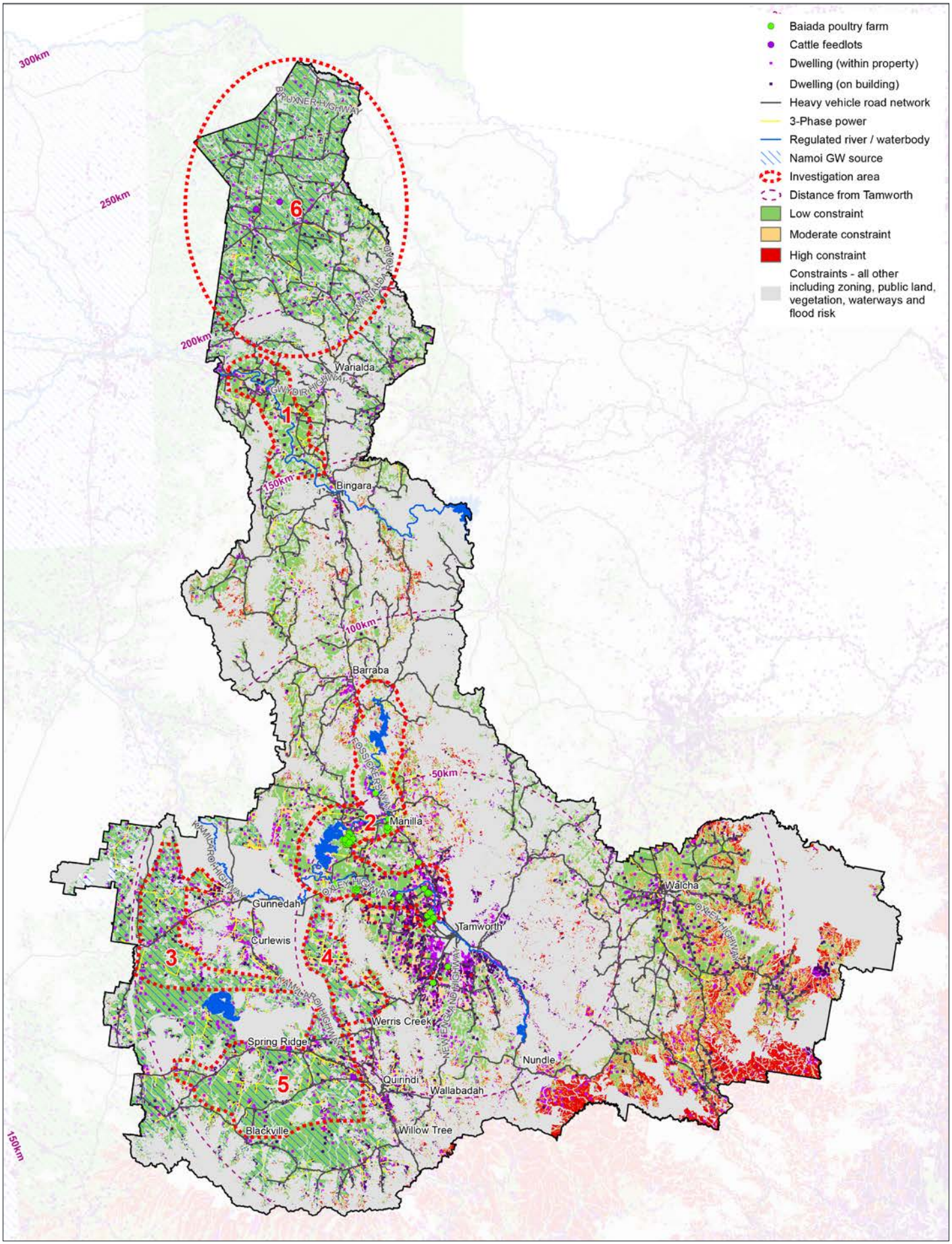
Legend

- Identified production area
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

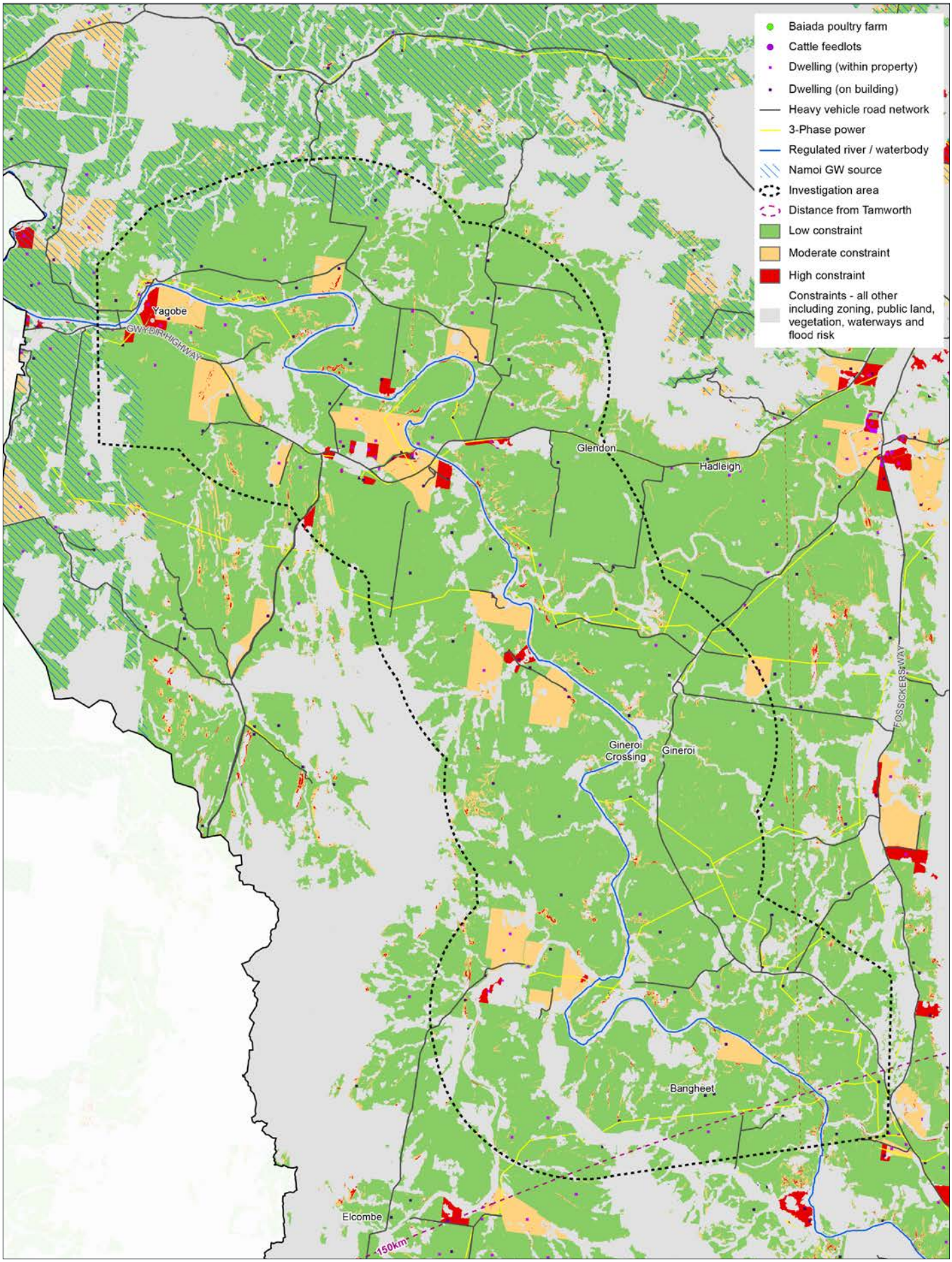


Appendix 2 Investigation area maps

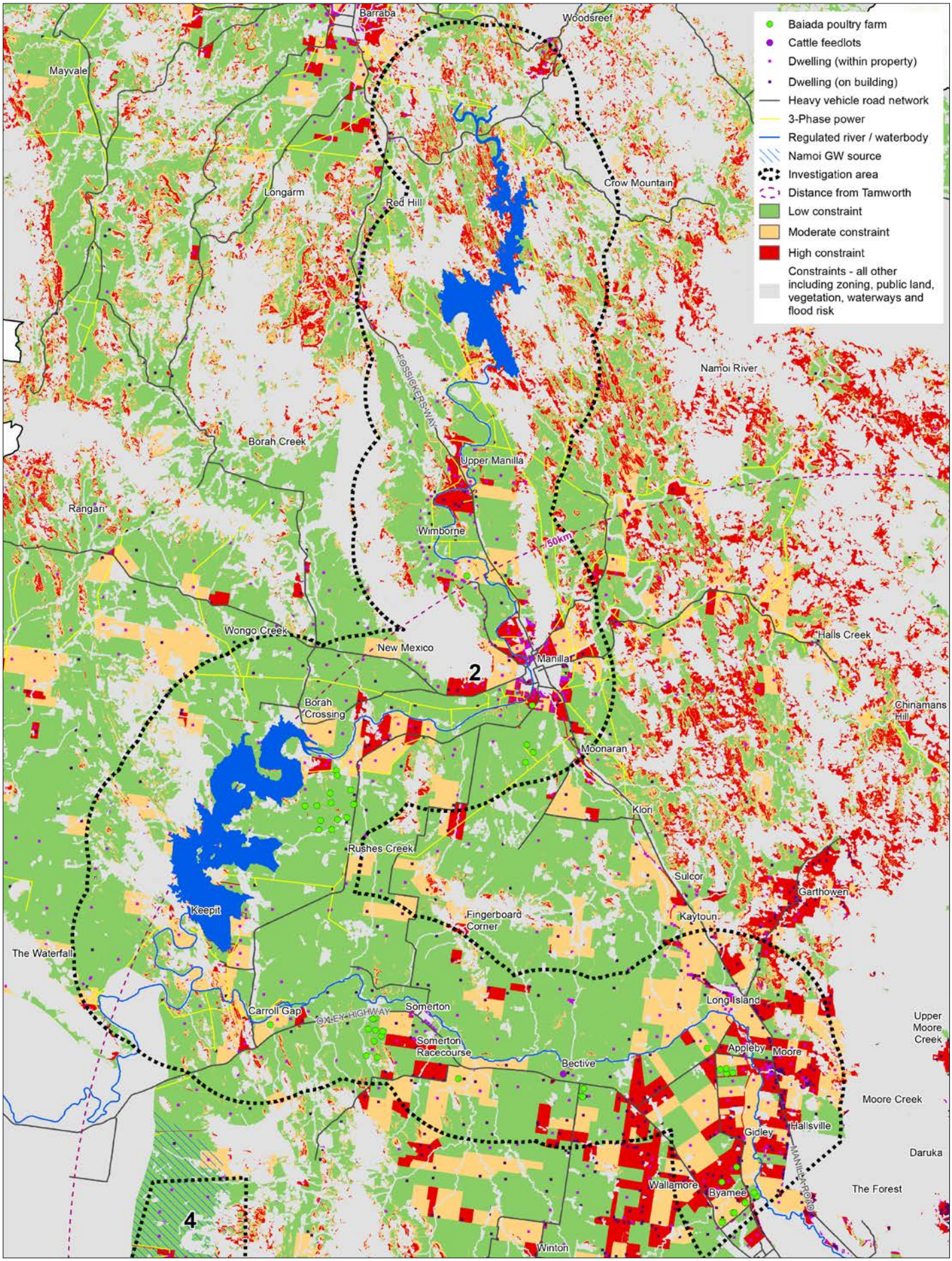
Namoi constraints: investigation areas overview



