24R References - Water Management

24R.1 Design of On-site Detention Systems (OSD)

24R.2 Design of Property and Interallotment Drainage Systems

24R.3 Flood Study Requirements

24R.4 Terms of Positive Covenants and Restrictions on use

24R.5 OSD Exemption Map

READ WITH

SECTION C
PART 24 - Water Management
24C.4: Mandatory Rainwater Tank Requirements

24R.1 DESIGN OF ON-SITE DETENTION SYSTEMS (OSD)

Controls

Depending on the site, stormwater may be detained above and/or below ground. Where it is above ground, it may be held in an open grassed or landscaped area or in a driveway designed for such a purpose. It is possible to use a combination of different locations. The following controls apply to on-site detention tanks:

General Controls for On-site Detention Systems (OSD)

1 On-site detention (OSD) is not to be established across allotment boundaries unless intended to be covered by reciprocal drainage easements.

2 The design of the facility is to be compatible with the proposed overall site layout and landscaping and is not to be unsightly.

3 On-site detention storages are to generally be located as close as possible to the lowest point of the site.

4 The site drainage system is not to surcharge before the on-site detention area is full to the design top-water level.

5 On-site detention storages are not to be located in drainage easements and/or overland flow paths that convey catchment flows through the site.

6 The on-site detention system is to drain freely to the public drainage system for storm events up to and including the 1% AEP.

If this is not possible, compensation is to be made by increasing the storage volume provided (calculations to be submitted for approval).

The rate of discharge from the OSD system is to be calculated based on the impervious area remaining after the deep soil area is deducted from the total site area.

7 Where the development is on land that is to be strata titled or community titled, OSD is to be located in common areas (and not in private courtyards).

8 Locations of on-site detention systems are to be included on any new final plans of subdivision.

9 Cut and/or fill within the canopy areas of any trees to be retained is not permitted.

10 The excavation influence line is not to affect footings of adjacent or neighbouring structures.

11 The location of the OSD is not to restrict pedestrian access between a public road and any site building and is not to cause hazard or inconvenience in any manner.

12 A spillway or overflow outlet is to be provided in all OSD systems as part of the operation of the system. The overflow is to be designed to cater for total system failure (blockage) in extreme storm events and designed to safely convey all overflows up to the 1% AEP

24R.1 DESIGN OF ON-SITE DETENTION SYSTEMS (OSD) (continued)

Controls

uncontrolled flow to an adequate downstream drainage system without adverse impact on neighbouring properties.

Note: Where large overflow structures are required, Council may determine that approval for the structure is required from the Dam Safety Committee.

13 The overflow from the system is to be collected within a suitably located and sized drainage pipeline with a design capacity equivalent to the 1% AEP storm runoff from the site.

14 Overflow is not to be directed to another private property unless along an overland flowpath along an easement.

15 The spillway is to be protected by the fixing of suitable armour over the overflow facility.

16 The overflow level is not to be less than:

i) 0.3m below the floor level of all habitable areas adjacent to the OSD and

ii) 0.15m below the floor level of all garage areas adjacent to the OSD.

17 The top level of kerbs and other retaining structures is to be a minimum of 50mm above the level of flow over the spillway.

18 The location of all on-site stormwater detention systems is to be marked on site by the fixing of a marker plate of minimum size of 0.15m x 0.1m to the grate of the discharge control pit or nearest concrete or permanent surface in a prominent position. The plate is to be of non-corrosive metal or 4mm thick laminated plastic and that contains the following wording:

This is an on-site stormwater detention system required by Ku-ring-gai Council. It is an offence to reduce the volume of the tank or basin or to interfere with the orifice plate that controls the outflow. The owner is to clean the base of the outlet control pit and the debris screen of debris and sediment on a regular basis. This plate is not to be removed.

19 A positive covenant and restriction on use is to be established for the detention system in accordance with 24R.4 of this Part.

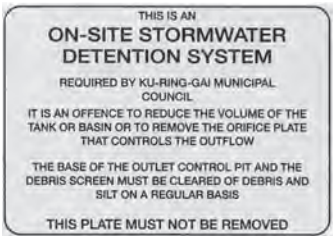


Figure 24R.1-1
Marker plate for on-site detention system

Discharge control pits (dcp)

20 The discharge control pit is to have dimensions of 0.6m x 0.6m for pits up to 0.6m deep, and 0.9m x 0.6m for pits exceeding 0.6m depth.

21 To protect against blockage, all outflow controls are to be totally and solely enclosed by a rustproof debris screen or wire cage in accordance with the following:

i) the screen material is to be hot dipped galvanised mesh (Lysaght's maximesh 3030 or equivalent product);

ii) the minimum surface area of the debris screen is to be 50 times

24R.1 DESIGN OF ON-SITE DETENTION SYSTEMS (OSD) (continued)

Controls

the area of the outlet pipe or orifice;

iii) the screen is to be a minimum of 0.1m from the face of the orifice and attached (generally on a sliding mechanism) to the wall;

iv) the screen is to be capable of removal by hand to permit cleaning and easy inspection of the outlet control; and

v) the inlet pipe to a DCP should direct inflows parallel to the screen. To assist in shedding debris, the screen should be positioned as close as possible to the vertical, but not less than 45 degrees to the horizontal.

22 A sediment collection sump is to be provided below the orifice outlet to the stormwater detention system that:

i) has a minimum depth of 0.2m below the invert of the orifice;

ii) is connected to the outlet pipe by means of 3 x 40mm weepholes plugged with a geofabric filter cloth; and

iii) includes an additional filter medium between the weepholes and the connection to the outlet that consists of 15mm river gravel wrapped in geofabric over a minimum length of 0.6m, thence to subsoil drainage connected to the main outlet (where possible).

23 If site discharge is controlled through installation of a choke pipe, the adopted tailwater levels are to be as follows:

i) for systems draining directly to the street drainage system –
- for connections to the kerb, the top of the kerb level, or
- for connections to street drainage pits, 0.15m below the underside of the grate, or
- for connections to footway or easement pipes or pits, the surface level of the point of connection; or

ii) for systems draining directly to an open channel, the top of the channel.

iii) for systems draining directly to a watercourse, the top of the watercourse.

24 If site discharge is controlled by a sharp edged orifice, the following controls apply:

i) orifice plates are to have minimum dimensions of 0.2 x 0.2m with a minimum orifice diameter of 30mm and are to be 3mm thick flat stainless steel.

ii) the orifice plate is to be tooled to the exact dimension as calculated and is to be securely fastened in a central position over the outlet pipe using four galvanised (4) dynabolts and epoxy cement.

iii) orifice plates are to be flush with the wall such that flow does not pass between the plate and the wall and is to be located so that the centreline of the orifice is in line with the base of the on-site detention tank.

24R.1 DESIGN OF ON-SITE DETENTION SYSTEMS (OSD) (continued)

Controls

iv) the following formula is to be used to calculate the required diameter of the sharp edged orifice:

$D = 21.8 * (PSD / h^{0.5})^{0.5}$ where

D = orifice diameter (mm) PSD = flowrate (L/s)

h = pressure head at the middle of the orifice when the system is at its maximum storage capacity (m)

Note: The formula assumes that the water level immediately downstream of the orifice is not above its obvert.

v) where the calculated orifice diameter is less than 30mm, the detention system is to be redesigned to either reduce water depths in the storage facility or to increase the catchment draining to the basin.

vi) the outlet pipe to which the orifice discharge is connected is to have a capacity at least 1.5 times the permissible site discharge for at least the first 2m downstream from the orifice.

Above ground on-site detention systems

25 The facility is to be located where the least possible adjustment to existing ground levels would be required to achieve storage of the necessary volume.

26 The calculated storage volume is to be increased by 20% to allow for the growth of the vegetation and for minor variations to the ground level occasioned by the maintenance regime.

27 Ponding depth is not to exceed 1.2m at any point and is not to exceed 0.3m over a minimum width of 1m at the perimeter.

28 A childproof fence is to be established around the OSD area where ponding depth exceeds 0.3m and where any side of the OSD basin exceeds 15% gradient.

29 The proposed structure is to be certified by the designing engineer as impermeable and structurally adequate to retain the design volume of water.

30 Council will not approve post and sleeper walls and/or earth mounding as a retaining structure for on-site detention storages unless of double wall construction with at least 0.5m width of soil between.

31 A minimum of 0.15m freeboard to the top of the basin perimeter is to be provided above the level of the overflow spillway invert.

32 Where ponding on driveways/parking areas is considered the maximum ponding depth is to be 0.15m in parking areas and 0.2m in all other trafficked areas; and

33 Where ponding on driveways/parking areas is considered, all driveway gradients and gradient transitions are to meet the standards of *Australian Standard 2890.1 – 2004 "Off-street car parking"*.

24R.1 DESIGN OF ON-SITE DETENTION SYSTEMS (OSD) (continued)

Controls

Below ground OSD structures

34 A minimum of 0.3m soil cover is to be provided where the tank is located under landscaped areas.

35 The tank is to be structurally designed to withstand all service loads (normal earth, surcharge, traffic and hydrostatic) and to provide a service life of fifty (50) years.

36 Internal supporting walls are to be minimised to ease maintenance. Typically internal supports should only be considered for spans greater than 3m.

37 Excavation for the tank is to be checked for impact on the zone of influence on adjacent footings and structures.

38 An inspection / access grate measuring 0.6m x 0.9m is to be installed directly over the overflow outlet and is to be readily accessible from a point external to the site building(s).

39 Where the internal depth of the tank is less than 0.6m, surface grates are to be provided in each corner of the on-site detention tank and all inlet pipes are to be connected directly under the grate access to the control outlet of the on-site detention tank. This is to minimise any need to enter the tank for maintenance reasons and to allow for ventilation and remote flushing of the tank floor.

40 The base of the tank is to have a minimum 1% grade towards the discharge control pit to ensure proper drainage.

41 Fixed step irons are to be fitted into the tank where the internal tank depth exceeds 1.2m.

42 A child-proof locking system is to be employed for surface grates and lids.

43 In high water table areas, the tank is to be designed to avoid flotation.

44 All inlet pipes are to discharge at the tank floor level in order to minimise noise disturbance;

45 Rainwater tanks designed for aboveground use are not to be utilised for underground OSD purposes; and

46 A Ku-ring-gai Council marker plate is to be affixed to the detention tank/basin at the discharge control pit.

47 On-site detention tanks are to be constructed of concrete insitu, pre-cast or modular or other approved materials in accordance with AS/NZS 3500.3 and should consider landscape outcomes and planning controls. VERSITANK, AUSDRAIN, ATLANTIS modules or equivalent will not be permitted.

24R.2 DESIGN OF PROPERTY AND INTERALLOTMENT DRAINAGE SYSTEMS

Controls

Design of Property Drainage Systems

The property drainage system is the system of underground pipes, inlet and junction pits, roof gutters, downpipes, swales and associated plumbing within a property that captures and conveys stormwater to on-site management systems (ie, OSD, OSR and/or water quality treatment devices) and to the public drainage system outside the site. The following controls apply to these drainage systems:

1 Consideration is to be given to the management of all stormwater runoff from:

- i) roofs, paved areas, driveways, swimming pool surrounds and other impervious areas,
- ii) areas subject to changes to natural ground level and including excavated or filled areas,
- iii) areas where the natural or pre-development overland flow regime is disrupted to the potential detriment of an adjoining property,
- iv) areas where long term ponding of water may occur, and
- v) areas where existing runoff from up-slope properties is likely to create nuisance to the proposed development.

2 The piped property drainage is to capture and convey the 2% AEP storm runoff to the stormwater management/disposal system.

Note: At Council's discretion, higher standards may be adopted if the proposed development is sensitive to damage by stormwater or blockage of the drainage system.

3 All stormwater entering the site, including that which exceeds the capacity of the piped drainage system, is to be captured and conveyed overland within the development site, in a controlled manner not exceeding recognised hazard criteria, to the approved stormwater disposal system.

Note: Any proposed concentrated flow onto adjoining properties is only permissible where an easement has been obtained in accordance with the requirements of this DCP (Refer to 24B of this Part).

4 No part of the property drainage system is to consist of aerial drainage systems other than vertical downpipes and guttering.

5 Underground pipes/plumbing are to:

- i) have a minimum internal diameter of 0.1m,
- ii) not be located beneath buildings except where:
  - there is no practicable alternative and pipes cannot be routed around the building,
  - the number of pipes underneath the building is minimised,
  - piping underneath buildings is straight and has no junctions,
  - inspection openings are provided at all points of entry and exit under the building, and

24R.2 DESIGN OF PROPERTY AND INTERALLOTMENT DRAINAGE SYSTEMS (continued)

Controls

- the design engineer certifies that the system is in accordance with *AS3500.3 – Plumbing and Drainage and the National Construction Code*,
- be subject to a hydraulic grade line analysis by a consulting engineer for any development site exceeding 5,000m^2 in area,
- be sewer class piping or better,
- be designed so that no surcharge occurs onto other properties or pipe flows exceed 100l/s,
- have a minimum longitudinal grade of 1% where pipe diameters are up to and including 0.15m or, where larger, a minimum longitudinal grade of 0.5%,
- be compatible with proposed and possible future development in all respects, and
- have the minimum depth of cover from finished ground level to top of pipe as required in accordance with Table 7.1 from *AS3500.3 - Plumbing and Drainage Part 3.2: Stormwater drainage - Acceptable solutions.*

Note: Higher standards should be adopted if the proposed development is sensitive to damage by stormwater or blockage of the drainage system.

6 Discharge from subsoil drainage systems are to be to a pit located within the property and not directly to the street gutter. The discharge is to be disposed of in a manner that does not affect adjacent properties nor cause erosion or scour of downstream drainage systems.

7 In residential developments that consist of more than one (1) dwelling, the private courtyard of each dwelling is to contain at least one grated inlet pit.

8 Surface inlet pits are to:

i) be located to catch overland flows experienced during failure of the site drainage system,

ii) be provided at all pipe junctions, changes in pipe direction exceeding 45 degrees and at the road boundary (within the property) prior to connection to the public drainage system,

iii) be of sufficient size to accept the predicted flow and have dimensions in accordance with the table below:

Depth (mm)	Dimension (mm^2)
< 600	450 x 450
600 – 900	600 x 600
900 – 1200	600 x 900
>1200	900 x 900

24R.2 DESIGN OF PROPERTY AND INTERALLOTMENT DRAINAGE SYSTEMS (continued)

Controls

iv) have step irons inside, where pits are deeper than 1.2m,

v) is not to be of plastic unless not larger than 0.45 x 0.45m with, not deeper than 0.45m and of heavy duty plastic to manufacturer's specifications, and

vi) have grated pit covers that are removable, designed to appropriate loadings (such as traffic) and constructed of galvanised steel or cast iron.

9 Heavy duty, grated drains of minimum width 0.2m and minimum depth 0.2m are to be provided across driveways at the following locations:

i) outside the entrance to a garage where the driveway falls towards the garage, or

ii) at the front (street) boundary of the property, fully within the property, where the driveway falls towards the street.

10 The minimum diameter outlet pipe from any grated surface inlet pit or grated drain provided to capture surface runoff is to be 150mm in order to reduce the occurrence of outlet blockage.

11 All inlet and outlet pipes from a pit are to be finished flush with the internal wall of the pit. The outlet pipe is to be at the same level as the base of the pit to ensure there is no permanent ponding of water in the pit.

12 Any existing drainage system on a development site to be utilised is to be suitably modified in order to offset any adverse impacts that a proposed development may have on the efficiency of that system.

13 Stormwater pipes are to be located outside the drip-line or not less than six (6) metres from the trunk (whichever is greater) of any tree to be retained unless the method of pipe installation is certified by a qualified arborist as not affecting the longevity of the tree to be retained.

Note: For small diameter pipes with minimum cover, careful hand excavation of the installation trench with retention across the trench of all roots greater than 25mm diameter, may be an acceptable method.

Note: For larger diameter pipes, or for small pipes at excessive depth, installation of pipes by remote thrust boring technique may be an acceptable method. In this case a pipe cover of at least one (1) metre should be provided.

14 Drainage works, materials and specifications are be designed and constructed in accordance with:

i) Institution of Engineers Australia *Australian Rainfall and Runoff*

ii) Australian Standard AS 3500.3 *Plumbing and Drainage*; and

iii) relevant occupational health and safety requirements.

24R.2 DESIGN OF PROPERTY AND INTERALLOTMENT DRAINAGE SYSTEMS (continued)

Controls

Mechanical pump-out systems for basement carparks

Mechanical pump-out drainage is only permissible where gravity drainage cannot be achieved from basement carpark area to the on-site stormwater management system. The following controls apply to mechanical pump-out systems:

15 The developer is to demonstrate that gravity drainage from the basement carpark is not possible.

Note: Where gravity drainage is possible from some parts of a basement carpark, only those sections where gravity drainage is not possible are be drained using a mechanical pump-out system.

16 The catchment area being pumped out is to consist of not more than the basement carpark itself and the driveway ramp to the basement carpark.

17 The catchment area being drained is to be 100m^2 or less.

18 The system is to be designed by a competent qualified civil engineer.

19 The system is to be dual alternating with level switches and activation of dual operation at top water level.

20 Each pump is to cater to a minimum of 110% of the design flow.

21 A description of the pump(s) is to be provide listing the manufacturer, model number and published duty curves.

22 An automatic alarm is to be installed so that it sounds during pump failure.

23 The water pumped from the basement carpark is to be directed to the OSD system designed in accordance with the requirements of 24B of this Part.

24 The pump wet well is to have a storage capacity of at least the two hour 1% AEP storm runoff and is to be checked for adequacy up to the 1% AEP event by a time-area computer model or the mass-curve technique in *Australian Rainfall and Runoff*.

25 The noise level from the pump is not to, at any time, exceed the ambient sound pressure levels by 5dB(A) at the boundary of the site and is not to be audible within any habitable room of an adjoining premises.

26 Proposed maintenance is to be described in the submission to Council.

Note: Council may impose a requirement to create a Positive Covenant on the title of the property requiring regular maintenance and reporting to Council of the pump-out system by a plumber or engineer.

24R.2 DESIGN OF PROPERTY AND INTERALLOTMENT DRAINAGE SYSTEMS (continued)

Controls

Design Controls for Interallotment Drainage Easements

This section describes the requirements for the design and construction of interallotment drainage systems. In the majority of cases, the developer will be required to construct a pipe in the easement once it is created. In limited circumstances, Council may agree that such a pipe is not necessary – it is important to consult with Council on this matter prior to submission of the development application. Agreement of the owner of the downstream property in this respect will also be required. The following controls apply for the design and location of all easements:

27 The easement is to be designed with sufficient regard to:

i) proposed pipe diameter within the easement and contributing catchments;

ii) significant trees that may be impacted upon by the placement of drainage lines;

iii) the structural requirements of pipes and their laying/upkeep;

iv) any adjoining structures; and

v) the stormwater overland flowpath capacity requirements.

28 All overflow from rainfall events on a site is to be directed to the interallotment drainage line with the necessary inlet pits and cut-offs

29 The interallotment easement is to be designed in accordance with the following table unless otherwise approved by Council:

Nominal Pipe Diameter	Minimum Easement Width
150mm	1.0 metres
225mm	1.2 metres
300mm	1.3 metres
375mm	1.4 metres
450mm	1.5 metres
525mm	1.6 metres
600mm	1.6 metres
750mm	1.8 metres
>750mm	metre + nominal pipe diameter

Note: The presence of an on-site stormwater retention, detention or extended detention system at the development site will not be accepted as a justification for reducing the design flowrate through a downstream interallotment drainage system. The capacity of the system within the easement is to be sufficient in the event of a blockage failure or overflow of the detention system.

24R.2 DESIGN OF PROPERTY AND INTERALLOTMENT DRAINAGE SYSTEMS (continued)

Controls

30 The in-ground interallotment drainage system (pipe) is to be sufficient to carry:

i) the 5% annual exceedance probability uncontrolled stormwater runoff from existing and future hard surfaces on the site, and the additional future design inflows, as determined by the requirements of this section, from all other properties that may benefit from a connection to the system, that adjoin and are uphill from the same associated drainage easement and/or have the benefit of the same associated drainage easement.

Note: Upon application, Council may waive this requirement for Development Types 1-3.

Note: In rare circumstances, an overland flow path may be required to convey the 1% annual exceedance probability event.

31 The constructed interallotment drainage system (pipe or channel) is to be wholly contained within the drainage easement created on the title(s) of the affected property or properties.

32 Where the drainage line in the private interallotment drainage easements is to be piped, the minimum pipe diameter is not to be less than 0.15m and the minimum depth of cover from finished ground level to the top of the pipe is to be in accordance with Table 7.1 of *Australian Standard AS 3500.3.2*.

33 If constructed channels are proposed for interallotment drainage systems, then:

i) the channel is to be concrete, stone-pitch or brick lined to form a permanent profile, and

ii) a 50% channel blockage factor is to be adopted in the design.

34 Stormwater pipes are to be located outside the Tree Protection Zone of any tree to be retained unless the method of pipe installation is certified by a qualified arborist as not affecting the longevity of the tree to be retained.

Note: For small diameter pipes with minimum cover, careful hand excavation of the installation trench with retention across the trench of all roots greater than 25mm diameter, may be an acceptable method.

Note: For larger diameter pipes, or for small pipes at excessive depth, installation of pipes by remote thrust boring technique may be an acceptable method. In this case a pipe cover of at least one (1) metre should be provided.

35 An overland flowpath that directs water along the easement is to be established to cater for blockage of the in ground interallotment system as far as the discharge point.

36 Surface inlet pits are to:

24R.2 DESIGN OF PROPERTY AND INTERALLOTMENT DRAINAGE SYSTEMS (continued)

Controls

i) be located to catch overland flows experienced during failure of the site drainage system, into the interallotment drainage line,

ii) be provided at all pipe junctions, changes in pipe direction exceeding 45 degrees and at the road boundary (within the property) prior to connection to the public drainage system,

iii) be of sufficient size to accept the predicted flow and have minimum dimensions in accordance with the table below:

Depth (mm)	Dimension (mm^2)
< 600	450 x 450
600 – 900	600 x 600
900 – 1200	600 x 900
>1200	900 x 900

iv) have step irons inside, where pits are deeper than 1.2m,

v) have pit covers that are removable, designed to appropriate loadings and constructed of galvanised steel or cast iron.