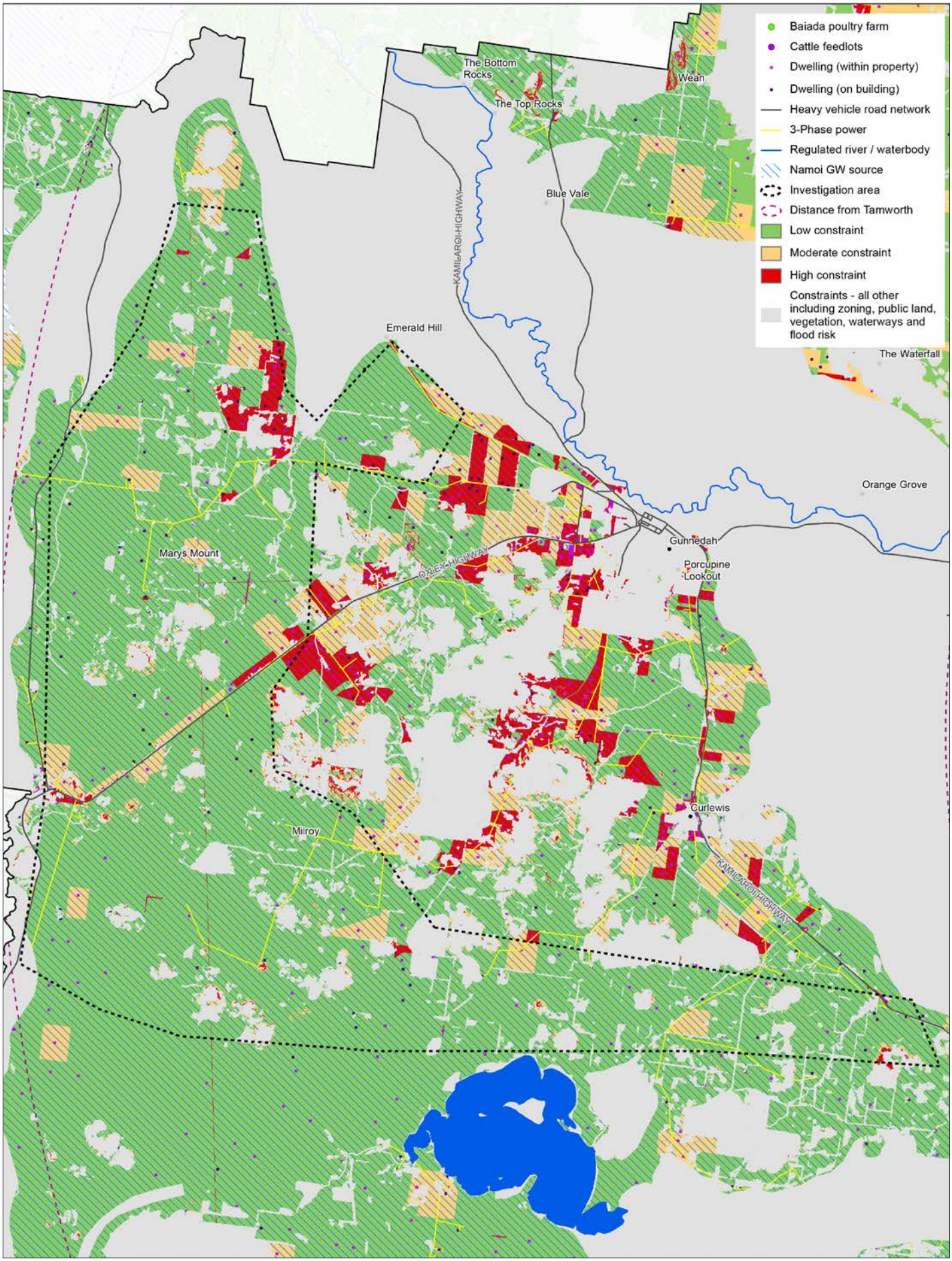
Namoi constraints: Investigation Area 1



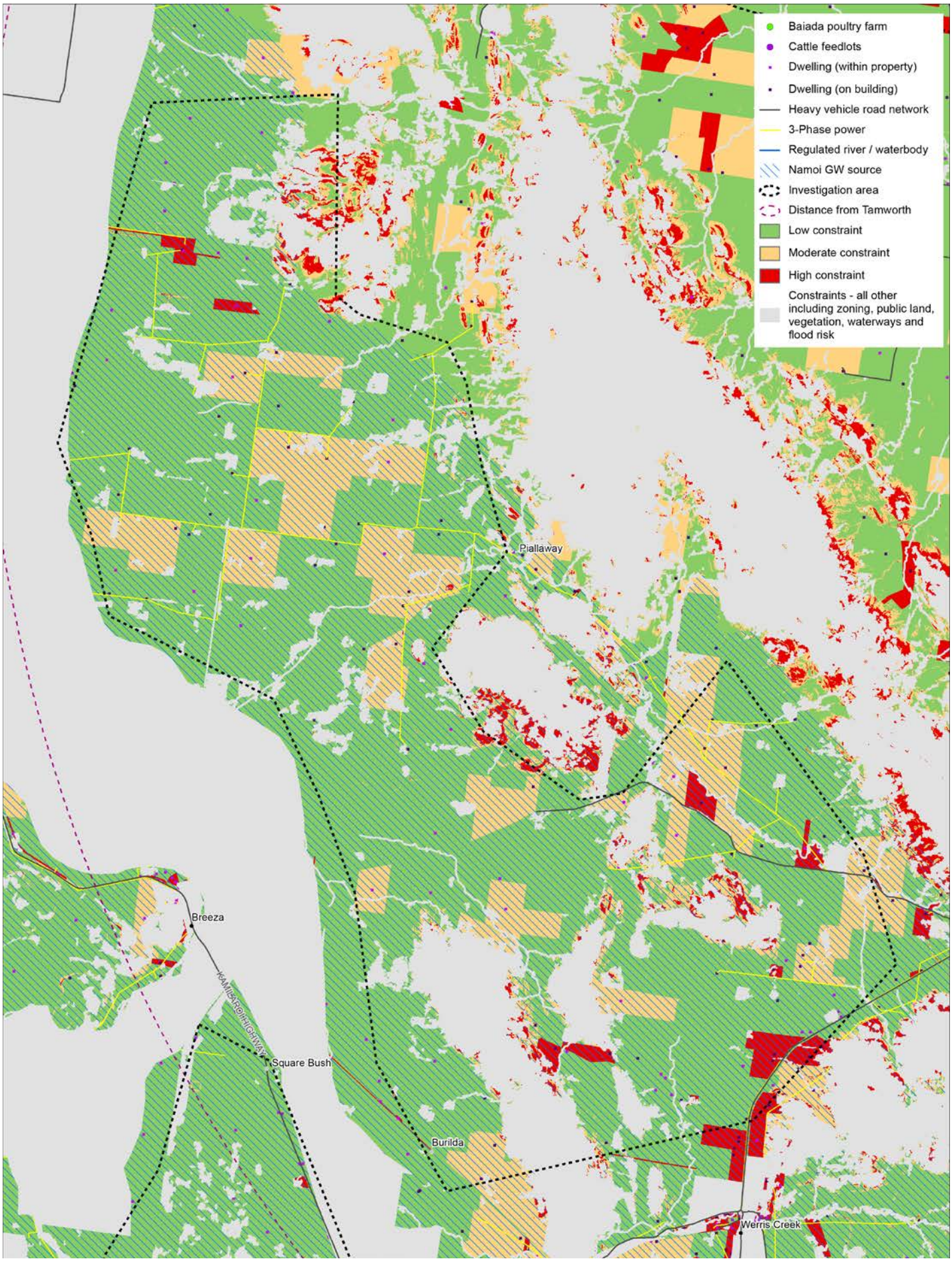
Namoi constraints: Investigation Area 2



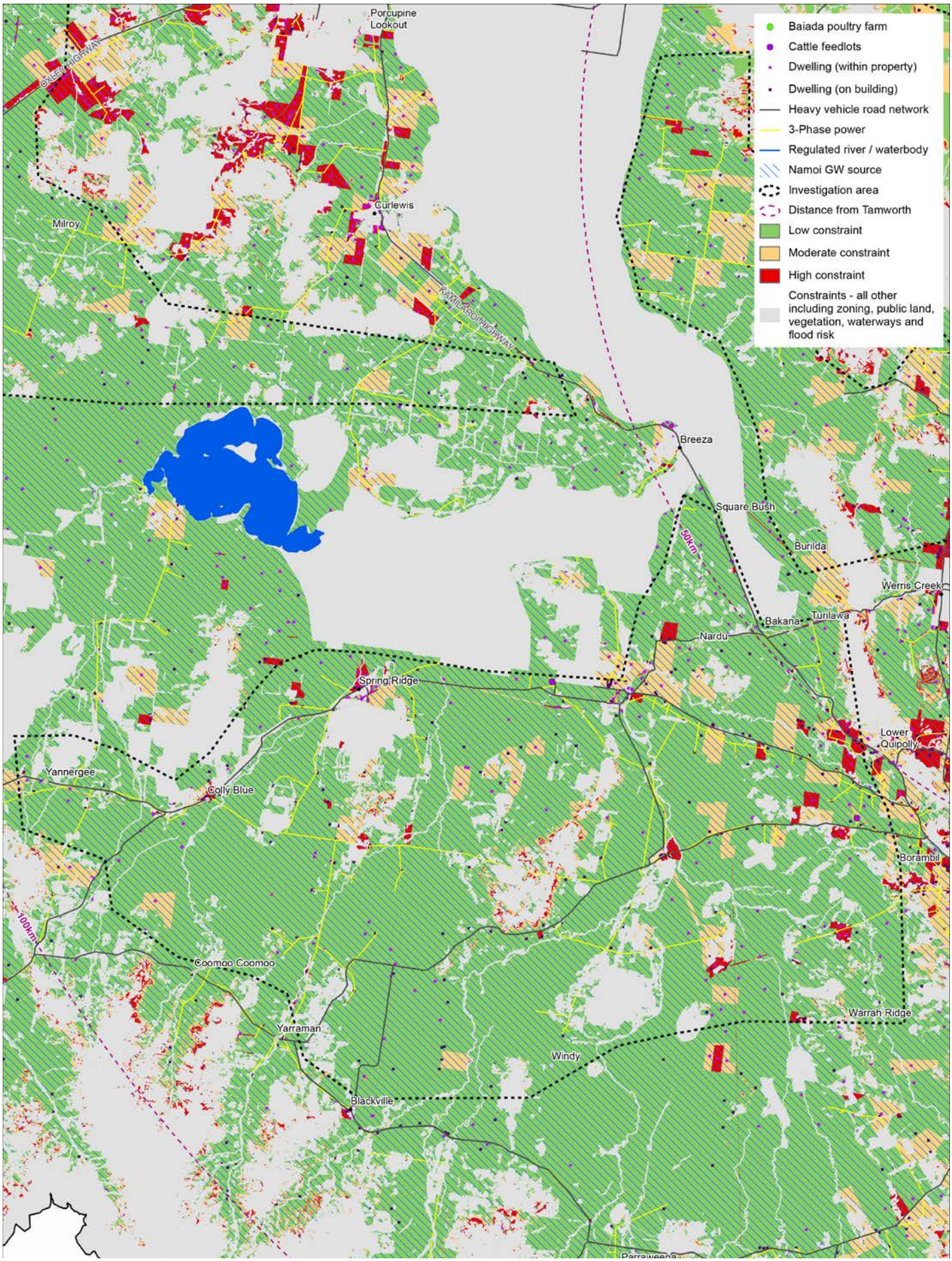
Namoi constraints: Investigation Area 3



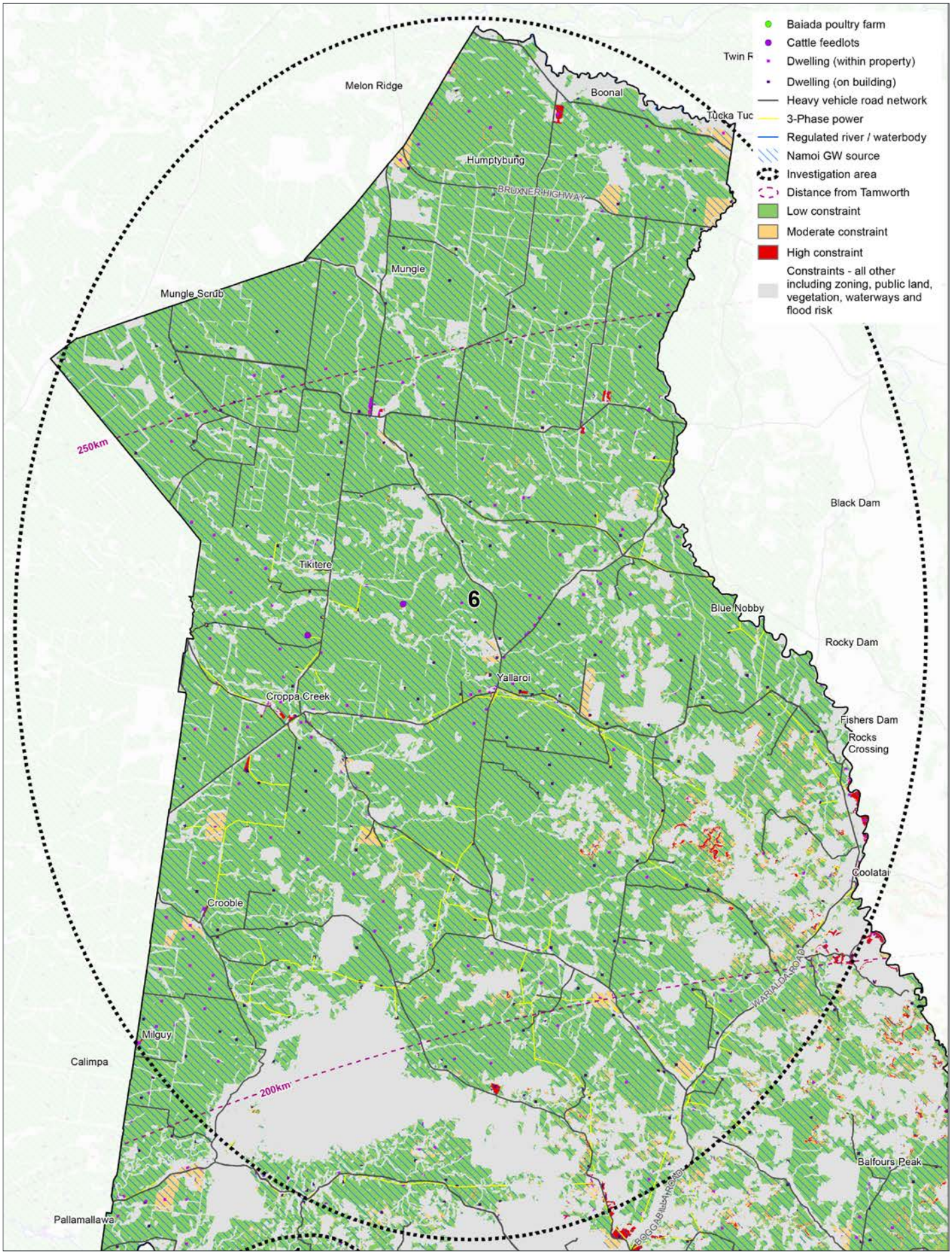
Namoi constraints: Investigation Area 4



Namoi constraints: Investigation Area 5

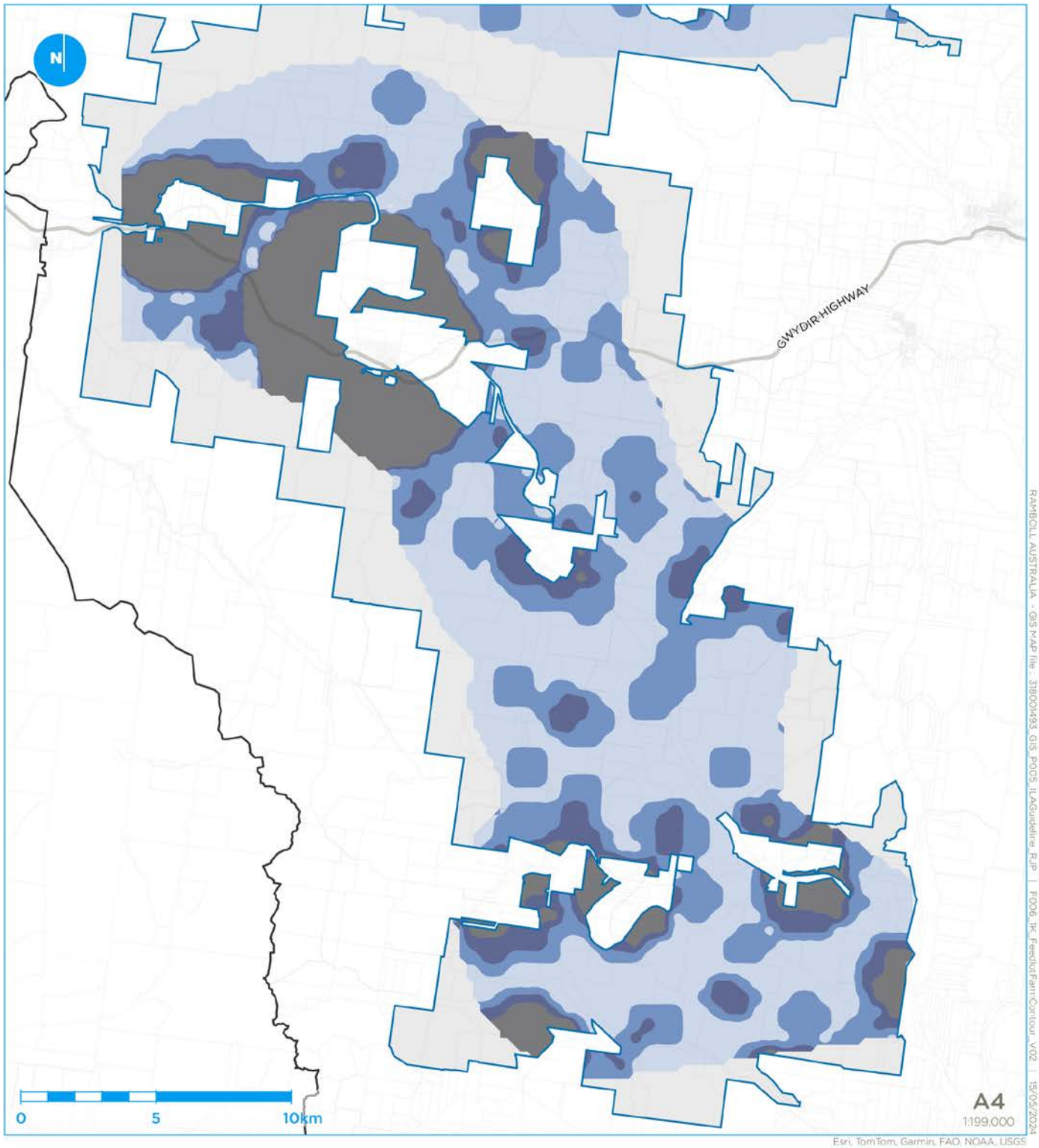


Namoi constraints: Investigation Area 6



Appendix 3 Odour contour maps

Feedlot farm contour map – 1,000 head capacity: Investigation Area 1



Legend

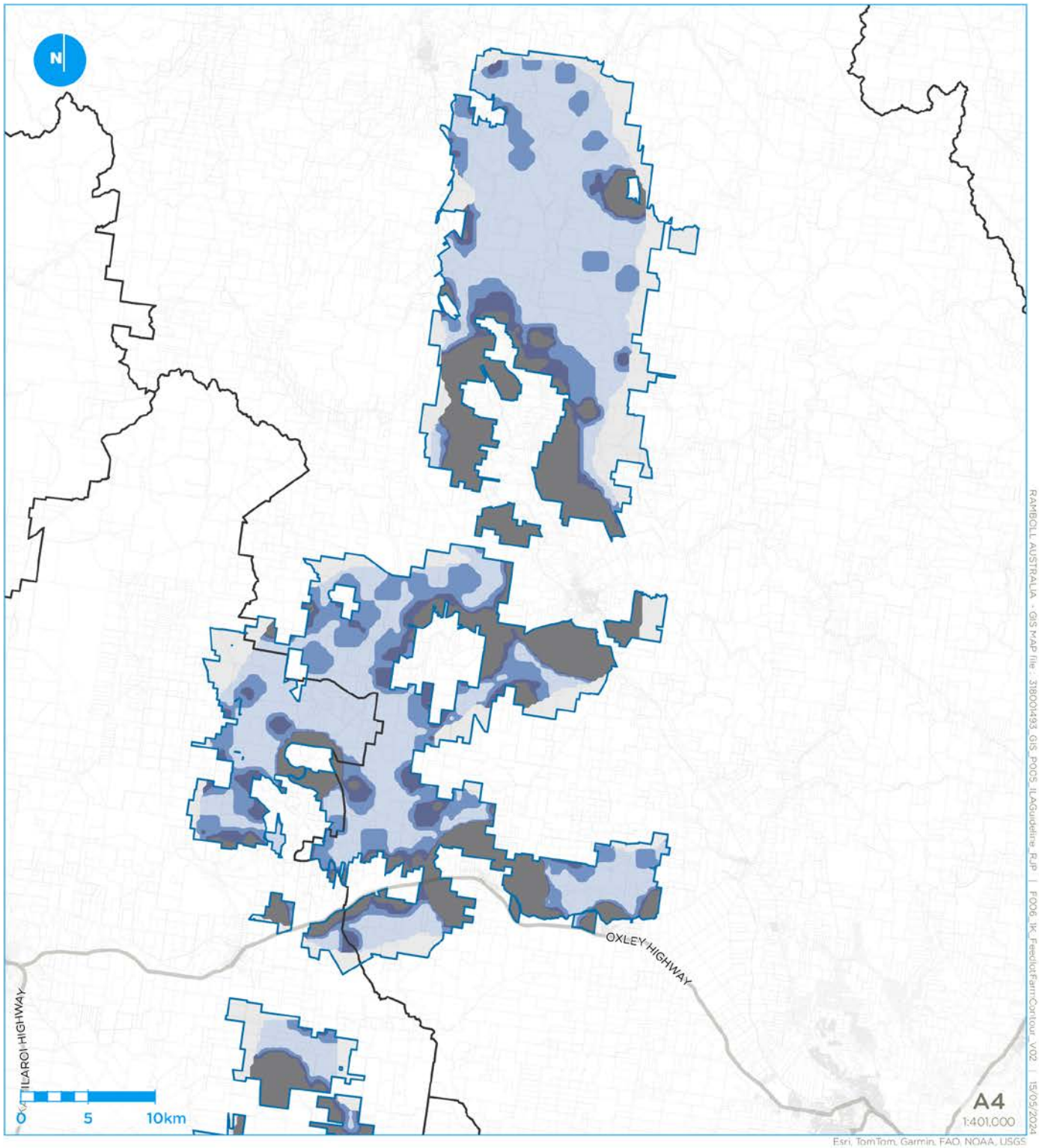
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings
- Encumbered by 3 dwellings or more

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

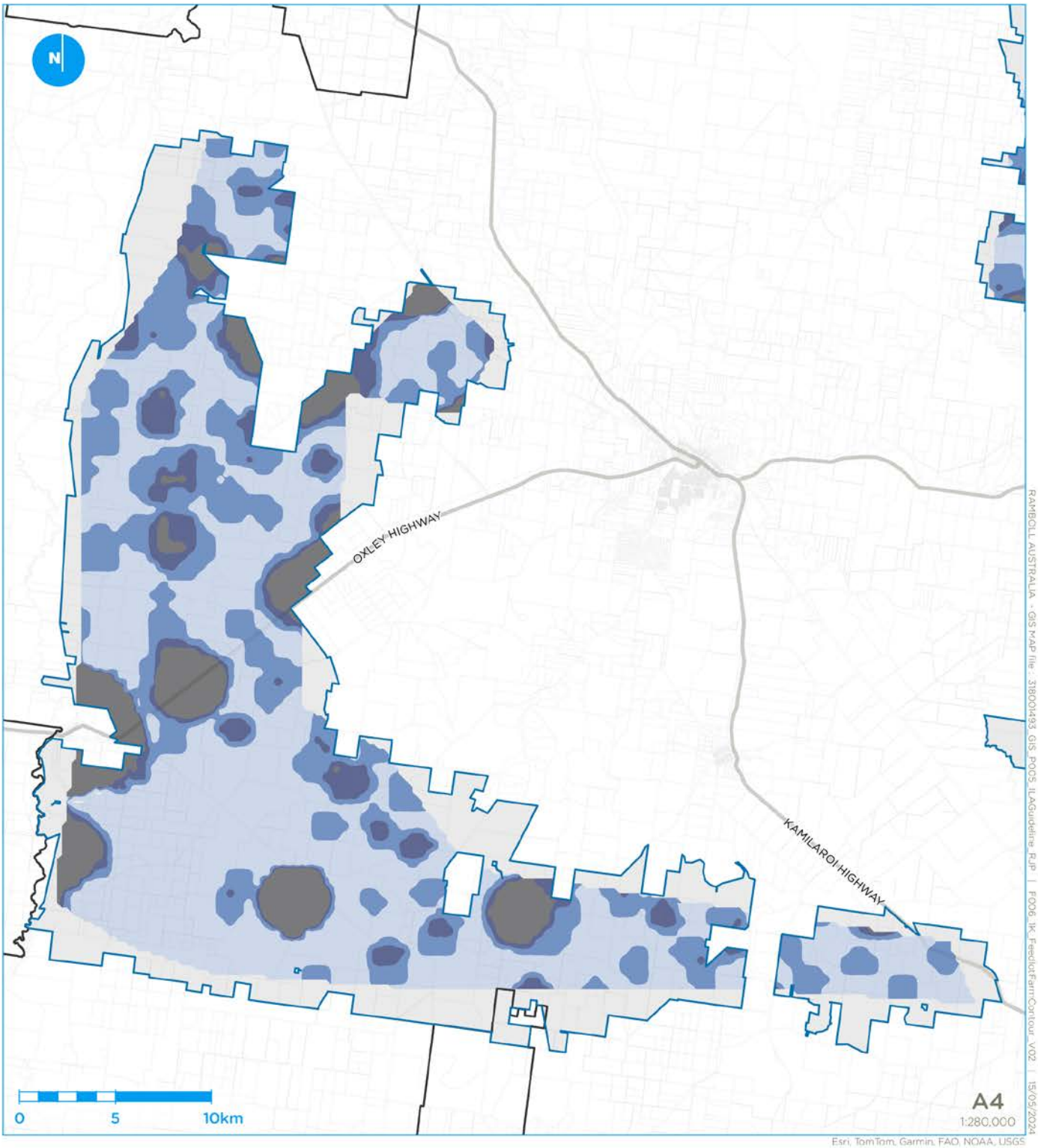
Feedlot farm contour map – 1,000 head capacity: Investigation Area 2



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

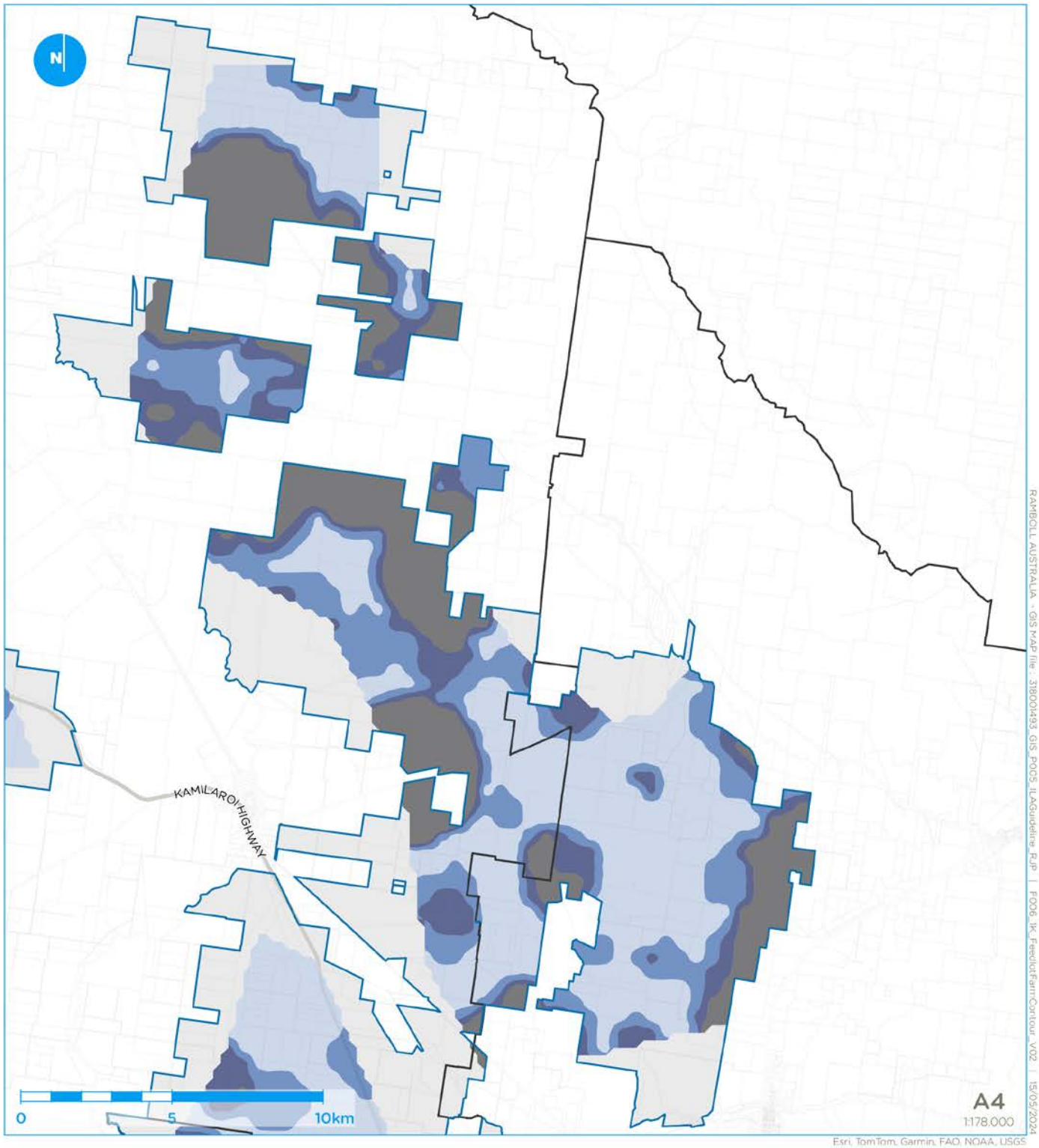
Feedlot farm contour map – 1,000 head capacity: Investigation Area 3