37 Drainage works, materials and specifications are to be designed and constructed in accordance with:

i) Institution of Engineers Australia *Australian Rainfall and Runoff*,

ii) Australian Standard AS 3500 3.2 – Plumbing and Drainage, Part 3 Stormwater Drainage,

iii) the relevant occupational health and safety requirements, and

iv) any other relevant controls in this DCP.

38 Where it is found that an existing Council owned channel/pipe is present on site that is not within an easement, a suitable easement is to be created over the drain in favour of Council, at no cost to the Council, or else the easement moved accordingly at no cost to Council.

39 Where an easement benefits one or more private properties, that easement is not to also be created to the benefit of Council.

24R.3 FLOOD STUDY REQUIREMENTS

Controls

A flood study is undertaken to identify the reach and depth of overland flows associated with drainage systems on or near a site and to assess the impact of development on such flows and vice versa. Drainage systems include underground pipes, natural watercourses, open channels and depressions and seepage.

The flood study is to be undertaken by a suitably qualified and experienced stormwater or hydraulic engineer. It is to conform to the principles set out in *Australian Rainfall and Runoff* and the *NSW Floodplain Management Manual* and is to include the following information:

Calculations and supporting information

1 A plan of the contributing catchment area and rationale for area determination is to be submitted.

2 Rationale for time of concentration calculations are to be discussed.

3 A hydrologic model is required to assess the flow discharge arriving at the site in the 1% AEP event, based on the following:

   i) for catchment areas less than 1 Ha, a rational method assessment is allowed.

   ii) for catchment areas greater than 1 Ha, an appropriate runoff routing computer model is to be used (e.g DRAINS, ILSAX etc).

4 Sufficient survey is to be obtained to accurately define the flow limits and profiles, which may extend onto adjoining properties.

5 A hydraulic model is required to assess the impact of the flow discharges through the pre-developed and post-developed site.

   i) for flow rates of $2m^3/s$ with no backwater effects, the Mannings Equation may be used.

   ii) for flow rates greater than $2m^3/s$ and/or with backwater effects, HEC-RAS or another suitable model is to be used.

6 Where an enclosed drainage system exists in the catchment studied (and is to be included in the analysis), the overland flow rate is to be determined as occurring during the greater of:

   i) the 1:100 year event with the enclosed system operating at a maximum of 50% capacity (due to inlet controlled systems and blockage factors), or

   ii) the 1:5 year event with the enclosed system fully blocked.

24R.3 FLOOD STUDY REQUIREMENTS (continued)

Controls

Information to be included in submission

7 All hydrological and hydraulic calculations undertaken to quantify the design flood standard and derive the flood levels together with the catchment map and any other data used in the calculations, as required above.

8 A scale plan view of the determined flood zone is to be provided at the same scale as the site survey for:

i) The pre-developed site. This may be overlaid on the existing site survey plan and the centreline of the watercourse or drainage depression together with all existing structures and impediments to flow are to be shown on this detail, and

ii) The post-developed site. This is to be overlaid on a plan, at the same scale as the submitted architectural plans, showing the footprint of all proposed structures in relation to the determined flood zone. The centreline chainages of the watercourse or drainage depression, together with all proposed structures and impediments to flow, are to be shown on this detail.

9 A minimum of three 1:50 scale cross-sections taken at right angles to the drainage system, showing both the pre-developed and post-developed flow sections with all levels to AHD, drawn at the following chainages:

i) at the upstream property boundary;

ii) where the existing and proposed development is closest to the drainage line;

iii) at the downstream extent of the development work; and

iv) other cross-sections as needed if other parts of the system affect the site.

Note: Cross-sections are to show existing and proposed levels, top water levels, hydraulic data, flood extents and critical proposed development levels such as floor levels.

10 A longitudinal section (at vertical scale 1:50, horizontal scale to that of plan view) of the drainage system through the property showing existing and proposed levels, flood levels, hydraulic data and all changes in grade.

11 The conclusion of the report is to have a signed declaration by the engineer stating:

"I have examined the site, existing improvements and proposed development. In accordance with accepted engineering practice, I have undertaken a flood study of the adjacent drainage system and can confirm the accuracy of my calculated results. I declare that the proposed development will be safeguarded from flooding and flood damage associated with the design flood standard as defined in Part 24 of the *Ku-ring-gai DCP* and will not adversely affect any other structures or properties.

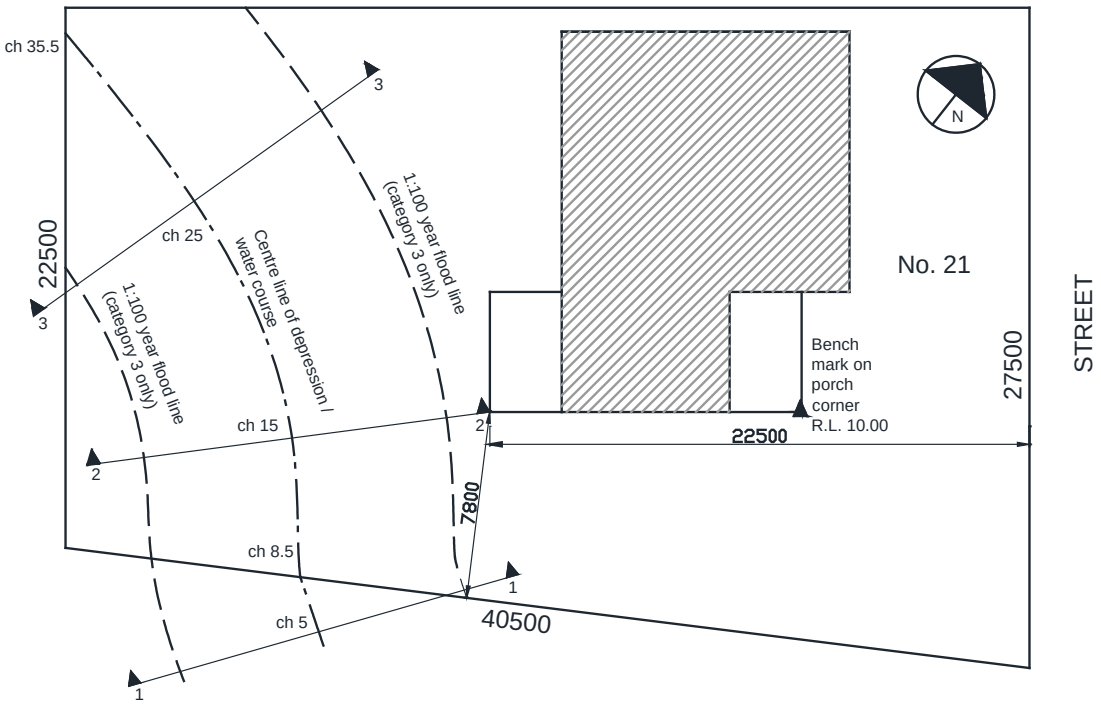
24R.3 FLOOD STUDY REQUIREMENTS (continued)

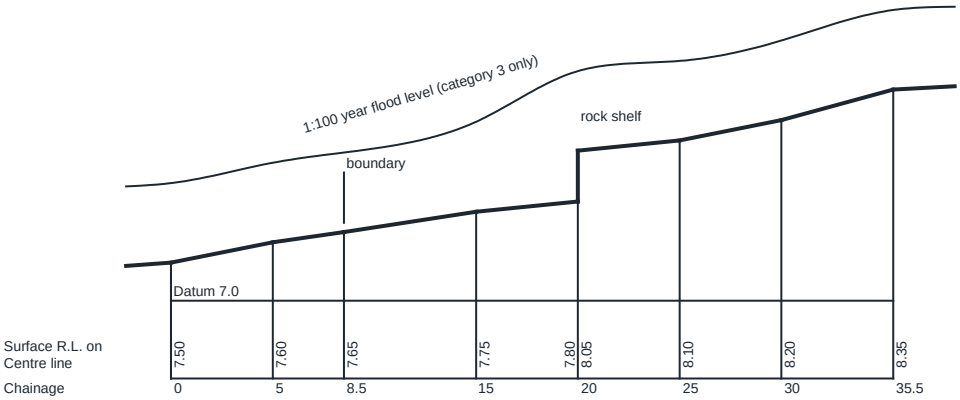
Controls

12 The study is to be submitted in a flood report form which includes an introduction and reference to the plans for the proposed development, methodology adopted and a written explanation/ conclusion for findings of the study, together with all supporting information. The study is to nominate floor levels for the proposed development, with regard to Council freeboard requirements.

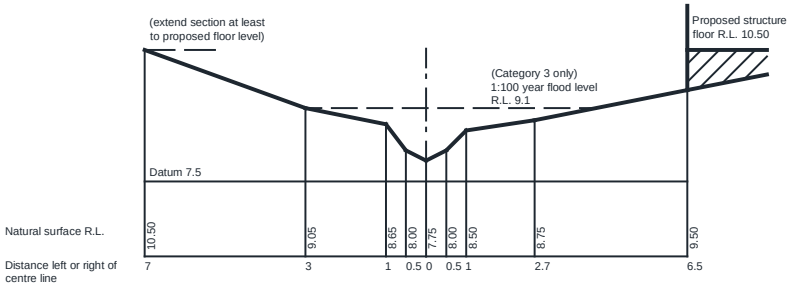
Note : Please consult Council's website for flood studies which have been completed

24R.3 FLOOD STUDY REQUIREMENTS (continued)





LONGITUDINAL SECTION
H 1:250, V 1:50



SECTION 2-2 (LOOKING UPSTREAM)
1:100 Natural

Figure 24R.3-1:
Typical Survey Information

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE

Controls

24R.4.1 Terms for On-site Detention

Terms of positive covenant referred to in the plan

1. The proprietor of the burdened lot covenants with the Council in respect of any System (as later defined) constructed on the burdened lot to:

   a) permit stormwater to be temporarily detained by the System;

   b) regularly keep the System clean and free from grass clippings, silt, rubbish, debris and the like;

   c) maintain the System to ensure a maximum outflow from the System and a minimum pondage in accordance with plans duly approved by Council and any other principal certifying authority;\

   d) ensure that the System at all times includes an overflow to direct any excess flow to the downstream drainage System;

   e) maintain, repair and replace the System or any part of it due to deterioration or damage without delay so that it functions in a safe and efficient manner;

   f) comply with the terms of any written notice issued by the Council in respect of the requirements of this Positive Covenant within the time stated in the notice;

   g) permit the Council to enter upon the burdened lot or any part of it with all necessary materials and equipment at all reasonable times and on reasonable notice (but at any time and without notice in the case of an emergency);

      - to view the state of repair of the System;
      - to ascertain whether or not there has been any breach of the terms of this Positive Covenant;
      - to execute works on the burdened lot for compliance with the requirements of this Positive Covenant;

   h) indemnify and keep indemnified the Council from and against all claims, demands, actions, suits, causes of action, sums of money, compensation, damages, costs and expenses which the Council or any other person may suffer as a result of any malfunction or non-operation of the System or any failure of the proprietor to comply with the terms of this Positive Covenant.

2. The Council is to have the following additional powers:

   a) in the event that the proprietor fails to comply with the terms of any written notice issued by the Council as set out above or in the event of an emergency, the Council or its authorised agent may enter the burdened lot with all necessary materials and equipment at all reasonable times and on reasonable notice (but at any time and without notice in the case of an emergency) and carry out any work which the Council in its discretion considers

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

reasonable to comply with the said notice referred to in Part 1(f) above or to alleviate the emergency.

b) The Council may recover from the proprietor as a liquidated debt in a court of competent jurisdiction;

- any expense reasonably incurred by it in exercising its powers under sub-paragraph (a) hereof,
- legal costs on an indemnity basis for issue of the said notices and recovery of the said costs and expenses together with the costs and expenses of registration of a covenant charge pursuant to Section 88F(4) of the Conveyancing Act, 1919 or providing any certificate required pursuant to Section 88G of the Act or obtaining any injunction pursuant to Section 88H of the Act.

In this Positive Covenant unless inconsistent with the context,

"**System**" means in relation the burdened lot the stormwater drainage detention basin or tank constructed or to be constructed on the burdened lot in accordance with the requirements of the Council (as shown on the plan) including all ancillary, gutters, downpipes, pipes, drains, orifice plates, trench barriers, walls, earth banks, kerbs, pits, grates, tanks, basins and other surfaces designed to temporarily detain and control stormwater located on any part of the burdened lot.

"**Proprietor**" includes the registered proprietor of the burdened lot from time to time and all of its heirs, executors, assigns and successors in title to the burdened lot and where there are two or more registered proprietors of the burdened lot the terms of this Positive Covenant are to bind all those registered proprietors jointly and severally.

"**Council**" means the Ku-ring-gai Council, its successor, its employees, officers, authorised agents and contractors.

"**Burdened lot**" means folio identifier [**lot/deposited plan**].

Name of Authority empowered to release, vary or modify this Positive Covenant:

Ku-ring-gai Council or such other successive Council that may be established

_____

Manager – Development Assessment

Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.2 Terms for On-site Retention

Terms of positive covenant referred to in the plan

1. The proprietor of the burdened lot covenants with the Council in respect of any System (as later defined) constructed on the burdened lot to:

   a) permit stormwater to be retained and re-used by the System;

   b) regularly keep the System clean and free from grass clippings, silt, rubbish, debris and the like;

   c) maintain the System to ensure a maximum outflow from the System and a minimum pondage in accordance with plans duly approved by the Council and any other principal certifying authority;

   d) ensure that the System at all times includes an overflow to direct any excess flow to the downstream drainage System;

   e) maintain, repair and replace the System or any part of it due to deterioration or damage without delay so that it functions in a safe and efficient manner;

   f) comply with the terms of any written notice issued by the Council in respect of the requirements of this Positive Covenant within the time stated in the notice;

   g) permit the Council to enter upon the burdened lot or any part of it with all necessary materials and equipment at all reasonable times and on reasonable notice (but at any time and without notice in the case of an emergency);

      - to view the state of repair of the System;
      - to ascertain whether or not there has been any breach of the terms of this Positive Covenant;
      - to execute works on the burdened lot for compliance with the requirements of this Positive Covenant;

   h) indemnify and keep indemnified the Council from and against all claims, demands, actions, suits, causes of action, sums of money, compensation, damages, costs and expenses which the Council or any other person may suffer as a result of any malfunction or non-operation of the System or any failure of the proprietor to comply with the terms of this Positive Covenant.

2. The Council is to have the following additional powers:

   a) In the event that the proprietor fails to comply with the terms of any written notice issued by the Council as set out above or in the event of an emergency, the Council or its authorised agent may enter the burdened lot with all necessary materials and equipment at all reasonable times and on reasonable notice (but at any time and without notice in the case of an emergency) and

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

carry out any work which the Council in its discretion considers reasonable to comply with the said notice referred to in Part 1(f) above or to alleviate the emergency.

b) The Council may recover from the proprietor as a liquidated debt in a court of competent jurisdiction;

- any expense reasonably incurred by it in exercising its powers under sub-paragraph (a) hereof,
- legal costs on an indemnity basis for issue of the said notices and recovery of the said costs and expenses together with the costs and expenses of registration of a covenant charge pursuant to Section 88F(4) of the Conveyancing Act, 1919 or providing any certificate required pursuant to Section 88G of the Act or obtaining any injunction pursuant to Section 88H of the Act.

In this Positive Covenant unless inconsistent with the context,

"System" means in relation the burdened lot the stormwater drainage detention basin or tank constructed or to be constructed on the burdened lot in accordance with the requirements of the Council (as shown on the plan) including all ancillary, gutters, downpipes, pipes, drains, orifice plates, trench barriers, walls, earth banks, kerbs, pits, grates, tanks, basins and other surfaces designed to temporarily detain and control stormwater located on any part of the burdened lot.

"Proprietor" includes the registered proprietor of the burdened lot from time to time and all of its heirs, executors, assigns and successors in title to the burdened lot and where there are two or more registered proprietors of the burdened lot the terms of this Positive Covenant are to bind all those registered proprietors jointly and severally.

"Council" means the Ku-ring-gai Council, its successor, its employees, officers, authorised agents and contractors.

"Burdened lot" means folio identifier [**lot/deposited plan**].

Name of Authority empowered to release, vary or modify this Positive Covenant:

Ku-ring-gai Council or such other successive Council that may be established

_____

Manager – Development Assessment

Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.3 Terms for Waste Collection

Terms of positive covenant referred to in the plan

1. Full and free right for Council its servants, agents, contractors and all persons authorised by Council to go, pass and repass over the Easement Site situated on the servient tenement at all times with or without vehicles for the purpose of collecting and removing garbage and refuse from the servient tenement and for purposes incidental thereto. Nothing herein contained is to entitle any person exercising the aforesaid rights to enter any building, private open space or courtyard except to the extent necessary to gain access to garbage receptacles located therein in positions approved by Council or to drive any motor vehicle onto any part of the Easement Site which has not apparently been constructed or provided for the purpose of a carriageway or parking area for vehicles.

2. The rights hereby granted may be exercised by Council, its servants, agents, contractors and all persons authorised by Council to enter the Easement Site without being liable for damage which may be occasioned to the servient tenement or any improvements thereon including any paving, driveways, footpaths, lawns, gardens, fences, walls, buildings or to the property of any person therein or thereon otherwise than by reason of the negligence of Council.

3. Without limiting the generality of, and notwithstanding anything hereinbefore contained, if any carriageway or parking area and/or the adjacent land supporting the same is damaged by reason of the movement thereon of any vehicle being used in connection with the collection of garbage from the servient tenement, neither Council its servants, agents, contractors nor any person authorised by Council is to be liable in respect thereof.

   Council, its servants, agents, contractors and all persons authorised by it to exercise the rights hereby granted is to be indemnified and be kept indemnified by the registered proprietor of the servient tenement, its successors and assigns against all actions, suits, causes of action or suits, claims, demands, proceedings, costs, charges, damages or expenses whatsoever which may be brought or made, instituted or claimed against and from them or any of them by the registered proprietor or any occupier of the servient tenement or any part thereof or by any other person in respect of any loss or injury sustained or threatened or damages suffered or feared by any such person whether in property or person as a consequence of any act or thing done or omitted by any person whilst upon the Easement Site for the purpose of collecting garbage from the servient tenement or for a purpose incidental thereto except where such loss, injury or damages result from the negligence of Council, its servants, agents, contractors or of any person authorised by Council as aforesaid.

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

4. Nothing herein contained is to oblige Council to have garbage collected from points within the Easement Site or is to prevent Council from discontinuing collection of garbage from within the servient tenement PROVIDED ALWAYS that if Council discontinues collection of garbage from within the servient tenement Council and the registered proprietor for the time being of the servient tenement is to respectively have the same rights and obligations with regard to the removal of garbage from the servient tenement as they would have had if this instrument had not been executed.

"Council" means the Ku-ring-gai Council or its successor

"Easement Site" means the location and boundaries of the easement as shown in the plan.

"Servient tenement" means lot TBC in deposited plan TBC.

Name of Person or Authority empowered to release, vary or modify this easement

Ku-ring-gai Council

_____

Manager, Development Assessment Services

Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.4 Terms for Water Quality Measures

Terms of positive covenant referred to in the plan for maintenance of water quality measures

1. The Registered Proprietor will at the Register Proprietor's own expense sufficiently maintain and keep in good and substantial repair and working order the water quality measures (stormwater cartridges) on the burdened lot in accordance with the system approved by Council (herein after called "the system") which exists from time to time on the burdened lot and further shown on the plan.

2. The maintenance is to include the checking of the condition of the system and the stormwater cartridges every 6 months and maintaining a logbook of these periodic checks and of any maintenance performed.

3. The Registered Proprietor is to permit officers of Council, having given two days' notice, to enter the burdened lot and to view the logbook and the condition of the system and the stormwater cartridges on two occasions per year.

4. Where the Registered Proprietor of the burdened lot fails to maintain the system in accordance with the above and fails to comply with any written request of Council within such reasonable time as nominated in said respect, the Registered Proprietor is to permit Council by its servants or agents to carry out any works it reasonably considers necessary to reinstate satisfactory performance of the system and the stormwater cartridges, and the Registered Proprietor is to pay on demand to Council any reasonable costs incurred by Council in undertaking such works.

The term **"Registered Proprietor"** is to include the Registered Proprietor of the burdened lot from time to time, and all the Registered Proprietor's heirs, executors, assigns and successors in title to the burdened lot and where there are two or more registered proprietors of the burdened lot the terms of this covenant is to bind all those registered proprietors jointly and severely.

"Council" means the Ku-ring-gai Council or its successor.

"Burdened lot" *means folio identifier [lot/deposited plan].*

Name of the body empowered to release, vary or modify these terms of this Positive Covenant

Ku-ring-gai Council

_____

Manager – Development Assessment Services

Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.5 Terms for Restriction on Use of Land referred to in the Plan

Unless inconsistent with the context words used herein have the same meaning as those ascribed to them in the Positive Covenant referred to in the Plan.

1. The proprietor of the burdened lot covenants with the Council not to:
    a) allow any obstruction or interference of any kind to be erected, placed, created or performed so as to inhibit the pumping of water in and out of the System;
    b) except in accordance with the written approval of the Council allow any building, erection or structure to be constructed or allowed to remain constructed or placed on the System;
    c) carry out or allow to be carried out any change of land profile or earthworks on the System;
    d) carry out or allow to be carried out any alterations to the System including surface levels, controlled outflows, grates, pipes, filter, pump, delivery plumbing or any other materials or elements thereof outside those normally required for the formation, maintenance and proper function of the System

In this Restriction on Use of Land unless inconsistent with the context,

"System" means the pump out drainage system (which expression is to include all ancillary gutters, pipes, drains, walls, kerbs, pits, grates, fittings, tanks, chambers and pumps designed to control water) (herein after called "the system") shown on the plan which exists from time to time on the burdened lot.