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

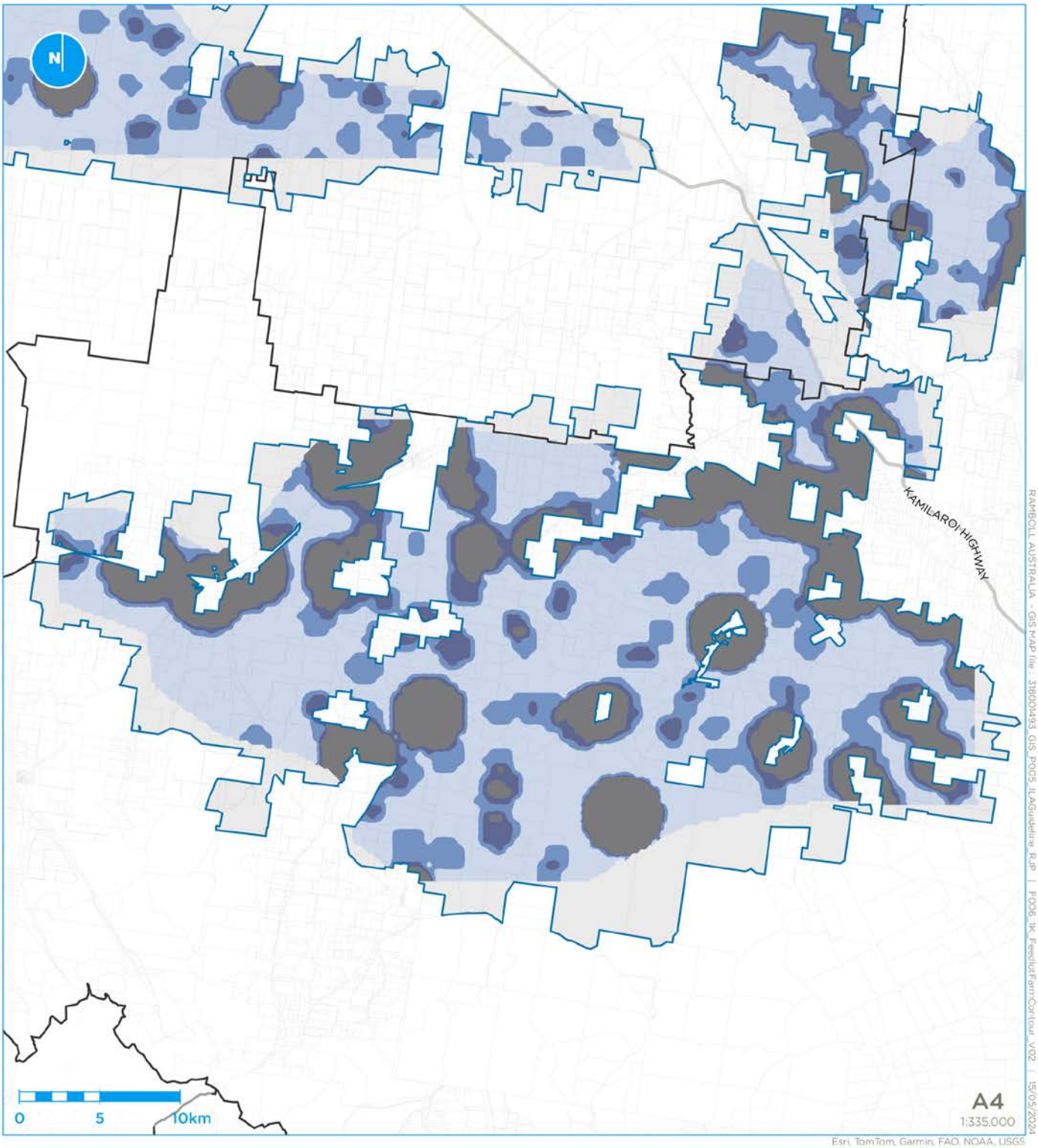
Feedlot farm contour map – 1,000 head capacity: Investigation Area 4



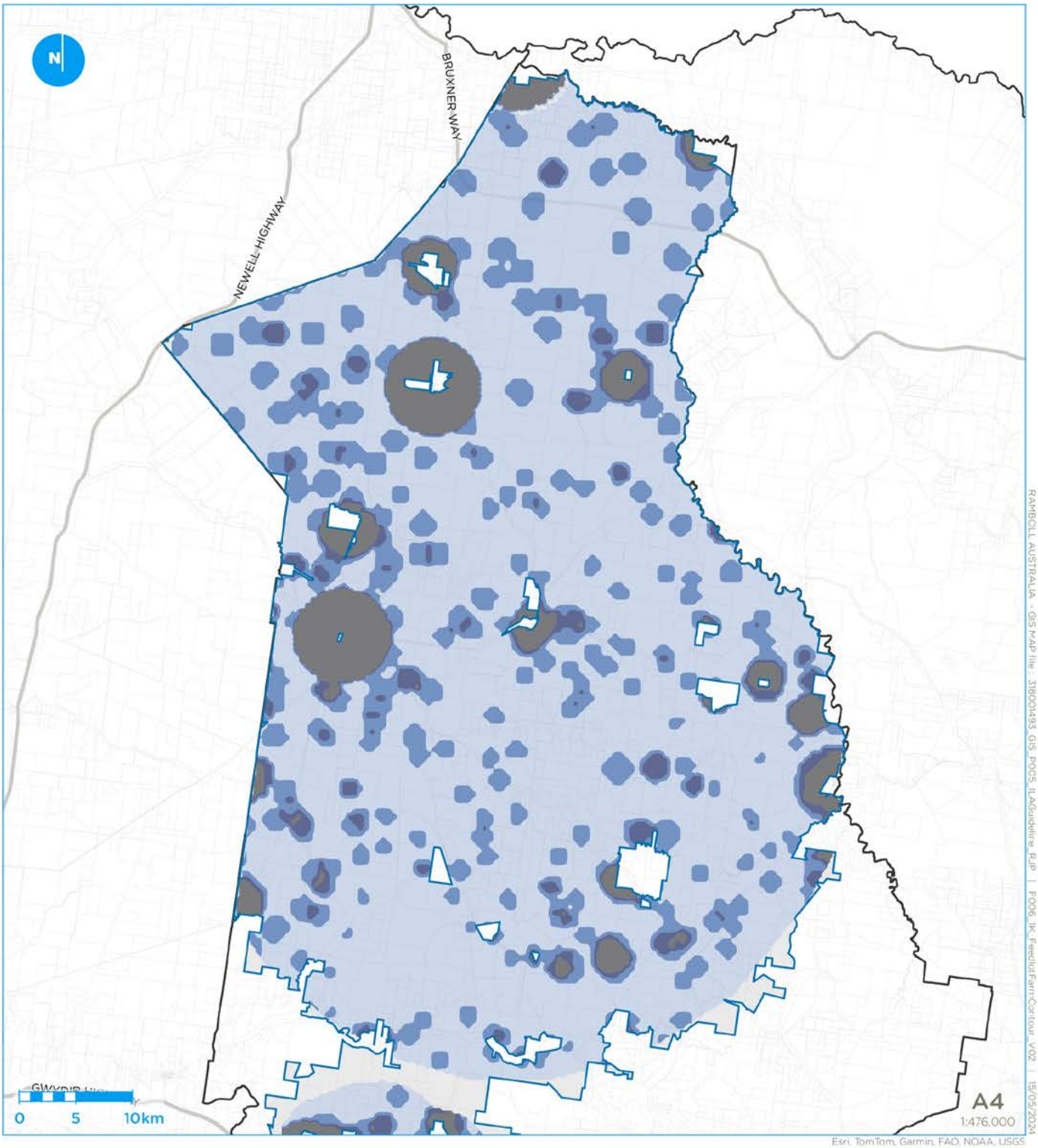
Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Feedlot farm contour map – 1,000 head capacity: Investigation Area 5



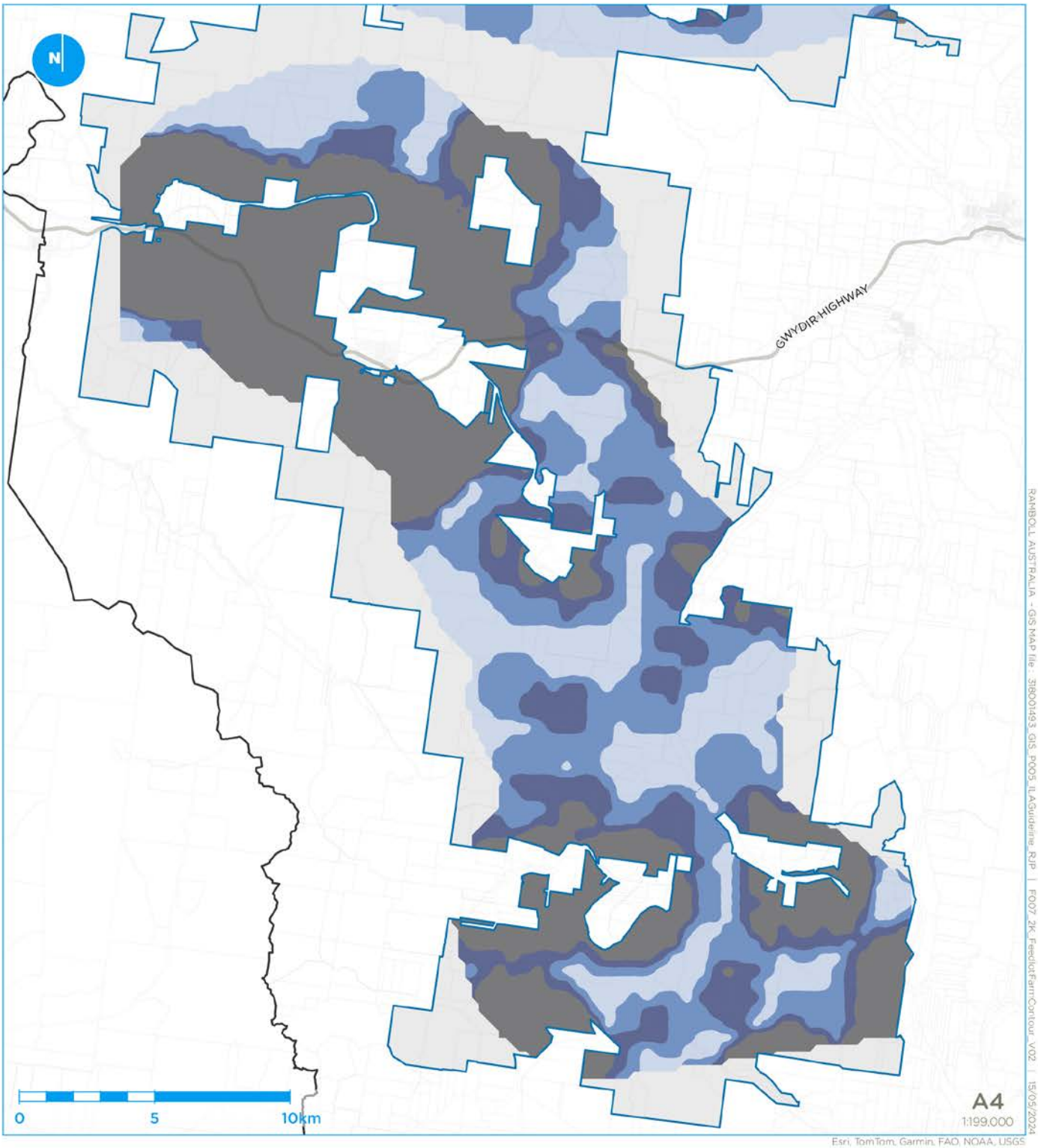
Feedlot farm contour map – 1,000 head capacity: Investigation Area 6



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Feedlot farm contour map – 2,000 head capacity: Investigation Area 1



Legend

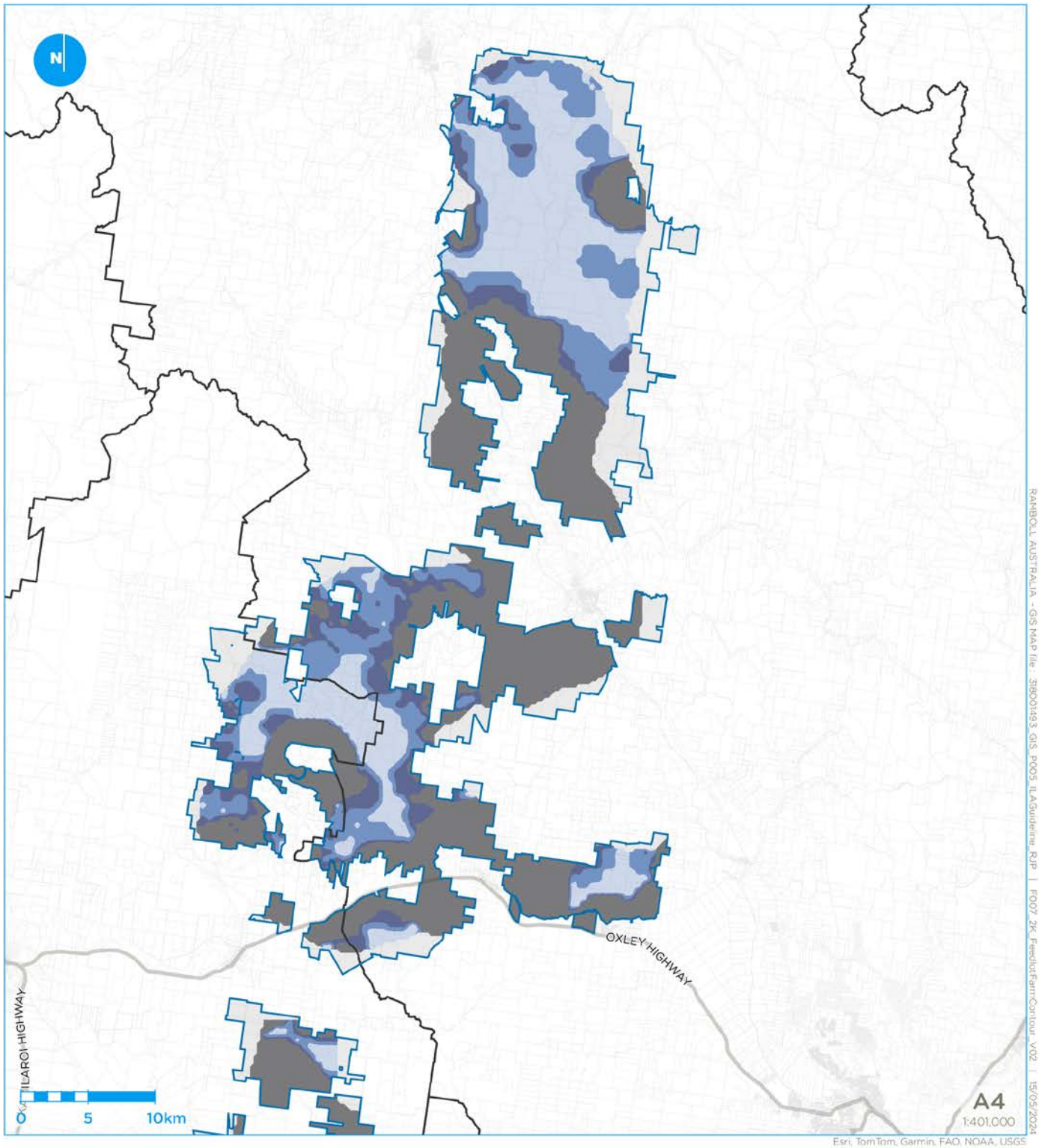
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings
- Encumbered by 3 dwellings or more

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

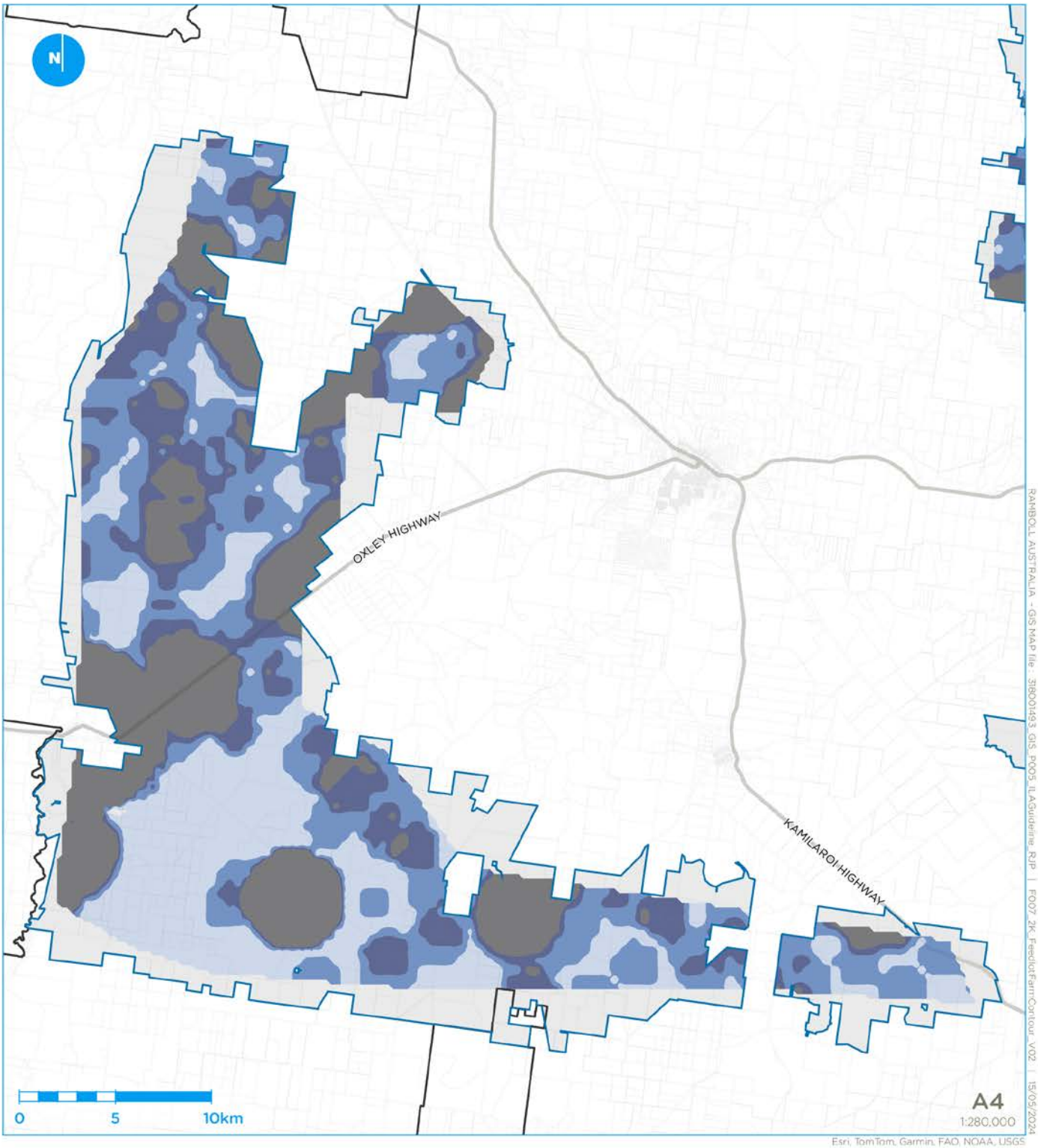
Feedlot farm contour map – 2,000 head capacity: Investigation Area 2



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Feedlot farm contour map – 2,000 head capacity: Investigation Area 3