"Proprietor" includes the registered proprietor of the burdened lot from time to time and all of its heirs, executors, assigns and successors in title to the burdened lot and where there are two or more registered proprietors of the burdened lot the terms of this Restriction on Use of Land is to bind all those registered proprietors jointly and severally.

"Council" means the Ku-ring-gai Council, its successors, its employees, officers, authorised agents and contractors.

"Burdened lot" means folio identifier [lot/deposited plan].

Name of Authority empowered to release, vary or modify this Restriction on the Use of Land:

Ku-ring-gai Council

_____

Manager – Develoment Assessment Services

Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.6 Positive Covenants to be Applied Under Section 88E of the Conveyancing Act 1919

Positive Covenant for construction over Council's easement referred to in the Plan

1. The Registered Proprietor will at its own expense remove the [structure as shown on Site Plan which is annexed hereto and marked with the letter "A"] ("the structure") at their own expense if requested by Council for the purpose of accessing the easement by notice in writing given to the Registered Proprietor by Council.

2. The Registered Proprietor is to maintain the structure at its own expense and perform any works in relation to the structure that are reasonable required by Council.

3. In the event that the Registered Proprietor of the burdened lot fails to remove or maintain the structure in accordance with the above and fails to comply with any written request of the Council within such reasonable time as nominated in said request, then Council is to be entitled to enter the burdened lot and perform such removal or maintenance of the structure and the Registered Proprietor is to meet any reasonable costs incurred by Council in carrying out works necessary to reinstate satisfactory performance of the easement, remove the structure or maintain the structure, such costs to be recoverable as a liquidated debt.

4. The term "Registered Proprietor" is to include the Registered Proprietor of the land from time to time, and all the Registered Proprietor's heirs, executors, assigns and successors in title to the burdened lot and where there are two or more registered proprietors of the burdened lot the terms of this covenant is to bind all those registered proprietors jointly and severally.

"Council" means the Ku-ring-gai Council or its successor.

"Burdened lot" means folio identifier [lot/deposited plan].

Name of authority empowered to release, vary or modify this positive covenant

Ku-ring-gai Council

_____

Manager, Development Assessment Services

Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.7 Terms of restriction on use of land for burdened lot affected by overland flow referred to in the Plan

1. The Proprietor of the burdened lot covenants with the Council not to:
   a) allow the placement of any structures, walls, fences, fill or other items which may impede the 1% AEP flood on the Restriction Site,
   b) except in accordance with the written approval of the Council, allow any structures, walls, fences, fill or other items to be constructed or allowed to remain constructed or placed in a position on the Restriction Site that may impede the 1% AEP flood;

"Council" means the Ku-ring-gai Council or its successor.

"Burdened lot" means folio identifier [lot/deposited plan].

"Restriction Site" means the area show on the plan.

Name of authority empowered to release, vary or modify this restriction on the use of land

Ku-ring-gai Council

_____

Manager – Development Assessment Services
Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.8 Positive Covenant for Turntable referred to in the Plan

1. The registered proprietor for the time being of the property agrees, in the event of a mechanical breakdown malfunctioning or failure ("failure") of the mechanical turntable to be erected on the burdened lot (shown on the plan) pursuant to Development Consent granted by Council on vehicle turntable ("the device"), to take all such action as is necessary to ensure that the failure is corrected and remedied within seven (7) days of the first occurrence of the failure.

2. The registered proprietor for the time being of the property agrees to indemnify and keep indemnified Council its members, officers and employees (collectively "Council") from and against:
   a) all and any claims, demands, liabilities, losses, damages, costs, expenses, actions and proceedings whatsoever and howsoever arising made by either the registered proprietor or any third person in connection with or arising out of the construction use, maintenance, non-maintenance repair or non-repair of the device; and
   b) all and any losses, damages, costs and expenses (including, without limitation, reasonable lawyers' fees) whatsoever and howsoever incurred by Council in connection with or arising out of the construction, use, maintenance, non-maintenance repair or non-repair of the device.

"Council" means the Ku-ring-gai Council or its successor.

The term **"registered proprietor"** is to include the registered proprietor of the burdened lot from time to time, and all its heirs, executors, assigns and successors in title to the burdened lot and where there are two or more registered proprietors of the burdened lot the terms of this covenant is to bind all those registered proprietors jointly and severely.

"Burdened lot" means folio identifier [lot/deposited plan].

Name of authority empowered to release, vary or modify this Positive Covenant

Ku-ring-gai Council

_____

Manager, Development Assessment Services

Ku-ring-gai Council

24R.4 TERMS OF POSITIVE COVENANTS AND RESTRICTIONS ON USE (continued)

Controls

24R.4.9 Positive Covenant for Permeable Pavers referred to in the plan

1. The Registered Proprietor agrees to maintain, repair and replace the Permeable Pavers situated on the Paver Site on the Burdened Lot as required at its own cost and comply with any reasonable request made by Council in respect of the Permeable Pavers.

2. In the event that the Registered Proprietor fails to maintain, repair or replace the Permeable Pavers or otherwise fail to comply with a reasonable request from Council, then Council may enter the Burdened Lot and perform such maintenance, repair or replacement of the Permeable Pavers or carry out other works necessary to ensure that water runoff in the area is not negatively impacted and recover from the Registered Proprietor the cost of such works as a liquidated debt.P

"Council" means the Ku-ring-gai Council or its successor.

The term **"Registered Proprietor"** is to include the registered proprietor of the Burdened Lot from time to time, and all its heirs, executors, assigns and successors in title to the Burdened Lot and where there are two or more registered proprietors of the Burdened Lot the terms of this covenant is to bind all those registered proprietors jointly and severally.

"Burdened Lot" means folio identifier [lot/deposited plan].

"Paver Site" means that area where Permeable Pavers have been placed on the Burdened Lot shown on the plan.

"Permeable Pavers" means the permeable pavers required pursuant to Development Consent DA [TBC]

Name of authority empowered to release, vary or modify this Positive Covenant

Ku-ring-gai Council

_____

Manager, Development Assessment Services

Ku-ring-gai Council

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24R.5 References

REFERENCES

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_001

On Site Detention

OSD Exempt Areas

Cadastre

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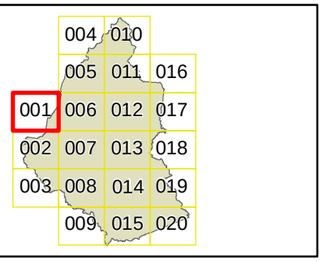

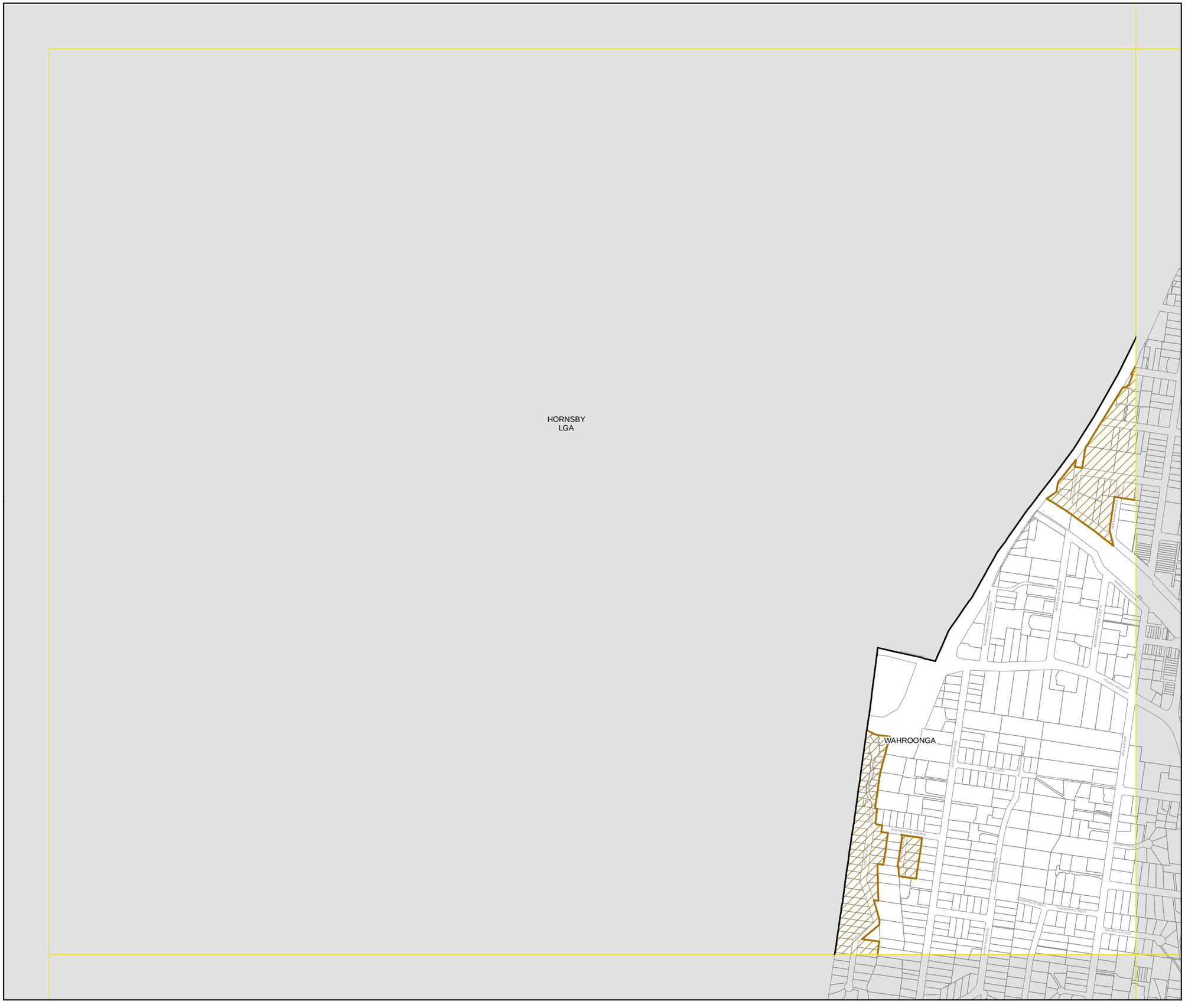

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Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_002

On Site Detention

OSD Exempt Areas

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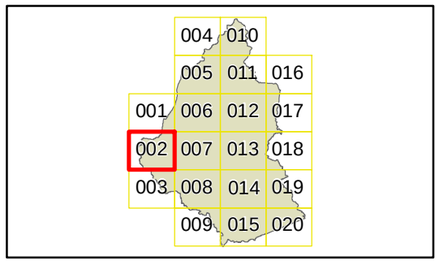

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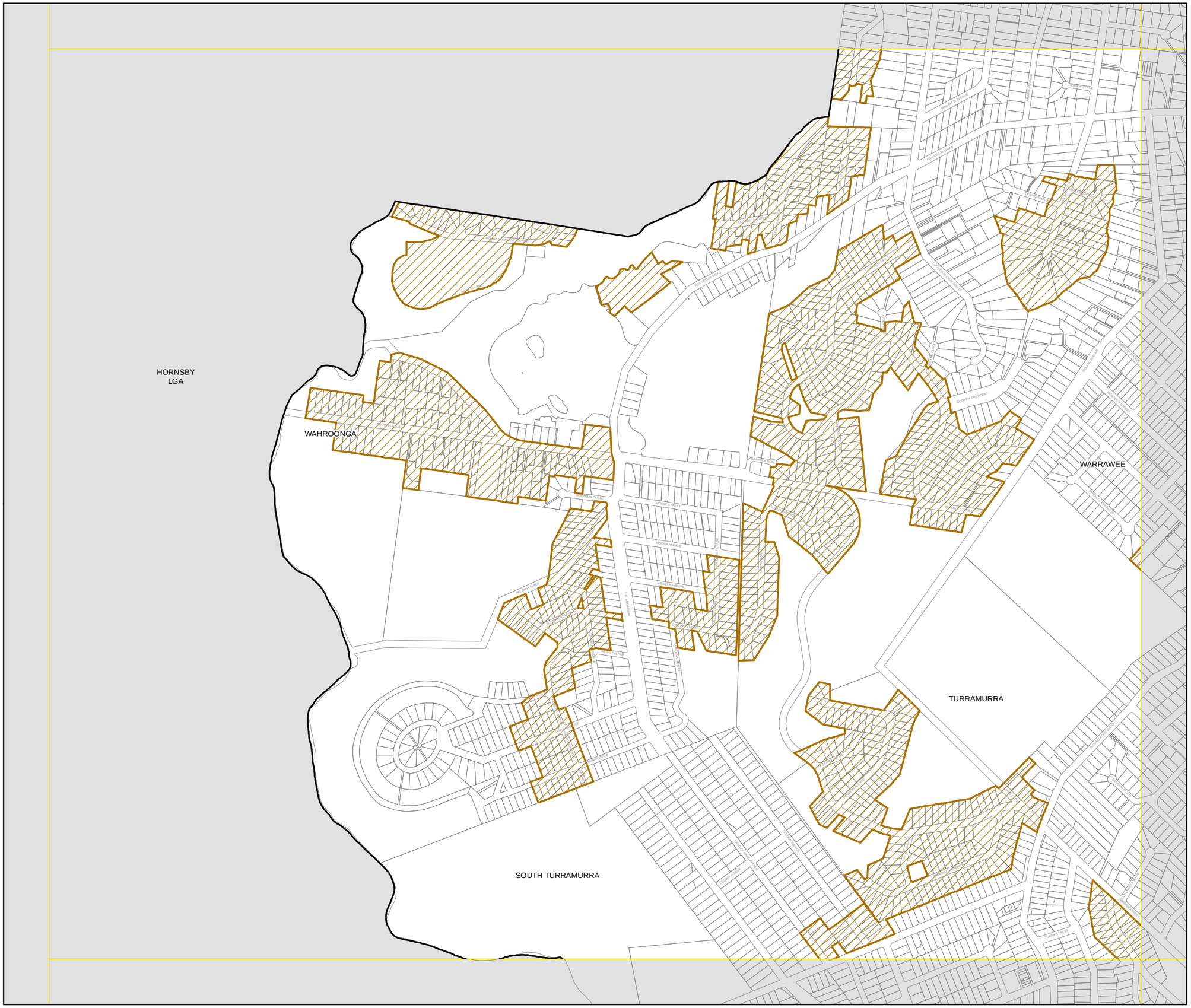

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_003

On Site Detention

OSD Exempt Areas

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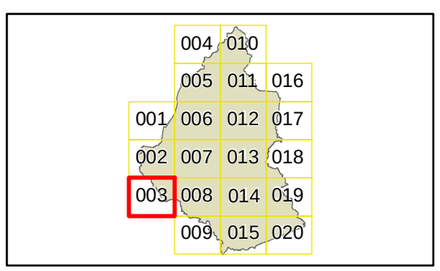

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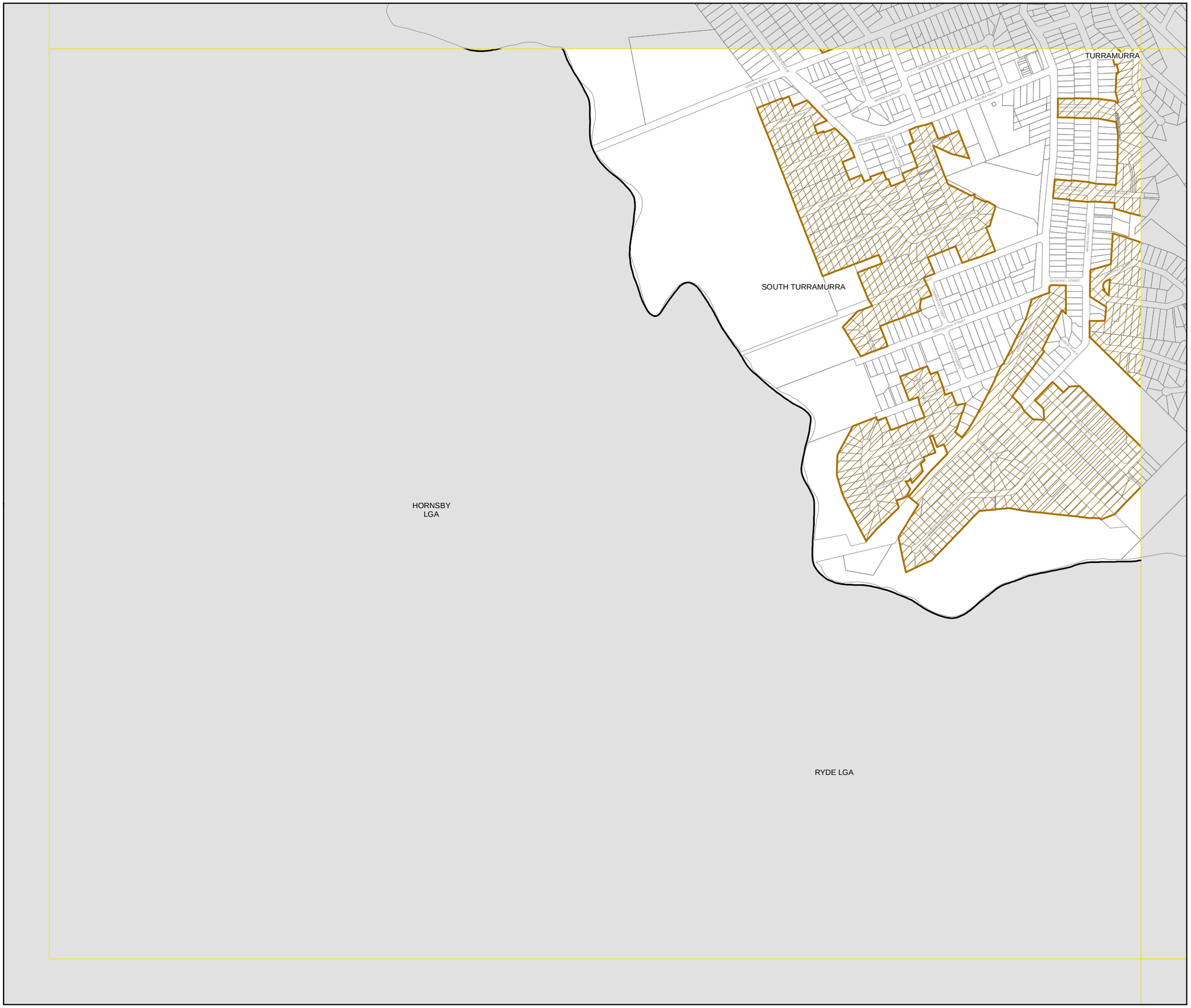

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_004

On Site Detention

OSD Exempt Areas

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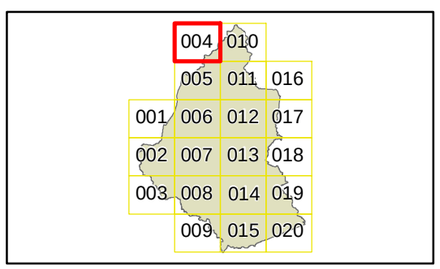

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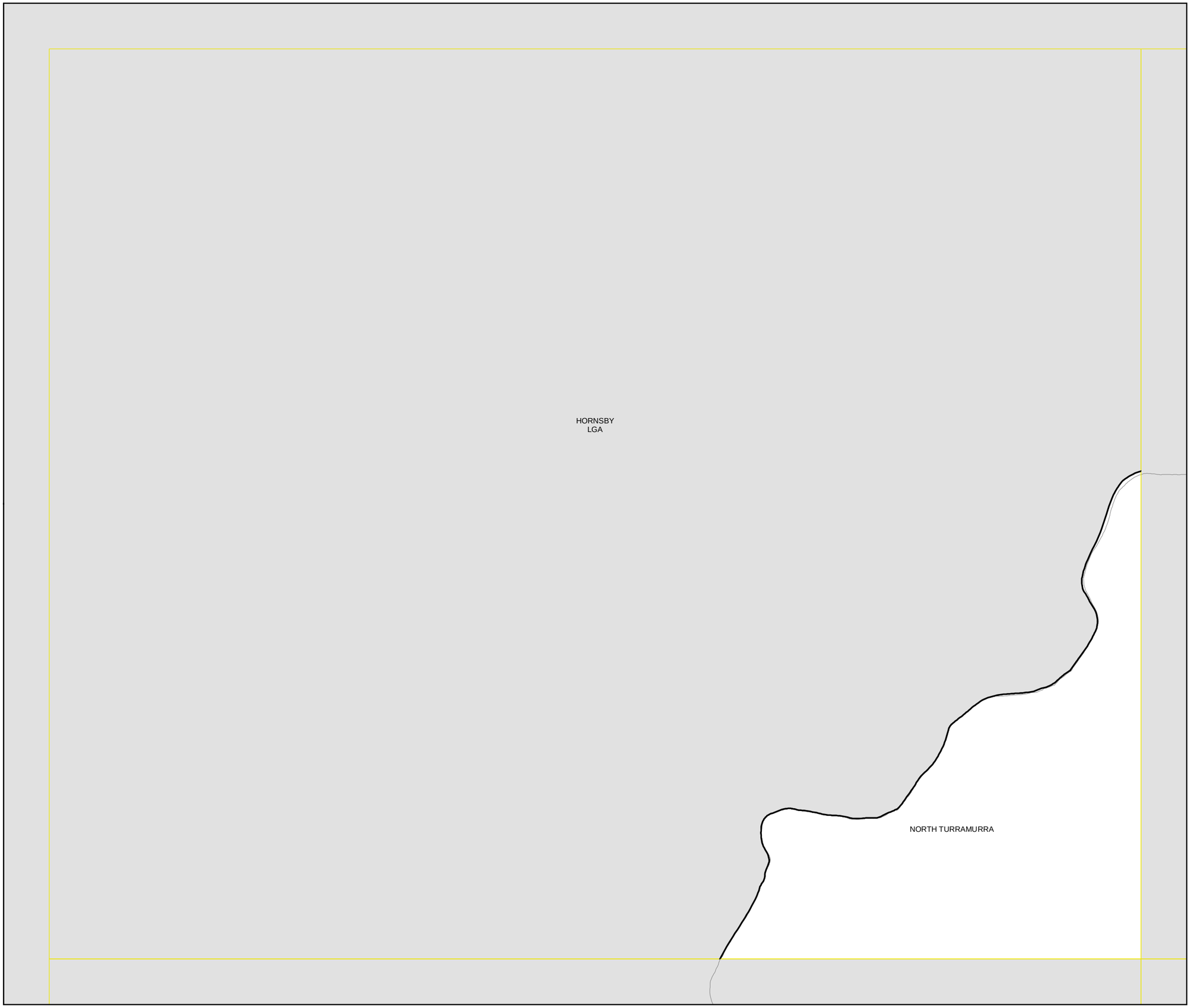