Legend

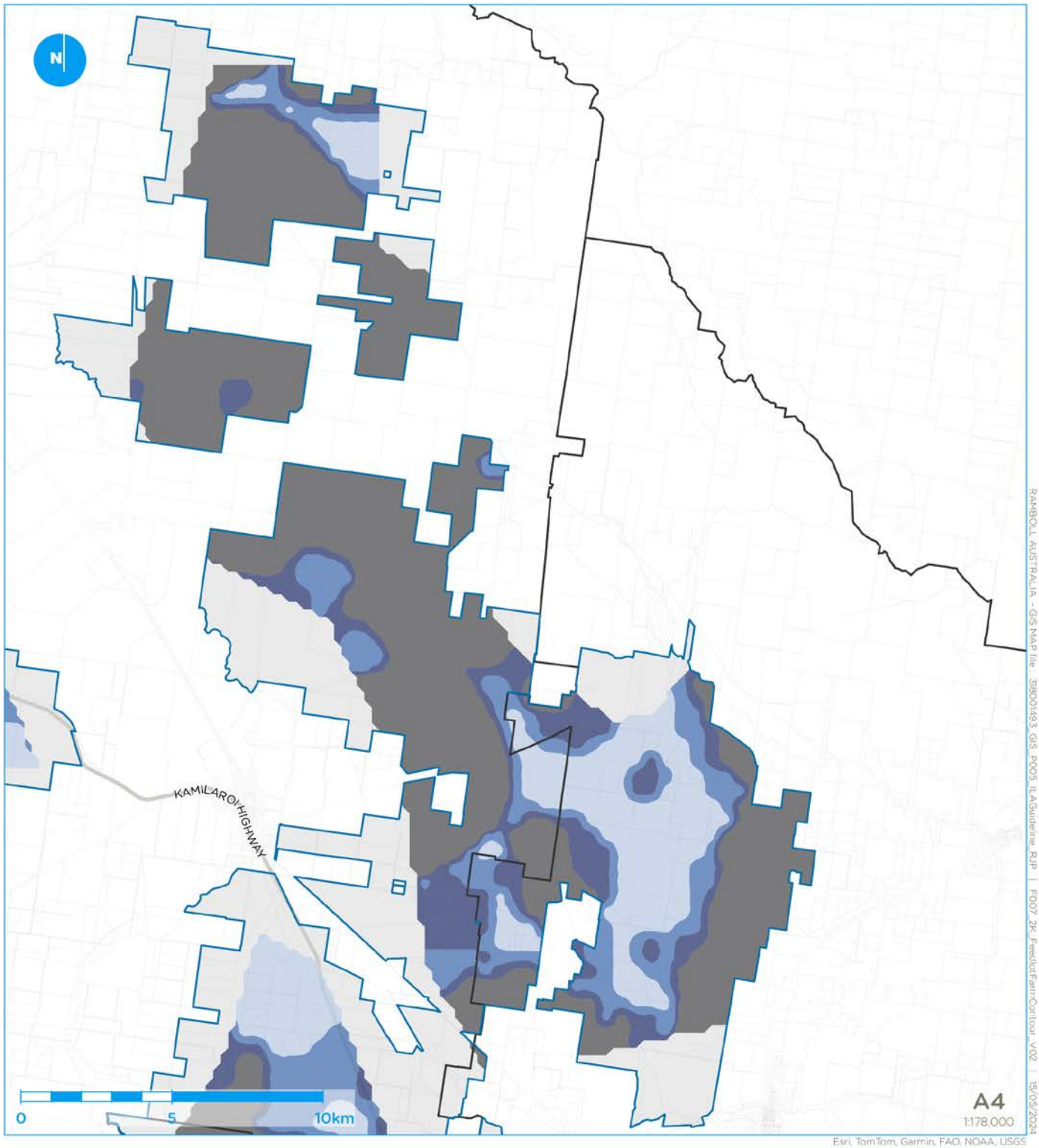
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings
- Encumbered by 3 dwellings or more

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

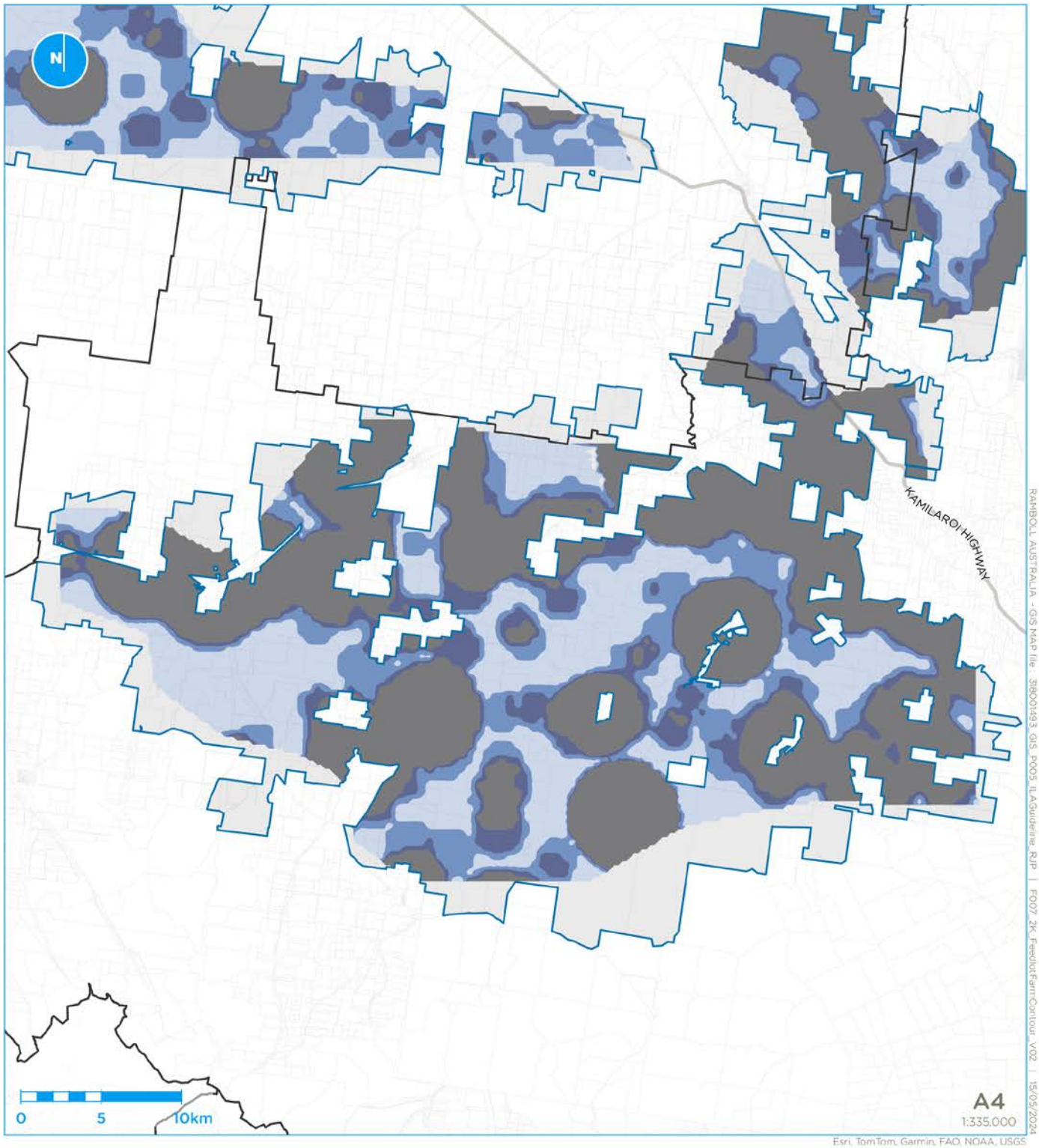
Feedlot farm contour map – 2,000 head capacity: Investigation Area 4



Legend

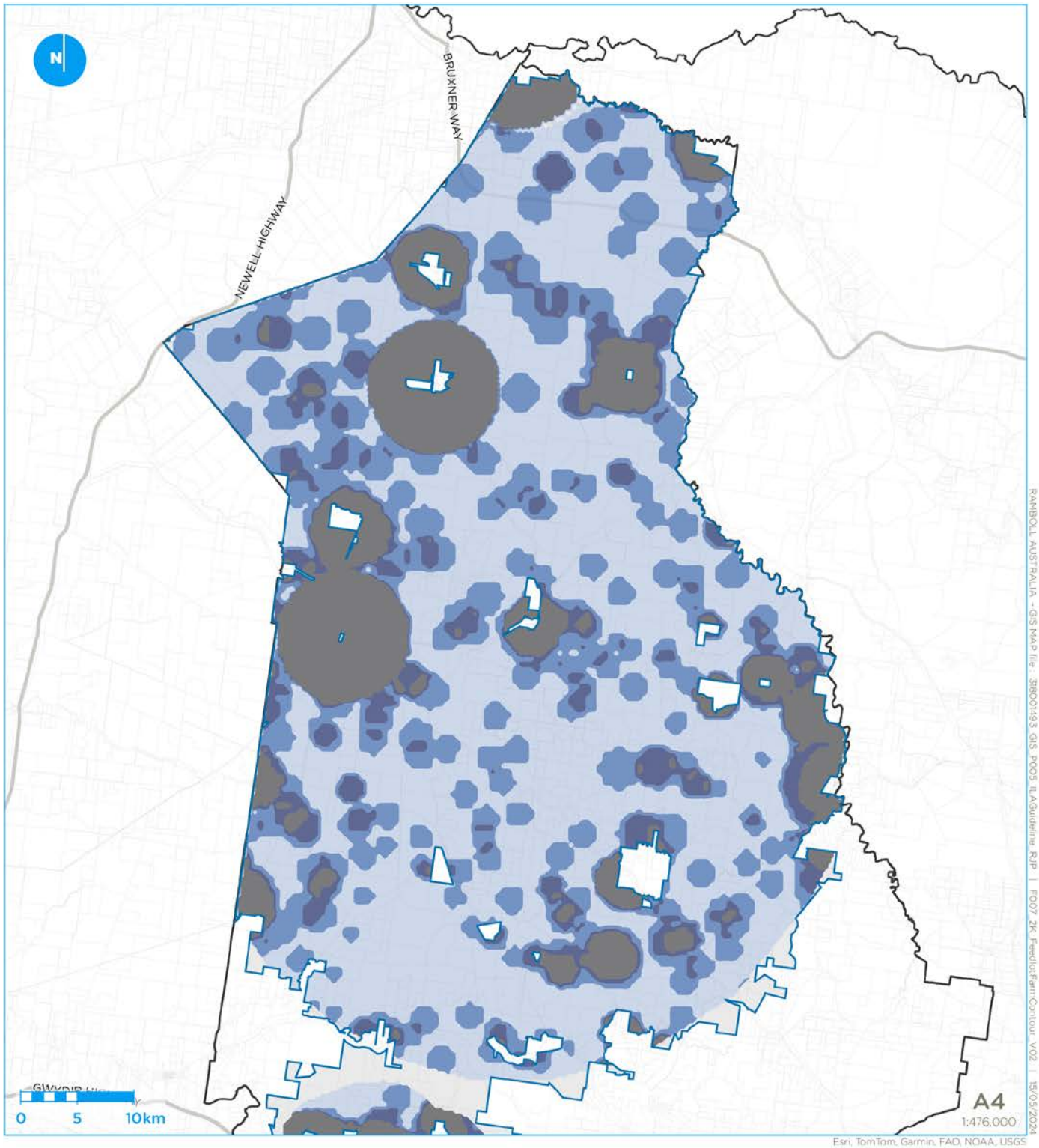
- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Feedlot farm contour map – 2,000 head capacity: Investigation Area 5



RAMBOLL AUSTRALIA - GIS MAP file: 318001493_GIS_P005_ILAGuideline_RJP | F007_2K_FeedlotFarmContour_V02 | 15/05/2024

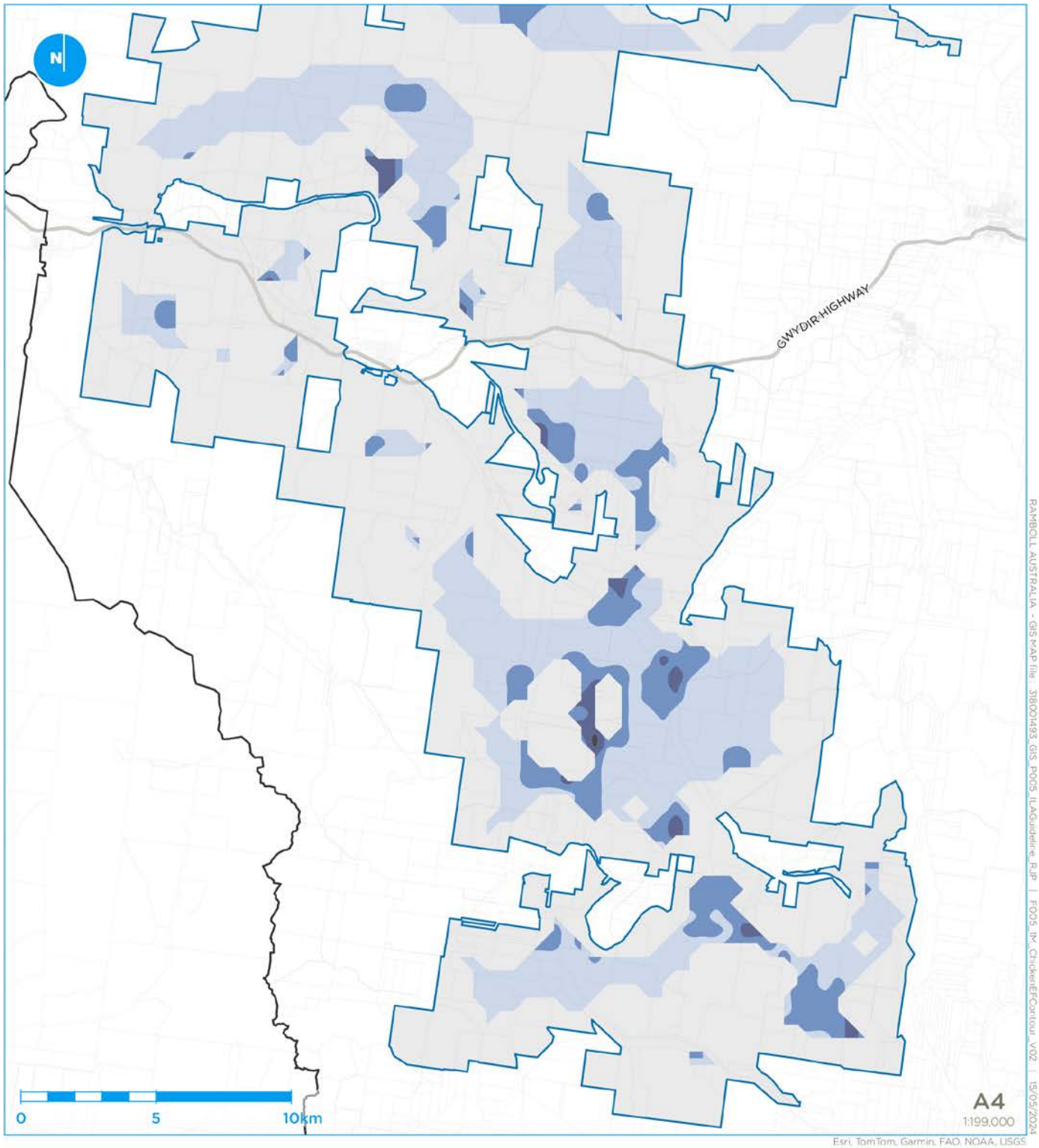
Feedlot farm contour map – 2,000 head capacity: Investigation Area 6



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

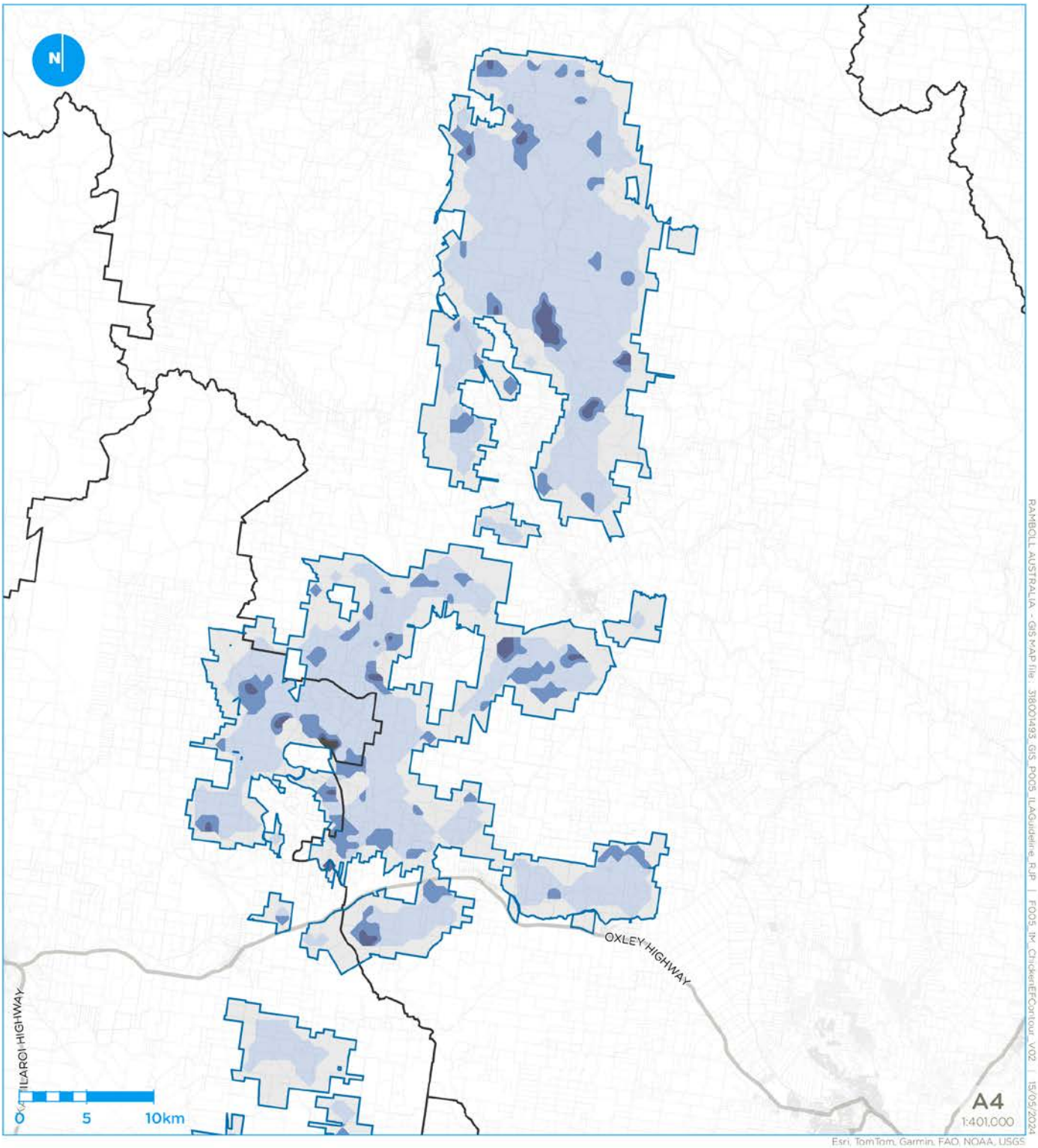
Chicken egg farm contour map – 1,000,000 bird capacity: Investigation Area 1



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

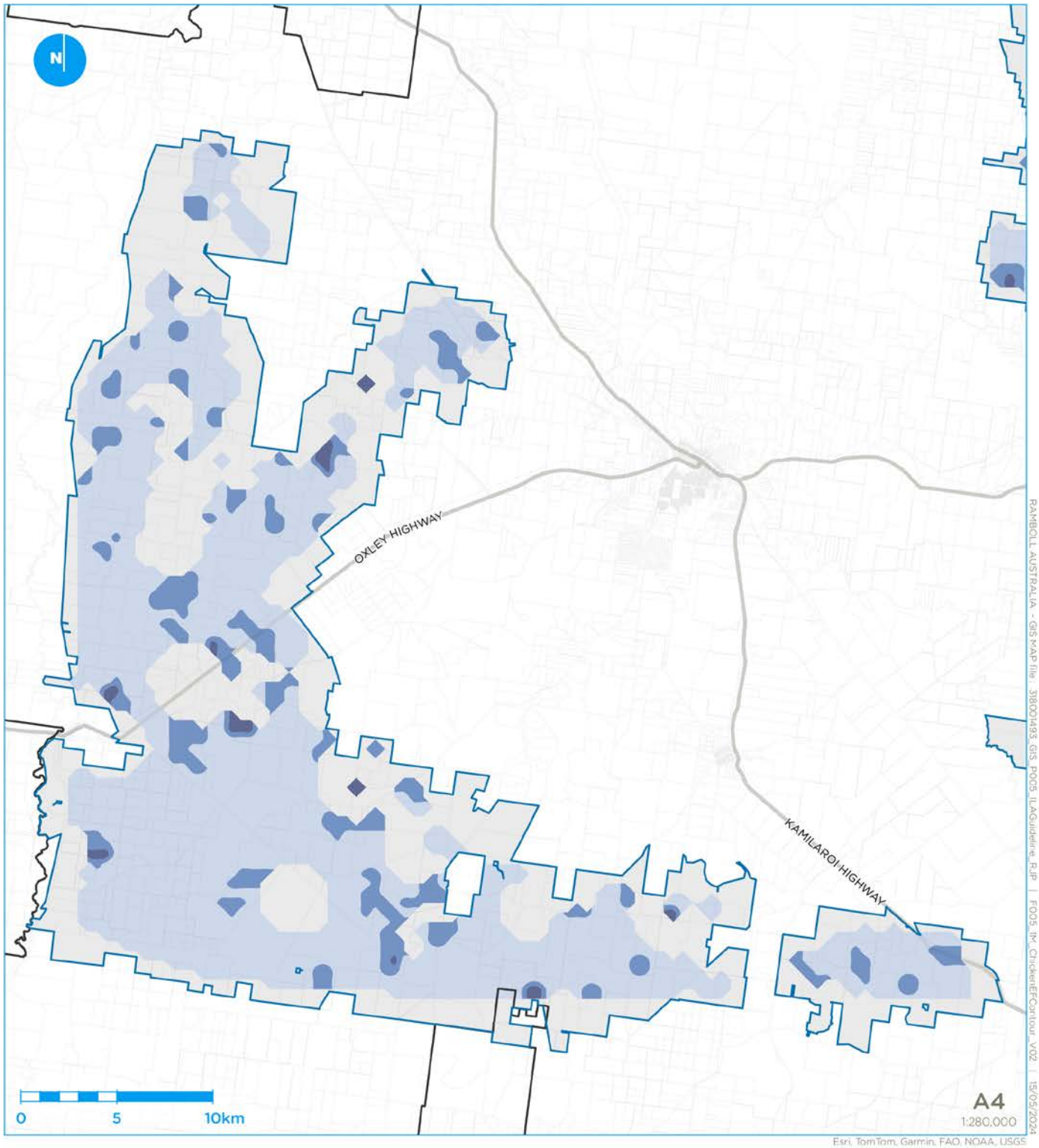
Chicken egg farm contour map – 1,000,000 bird capacity: Investigation Area 2