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_005

On Site Detention

OSD Exempt Areas

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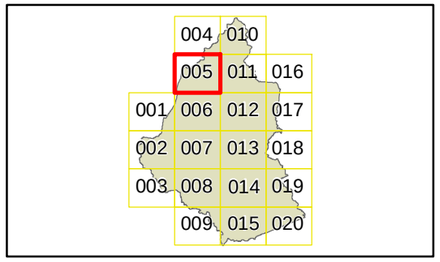

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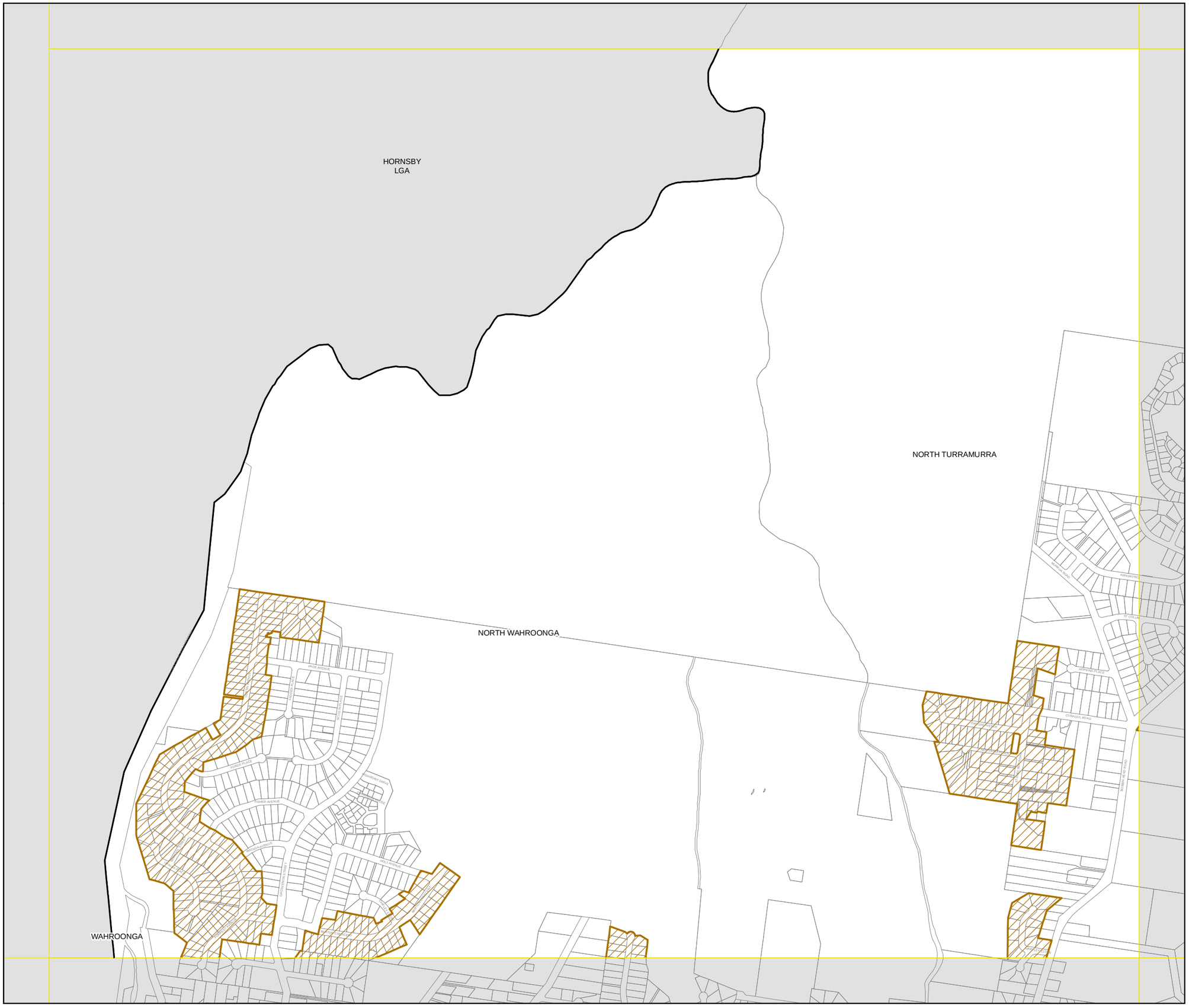

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_006

On Site Detention

OSD Exempt Areas

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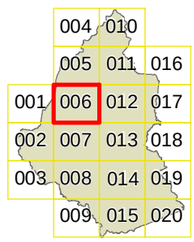

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Projection: GDA 1994
MGA Zone 56

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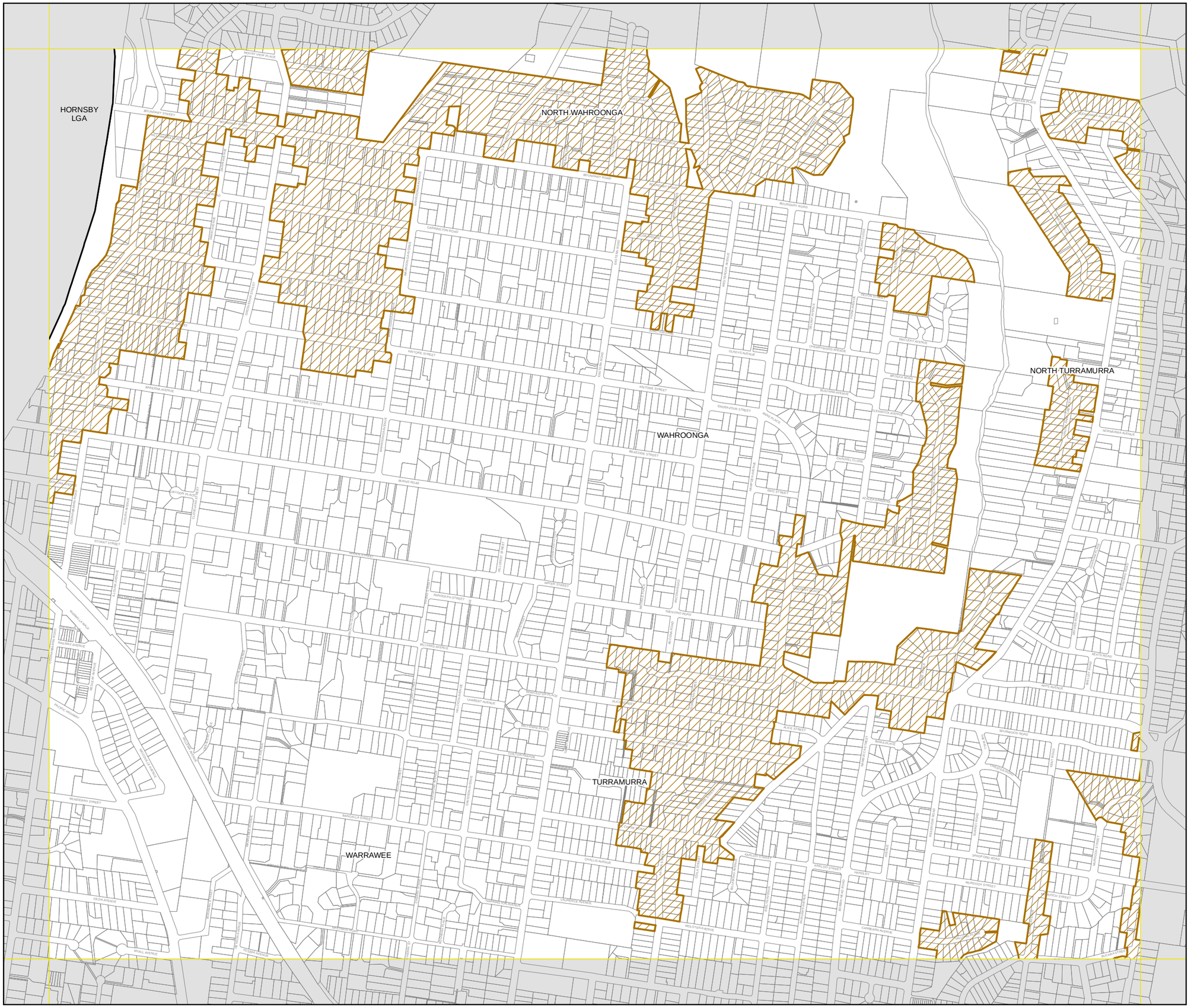
Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_006_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_007