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

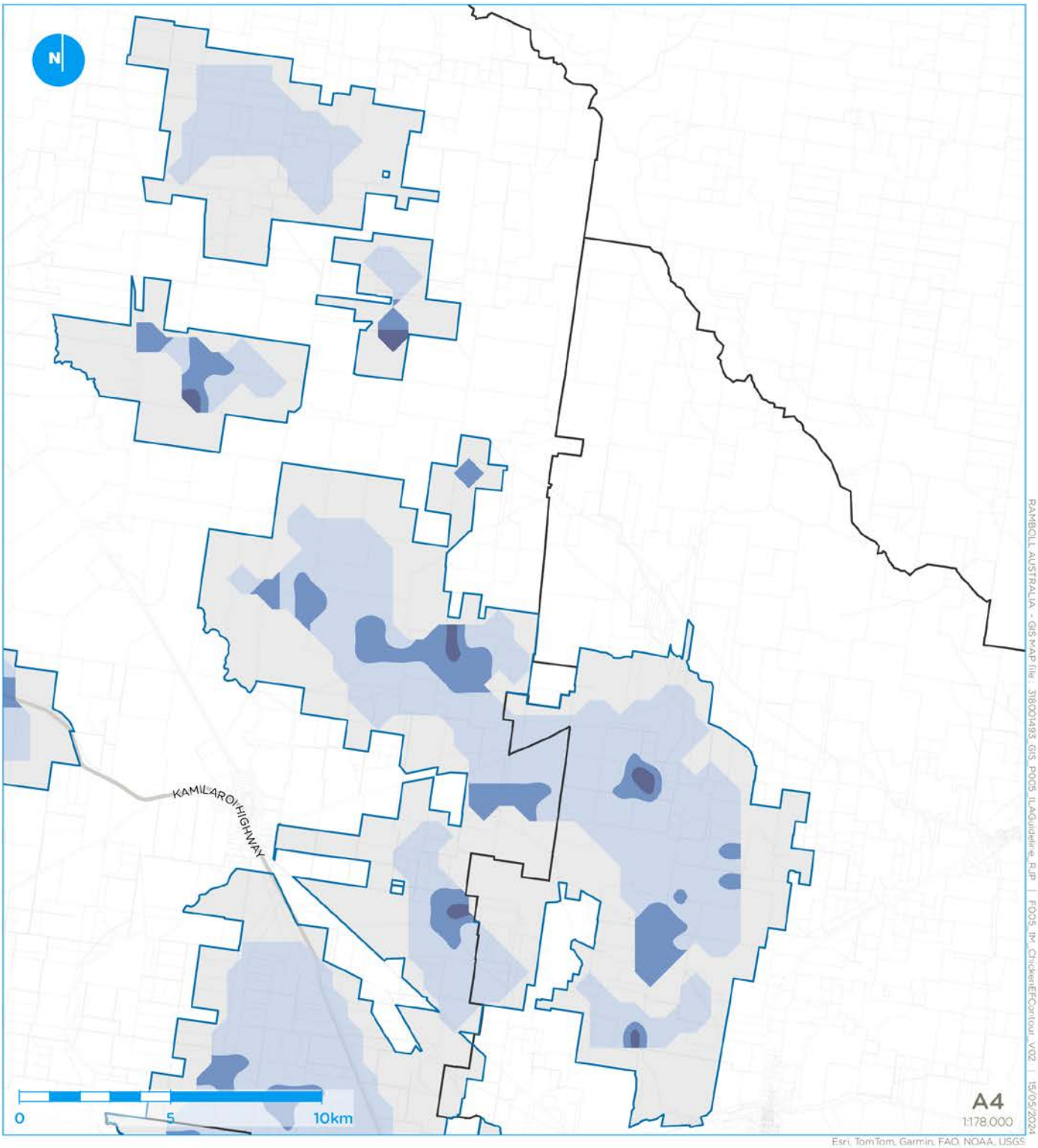
Chicken egg farm contour map – 1,000,000 bird capacity: Investigation Area 3



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken egg farm contour map – 1,000,000 bird capacity: Investigation Area 4



Legend

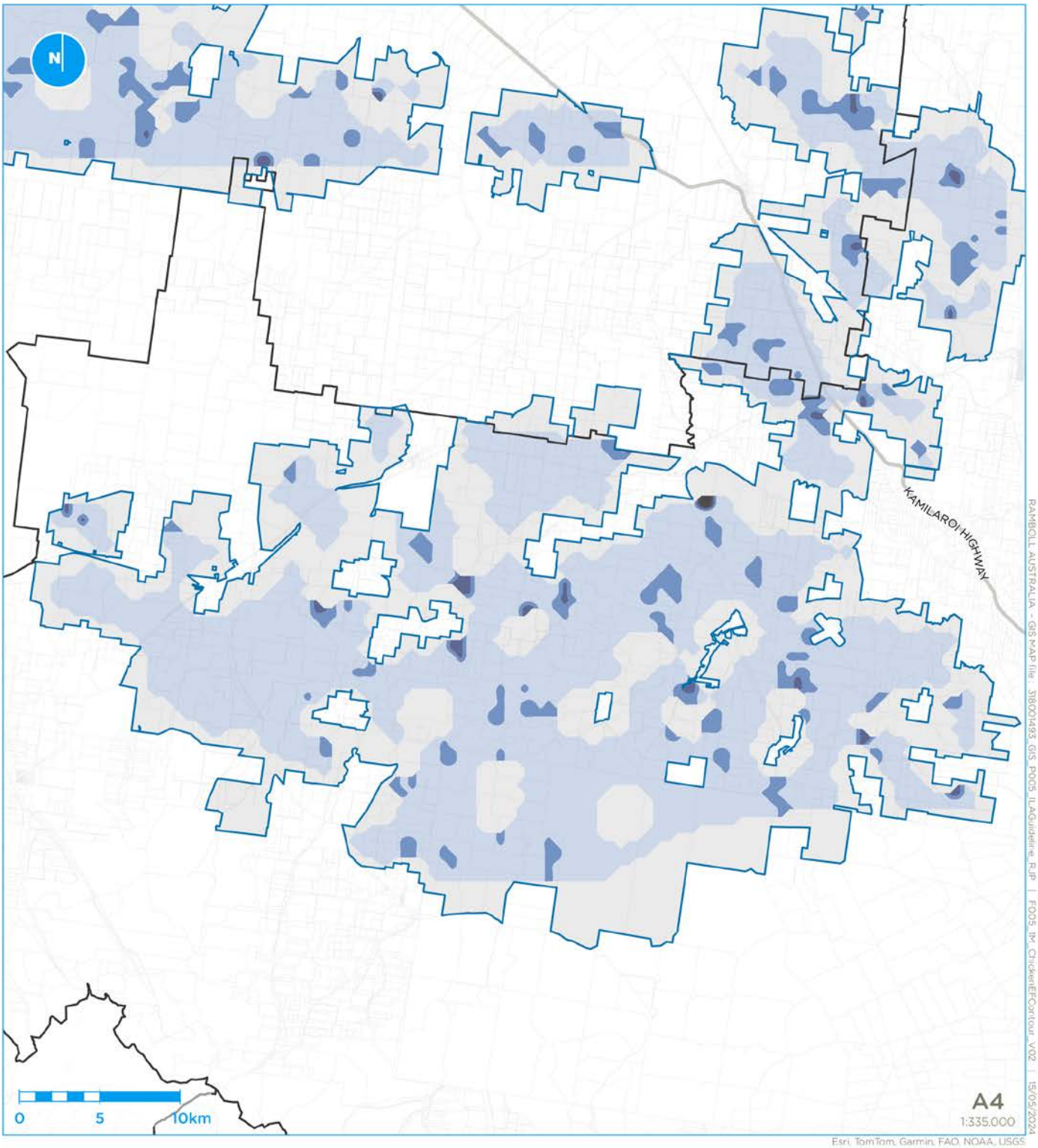
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

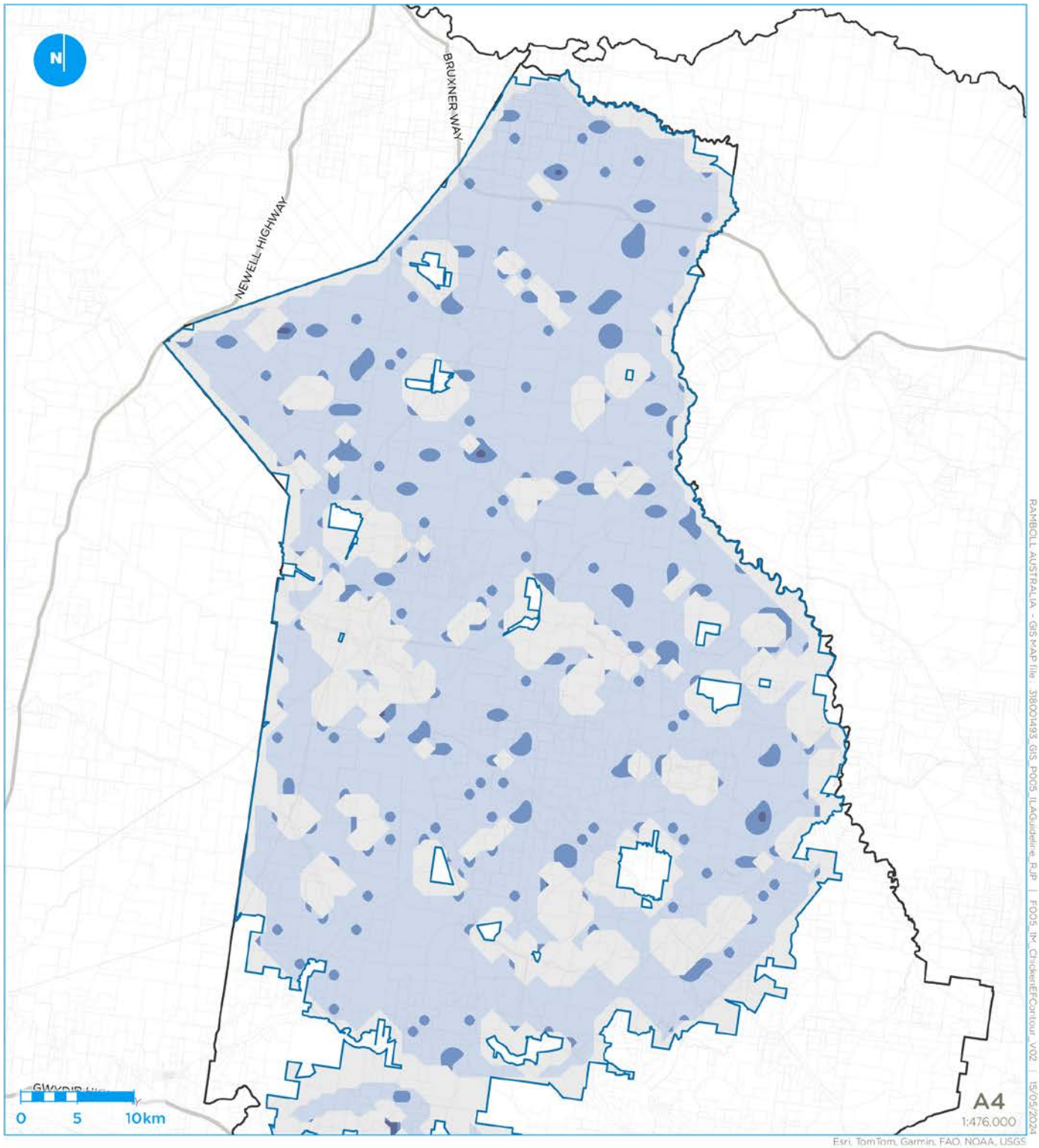
Chicken egg farm contour map – 1,000,000 bird capacity: Investigation Area 5



Legend

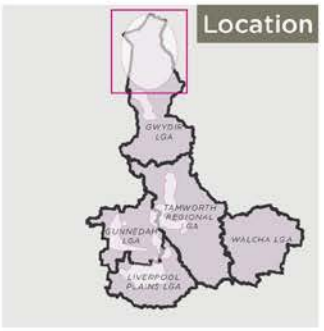
- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken egg farm contour map – 1,000,000 bird capacity: Investigation Area 6

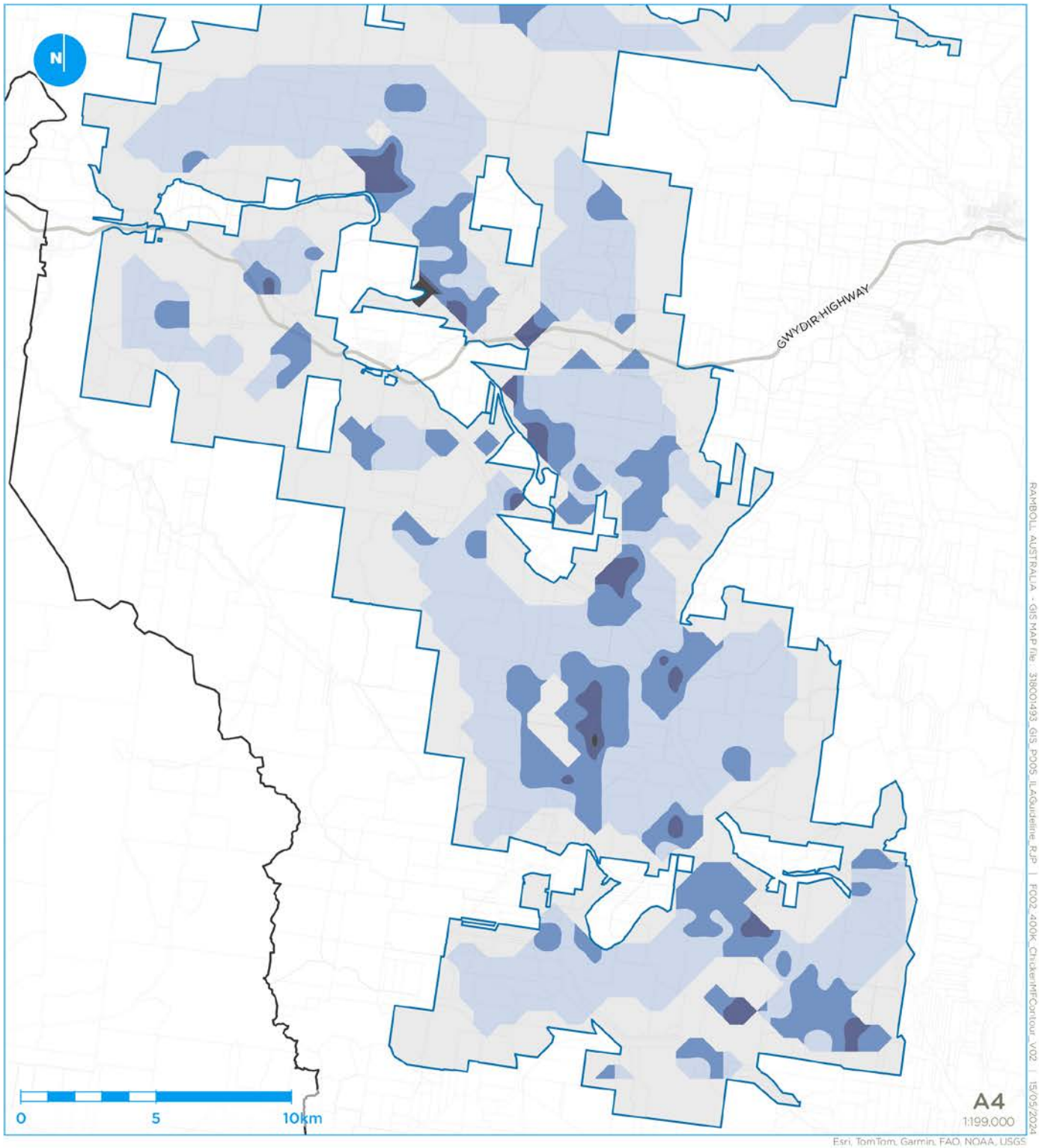


Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)



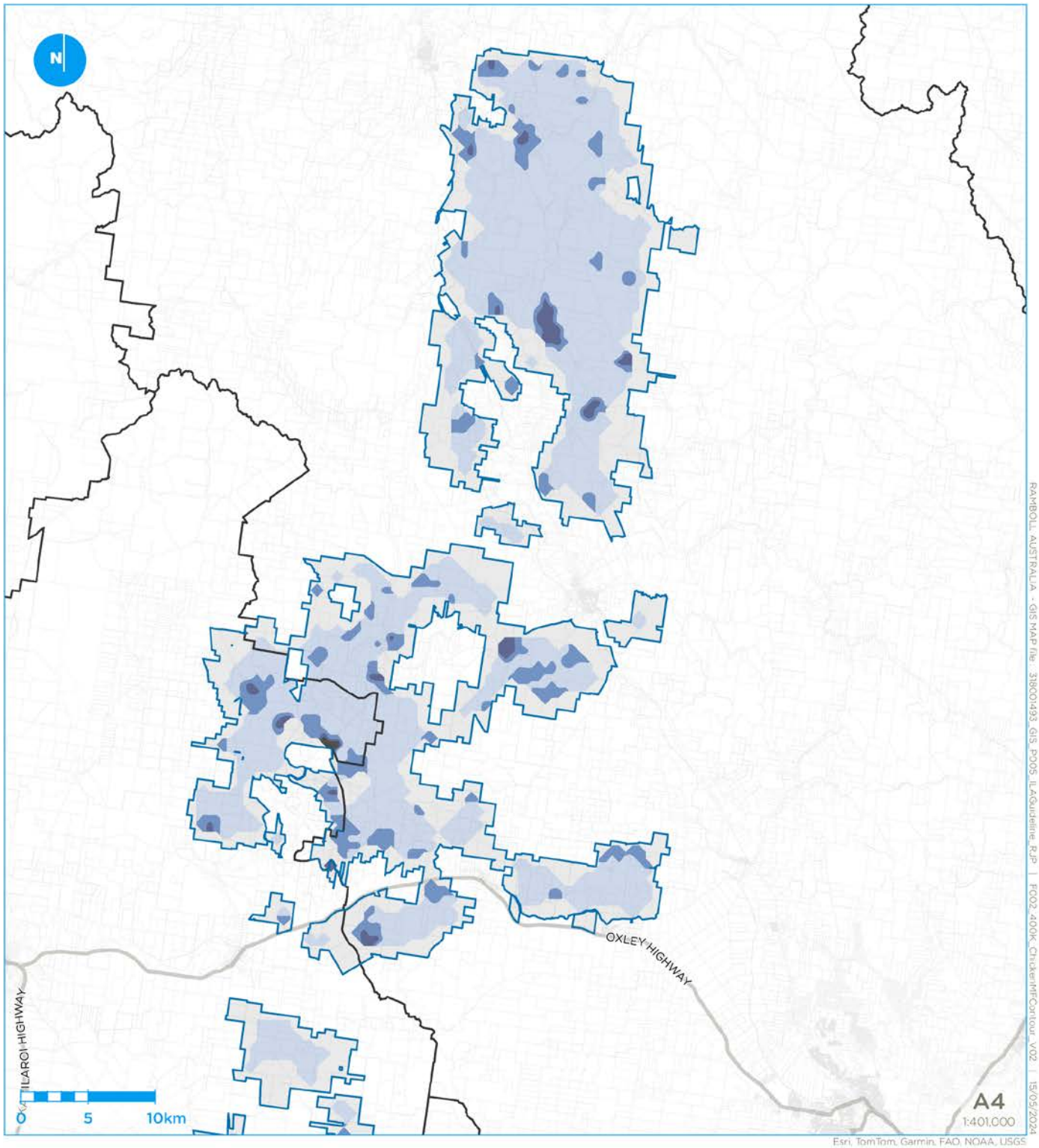
Chicken meat farm contour map – 400,000 bird capacity: Investigation Area 1



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

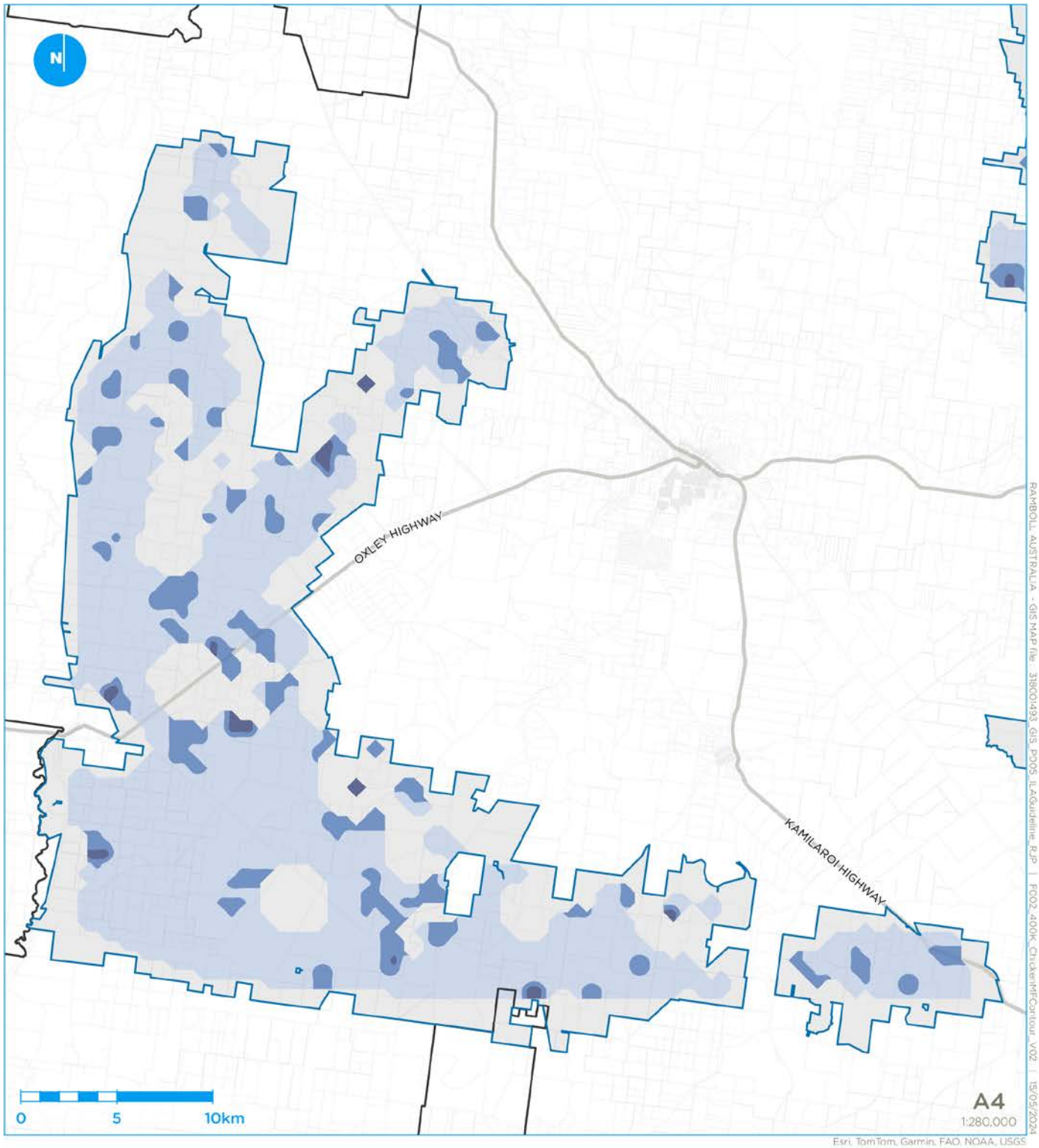
Chicken meat farm contour map – 400,000 bird capacity: Investigation Area 2



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 400,000 bird capacity: Investigation Area 3



Legend

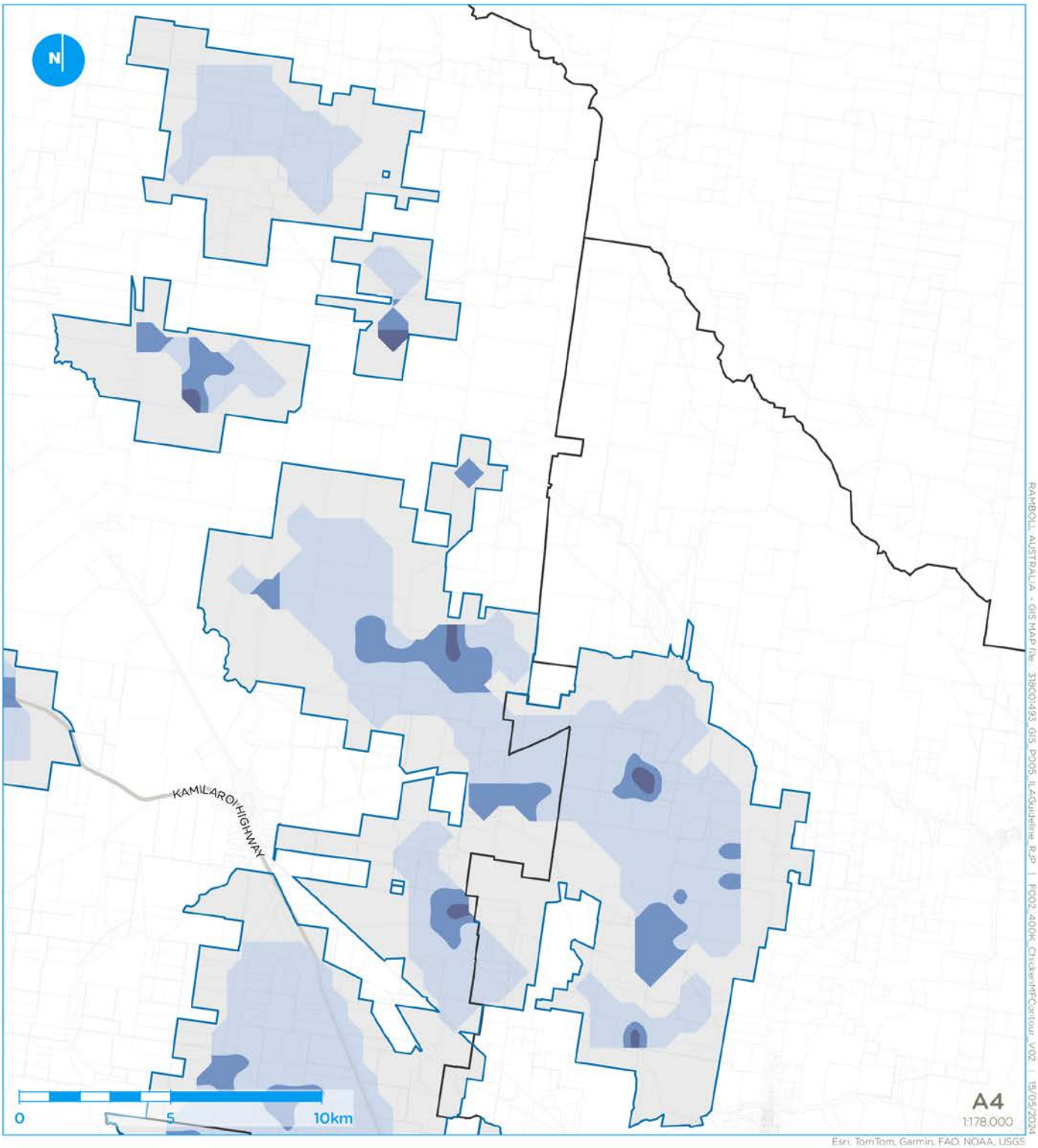
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 400,000 bird capacity: Investigation Area 4



Legend

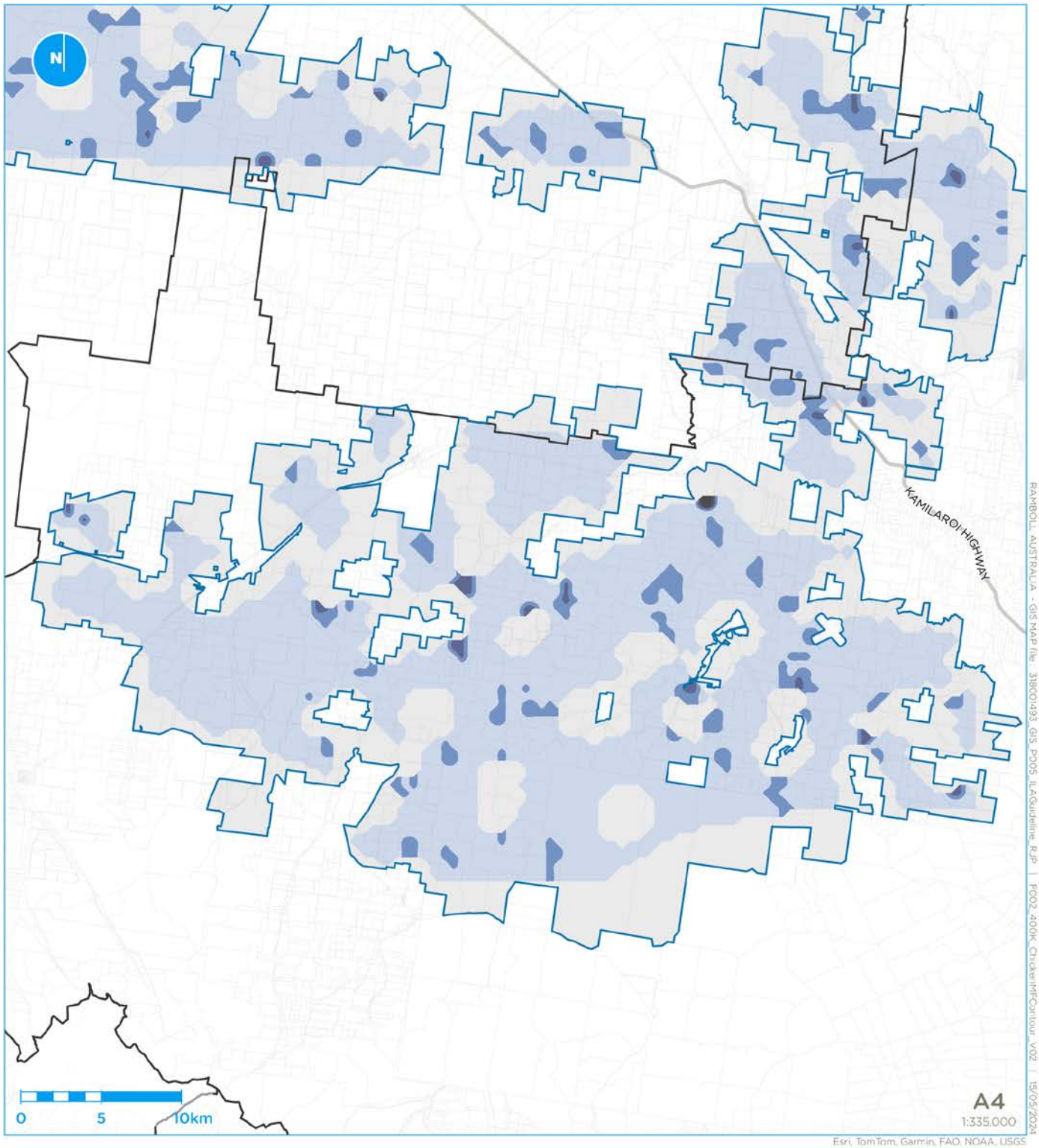
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

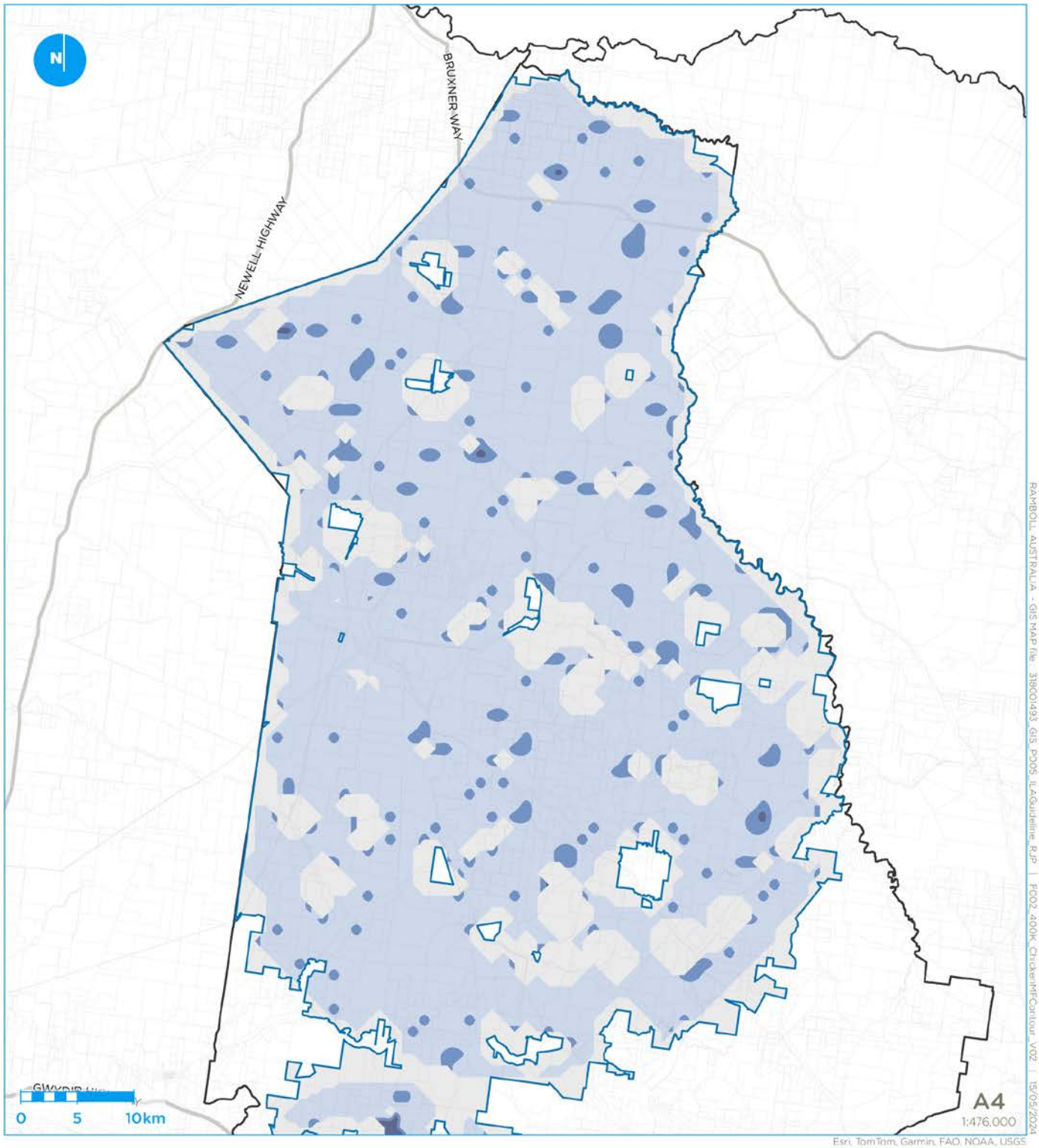
Chicken meat farm contour map – 400,000 bird capacity: Investigation Area 5



Legend

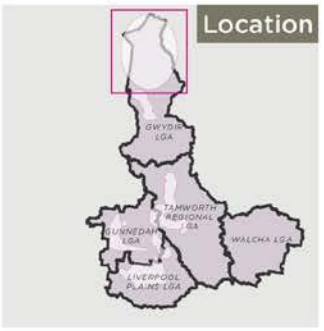
- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 400,000 bird capacity: Investigation Area 6

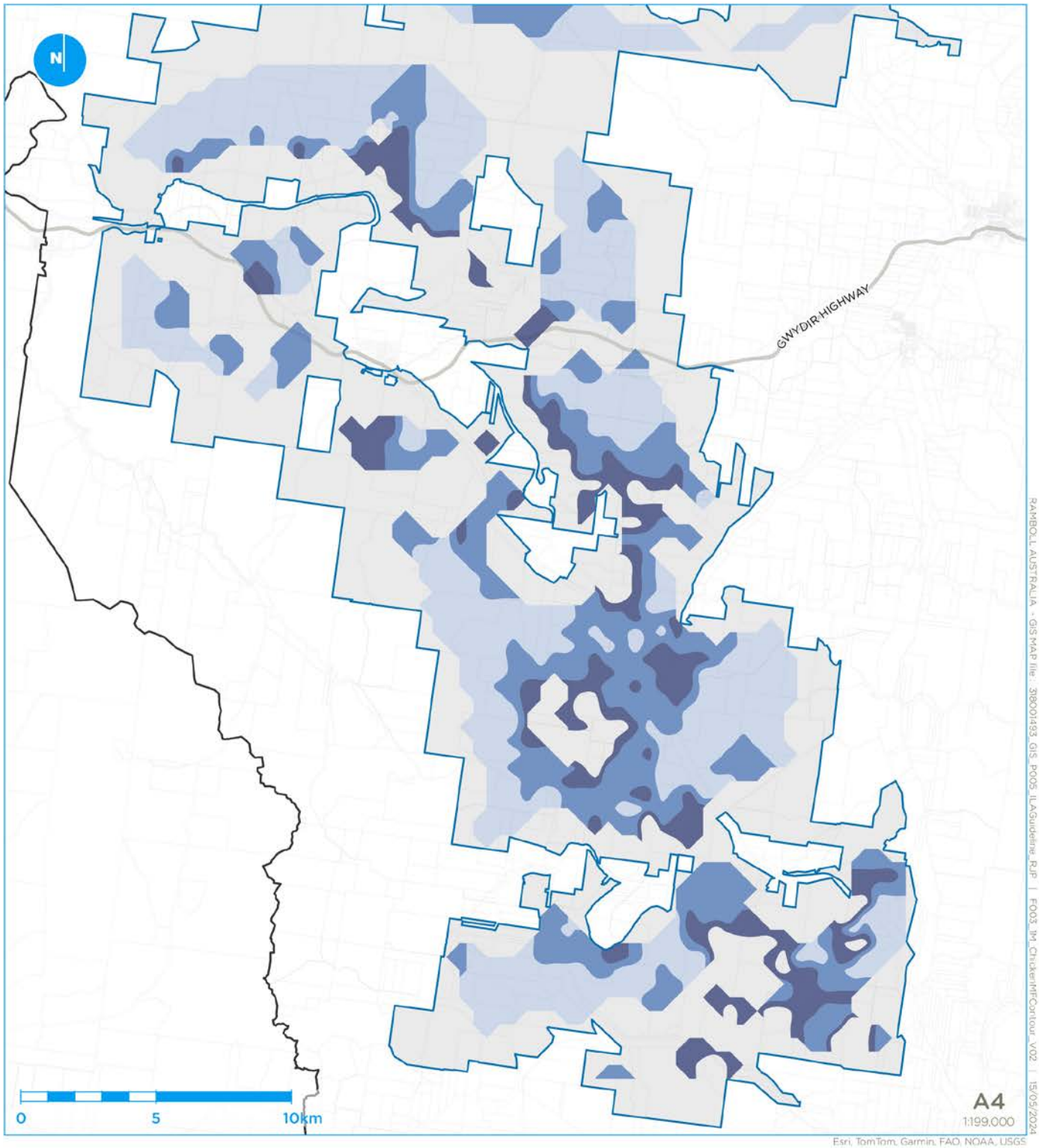


Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)



Chicken meat farm contour map – 1,000,000 bird capacity: Investigation Area 1



Legend

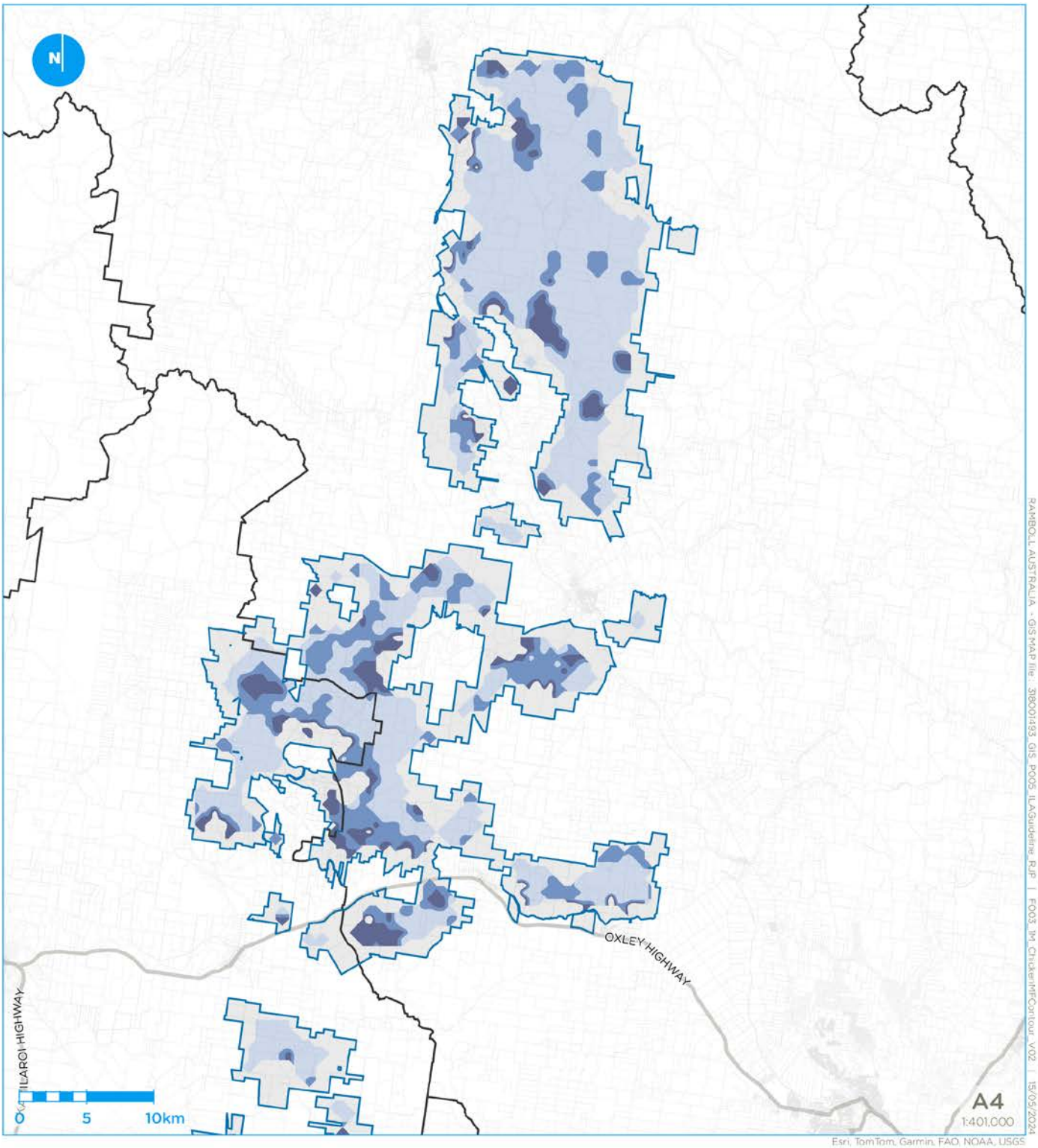
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

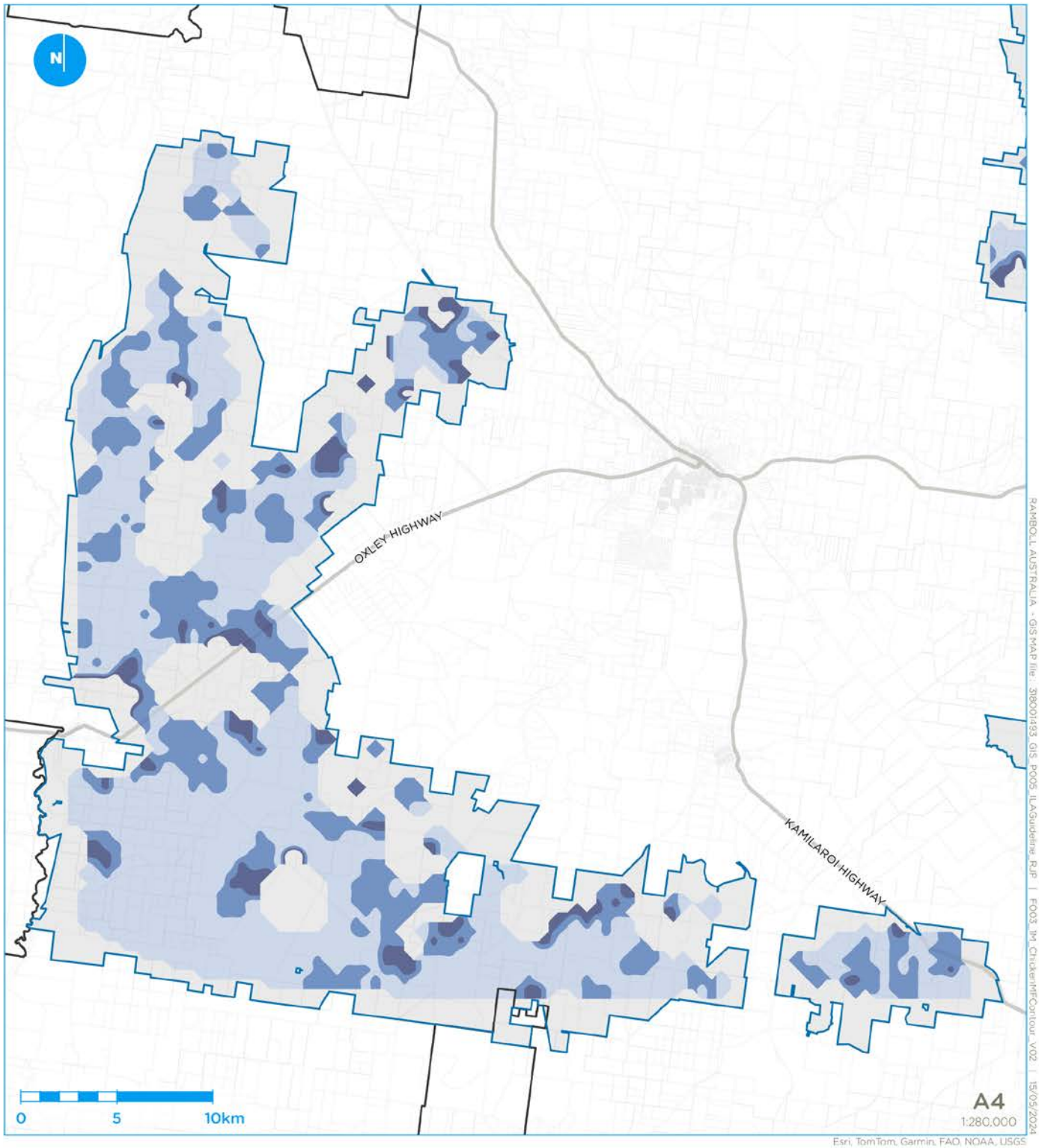
Chicken meat farm contour map – 1,000,000 bird capacity: Investigation Area 2



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

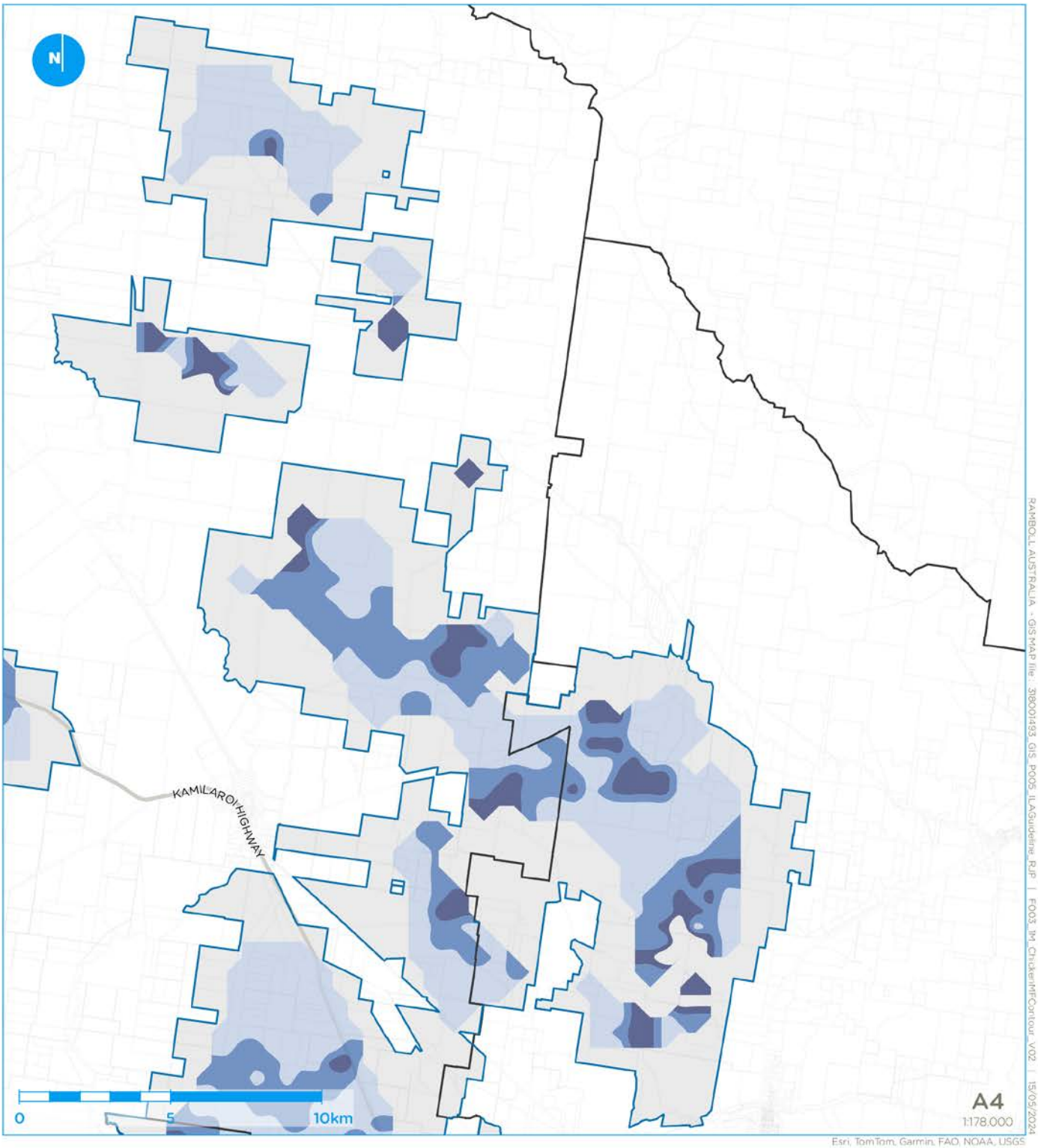
Chicken meat farm contour map – 1,000,000 bird capacity: Investigation Area 3



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

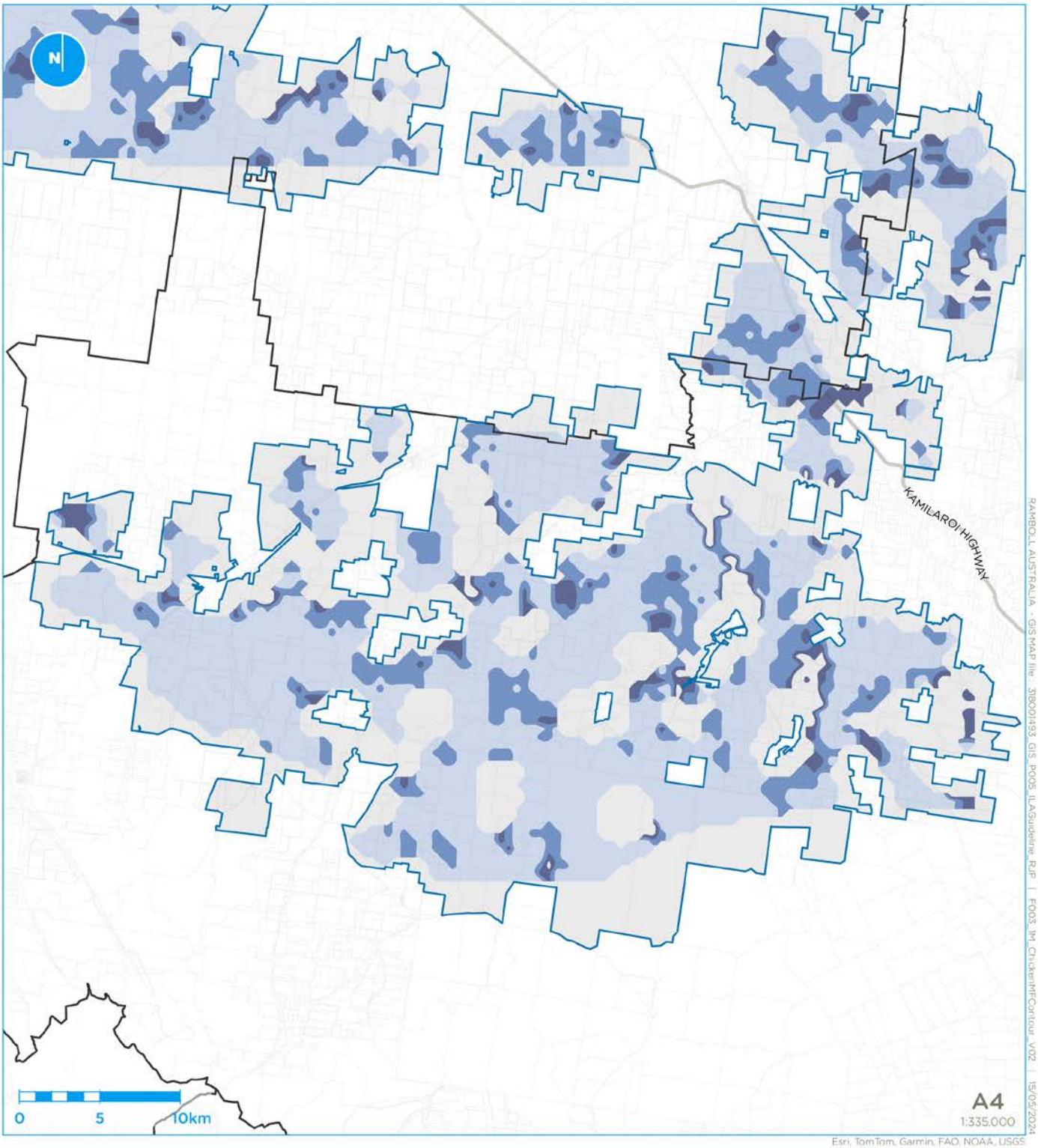
Chicken meat farm contour map – 1,000,000 bird capacity: Investigation Area 4



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

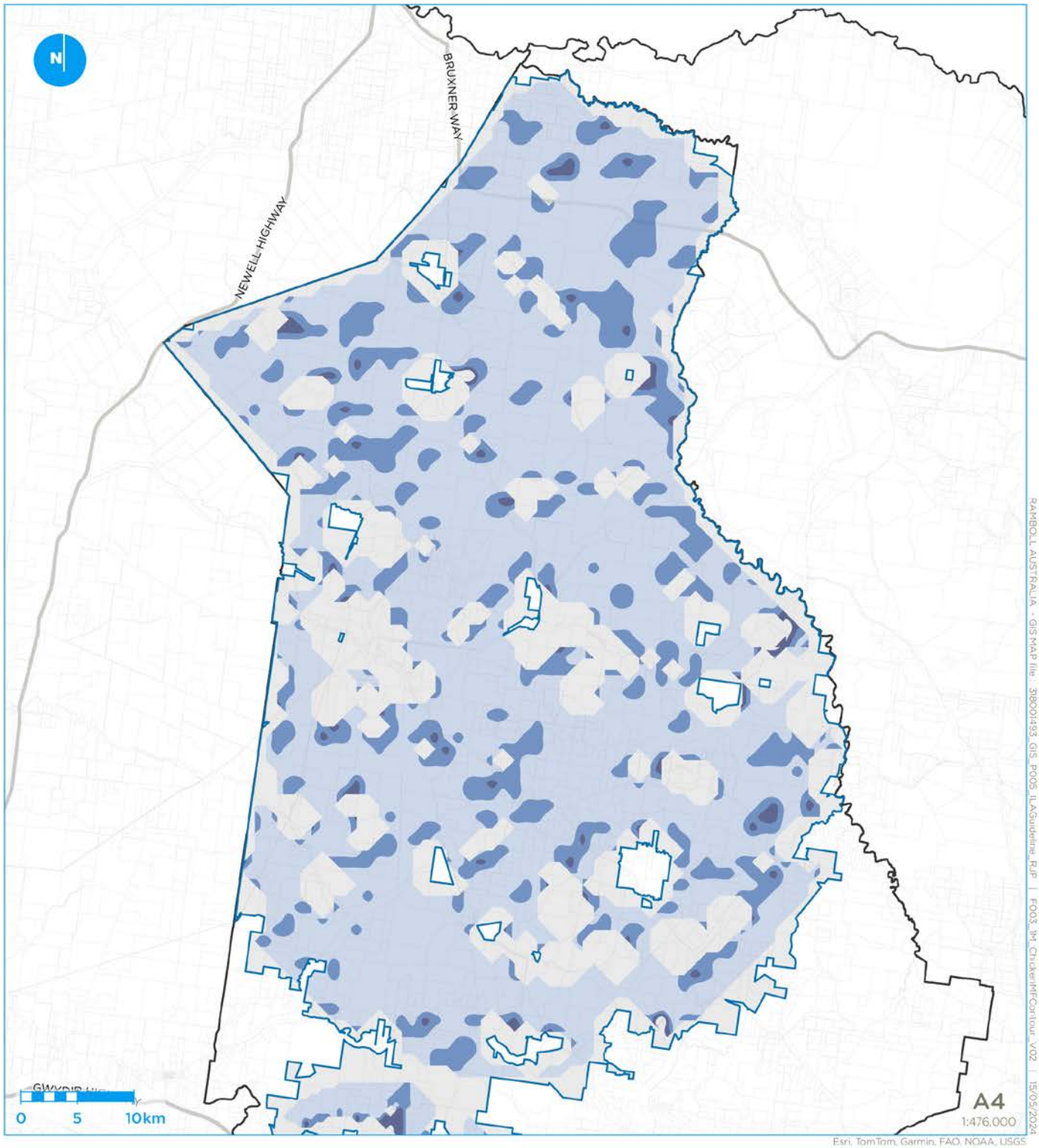
Chicken meat farm contour map – 1,000,000 bird capacity: Investigation Area 5



Legend

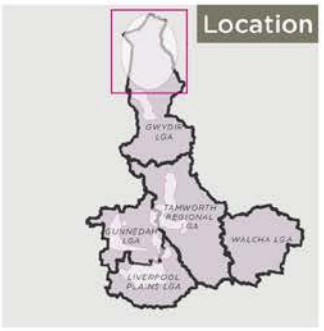
- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 1,000,000 bird capacity: Investigation Area 6

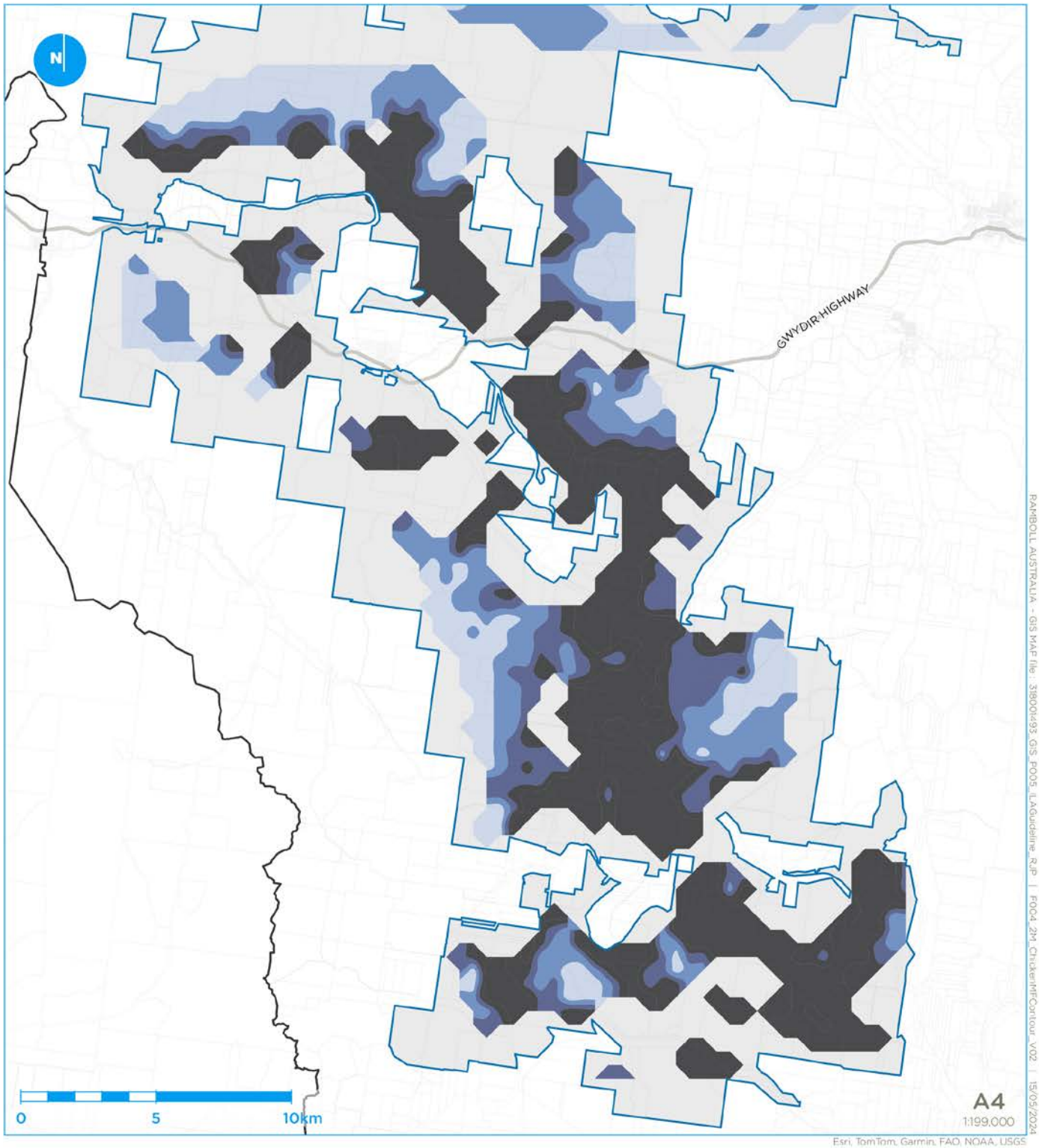


Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)



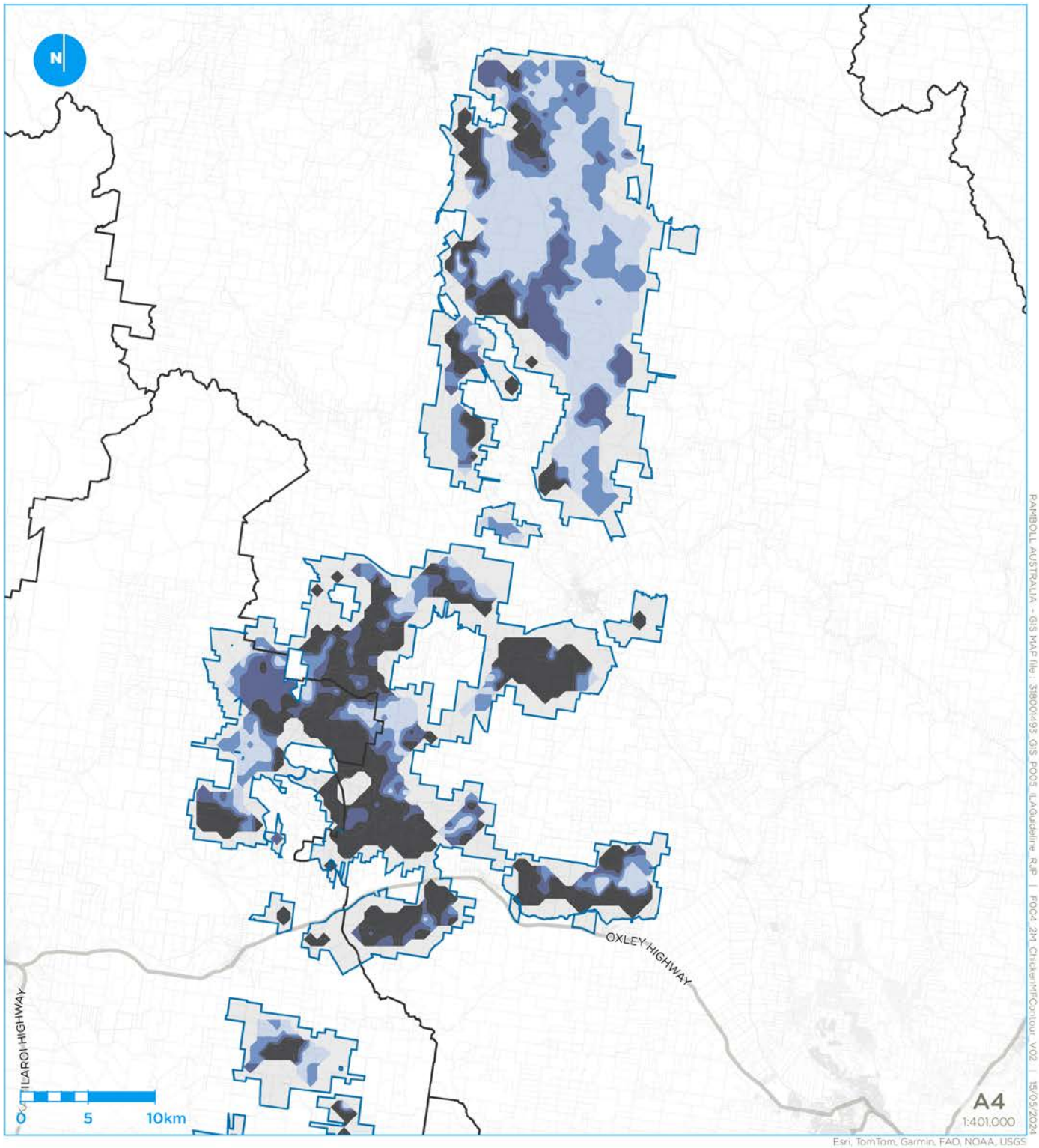
Chicken meat farm contour map – 2,000,000 bird capacity: Investigation Area 1



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

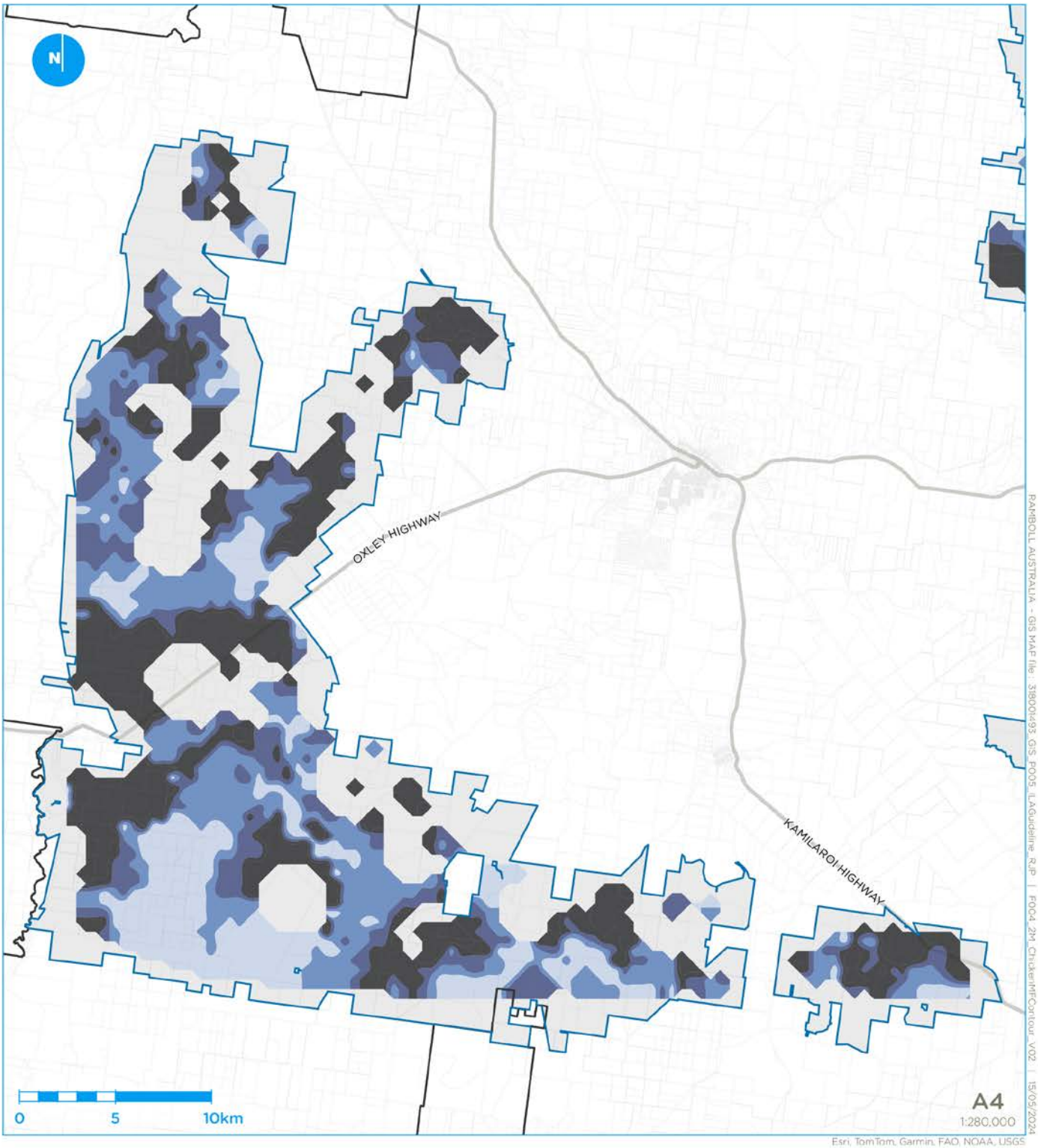
Chicken meat farm contour map – 2,000,000 bird capacity: Investigation Area 2



Legend

- Identified production area
- Area excluded from modelling
- Odour land suitability contour
  - Not encumbered by dwellings
  - Encumbered by 1 dwelling
  - Encumbered by 2 dwellings
  - Encumbered by 3 dwellings or more
- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 2,000,000 bird capacity: Investigation Area 3



Legend

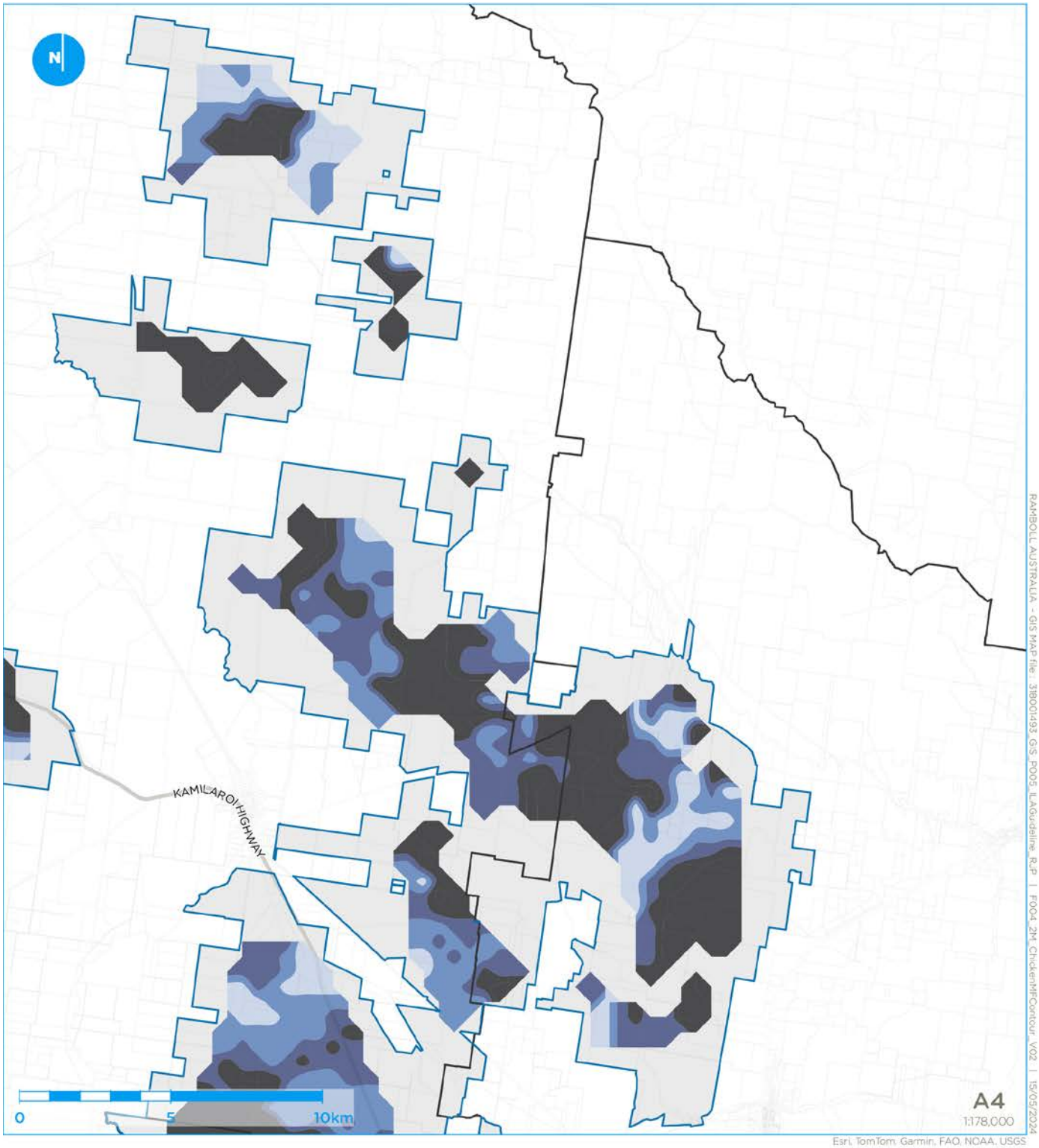
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings
- Encumbered by 3 dwellings or more

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 2,000,000 bird capacity: Investigation Area 4



RAMBOLL AUSTRALIA – GIS MAP file: 318001493_GIS_P005_LAGuideline_R_P | F004_2M_ChickenMFContour_V02 | 15/05/2024

Legend

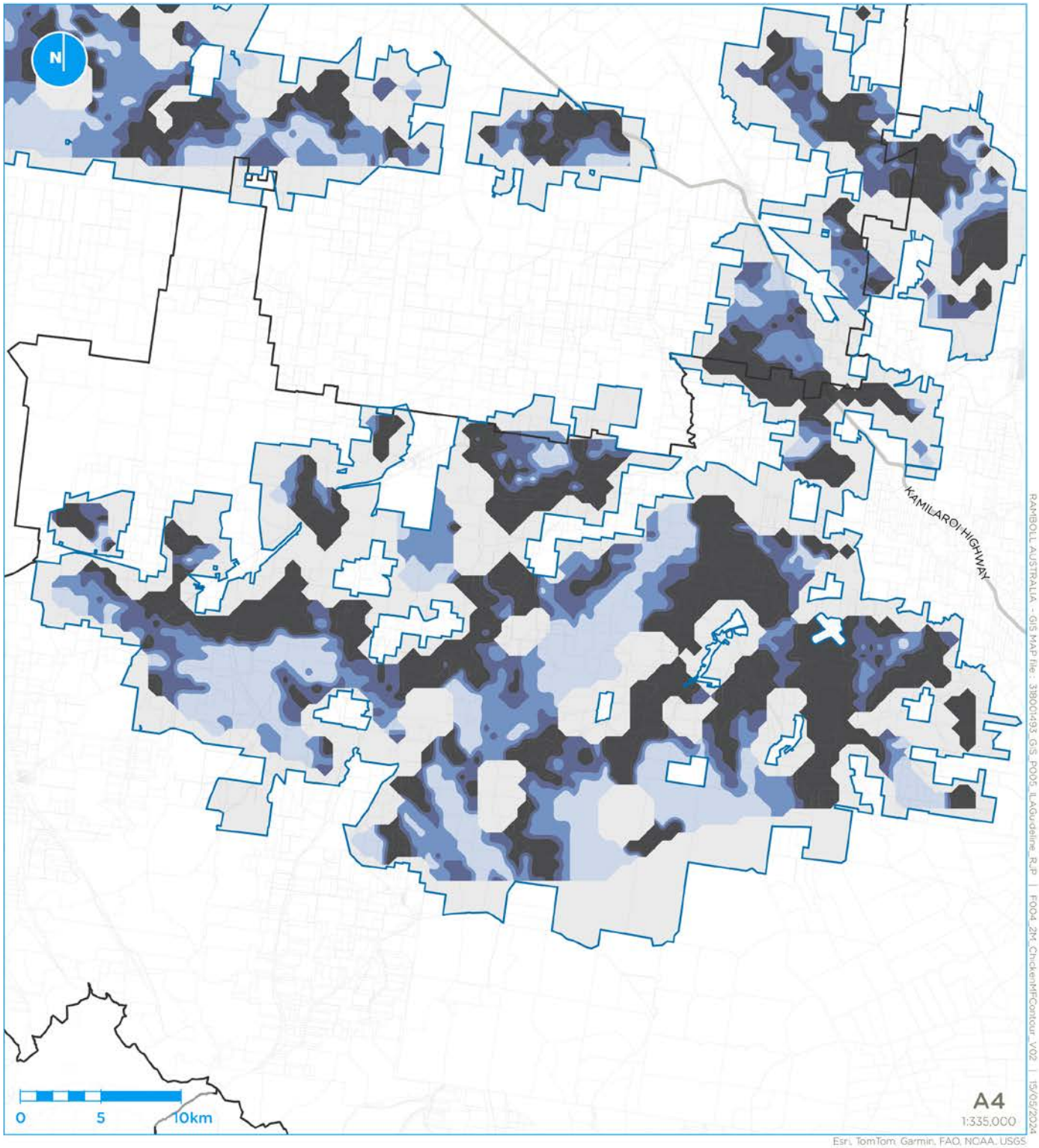
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings
- Encumbered by 3 dwellings or more

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 2,000,000 bird capacity: Investigation Area 5



Legend

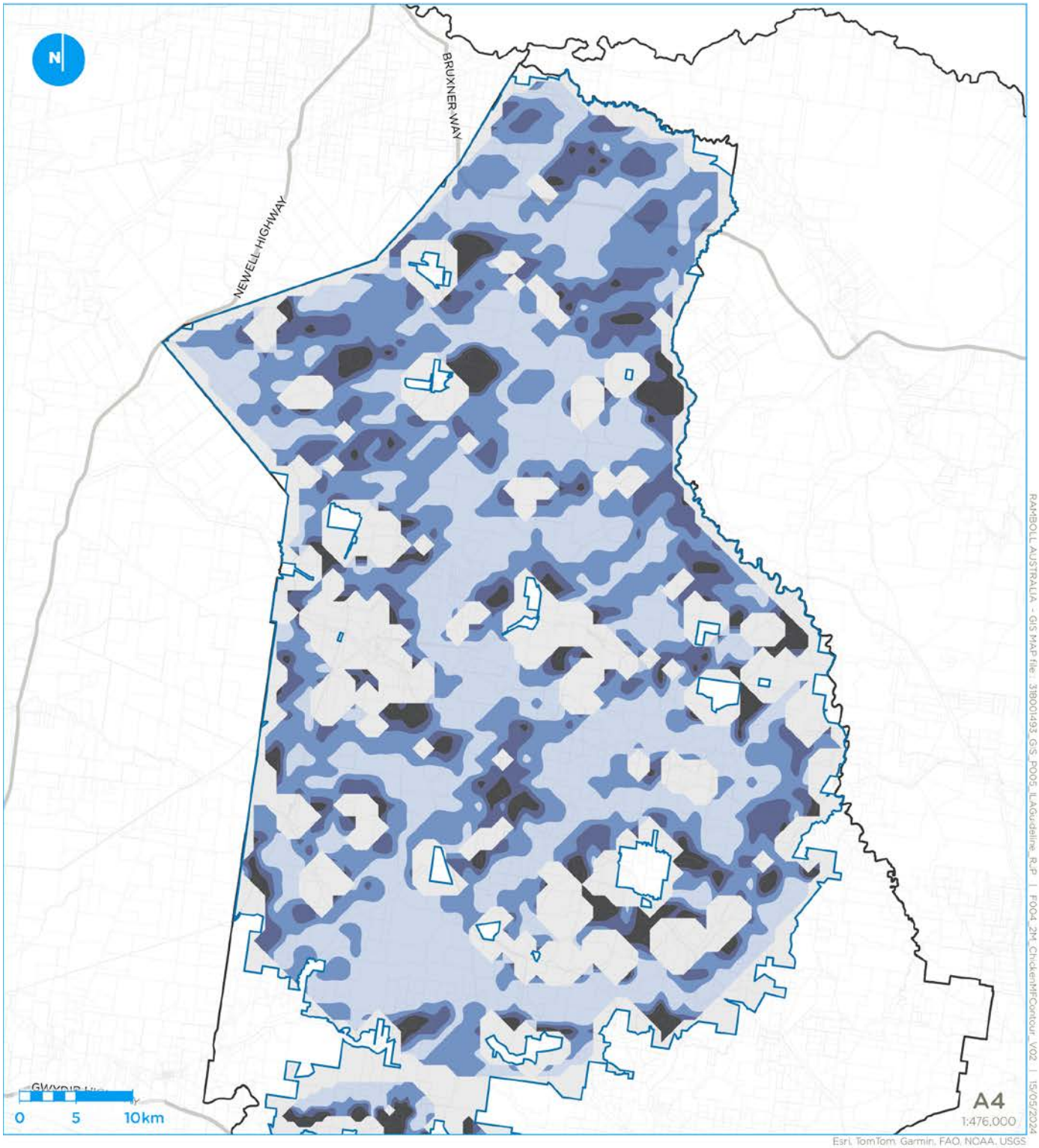
- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings
- Encumbered by 3 dwellings or more

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Chicken meat farm contour map – 2,000,000 bird capacity: Investigation Area 6



Legend

- Identified production area
- Area excluded from modelling

Odour land suitability contour

- Not encumbered by dwellings
- Encumbered by 1 dwelling
- Encumbered by 2 dwellings
- Encumbered by 3 dwellings or more

- Lot boundary (NSW Spatial Service, 2023)
- LGA boundary (NSW Spatial Service, 2023)

Gunnedah landscape

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