On Site Detention

OSD Exempt Areas

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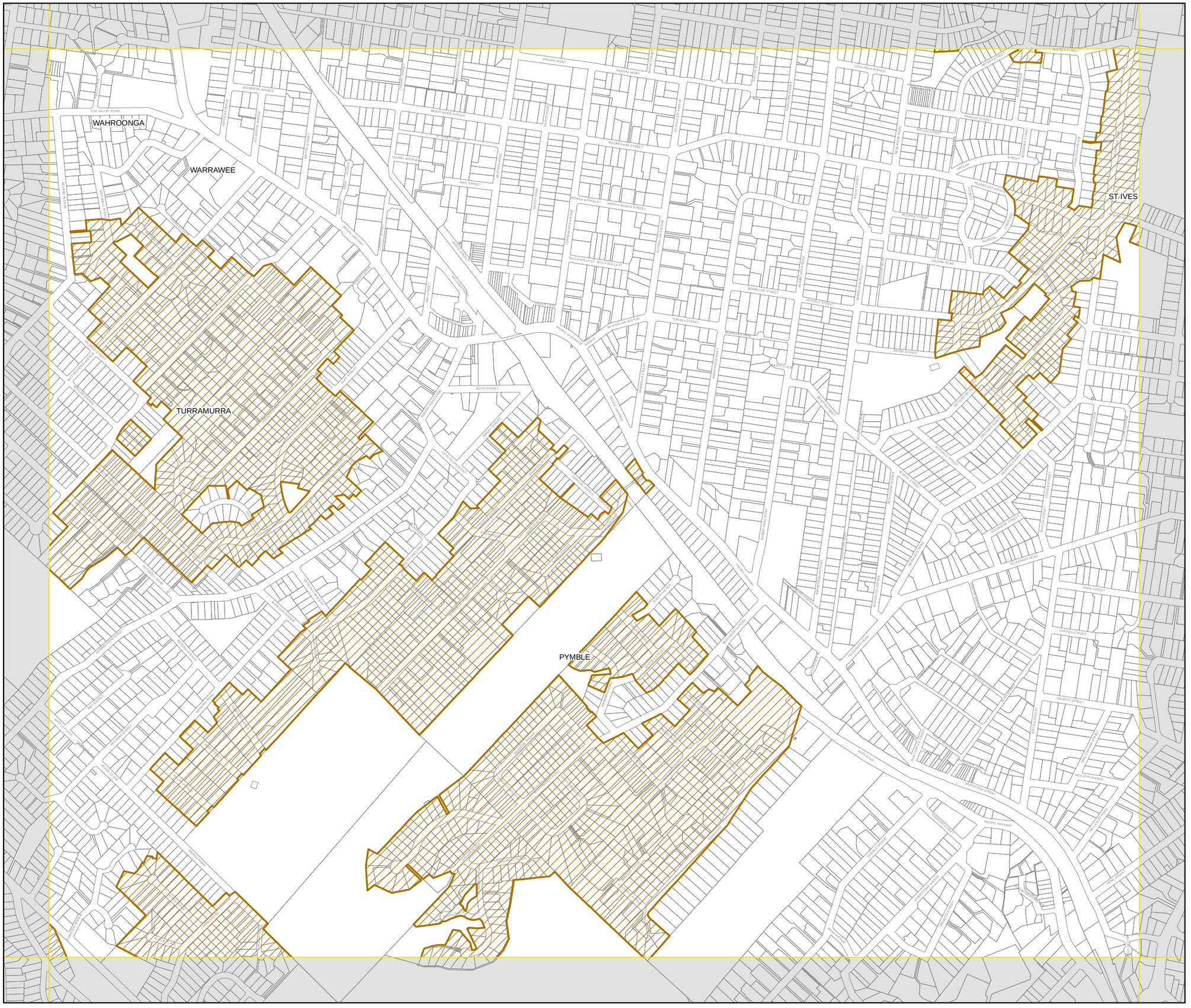

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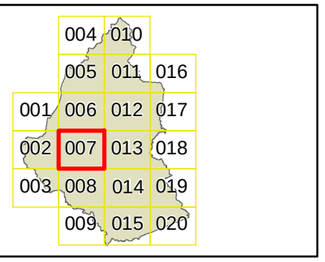

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Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_007_010_20220708

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_008

On Site Detention

OSD Exempt Areas

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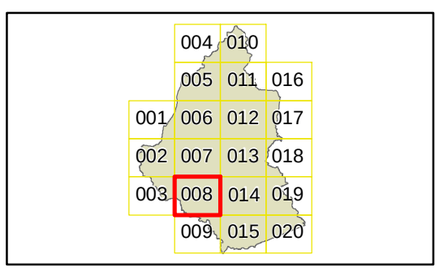

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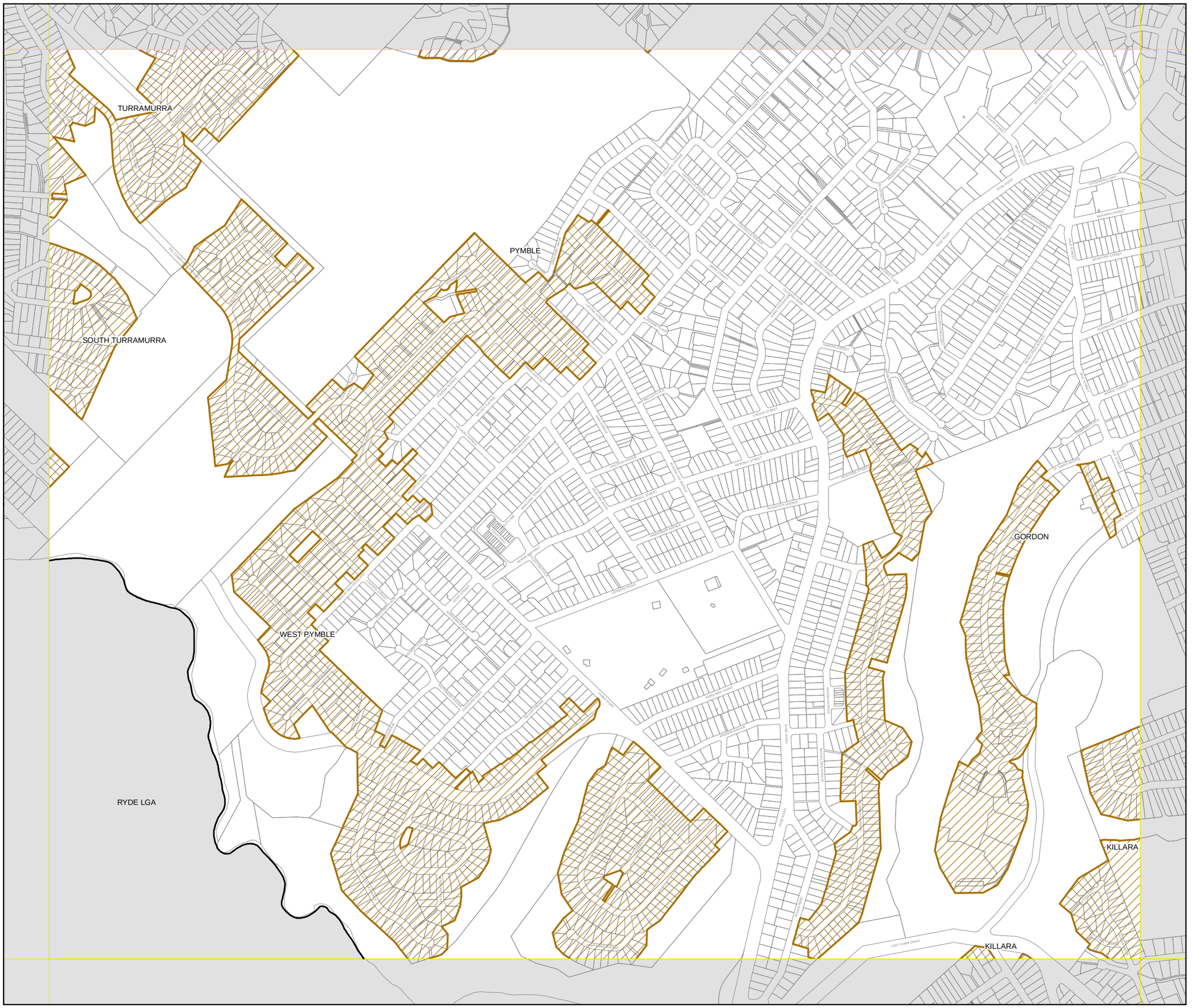
Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_008_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_009

On Site Detention

OSD Exempt Areas

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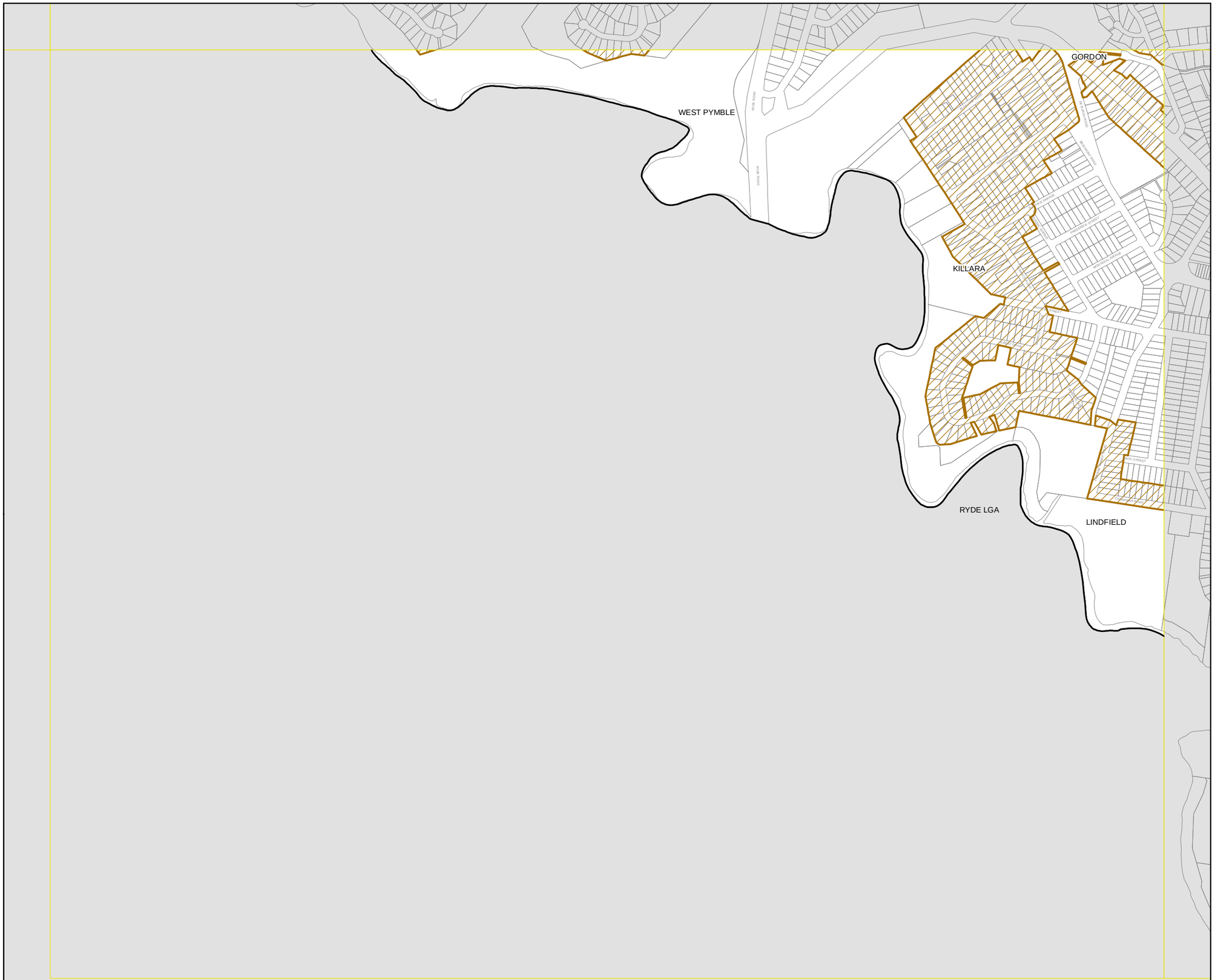

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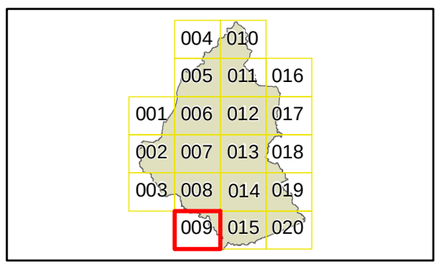

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Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_009_010_20220708

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_010

On Site Detention

OSD Exempt Areas

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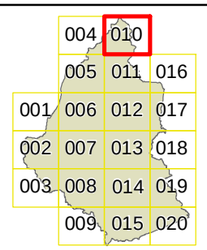

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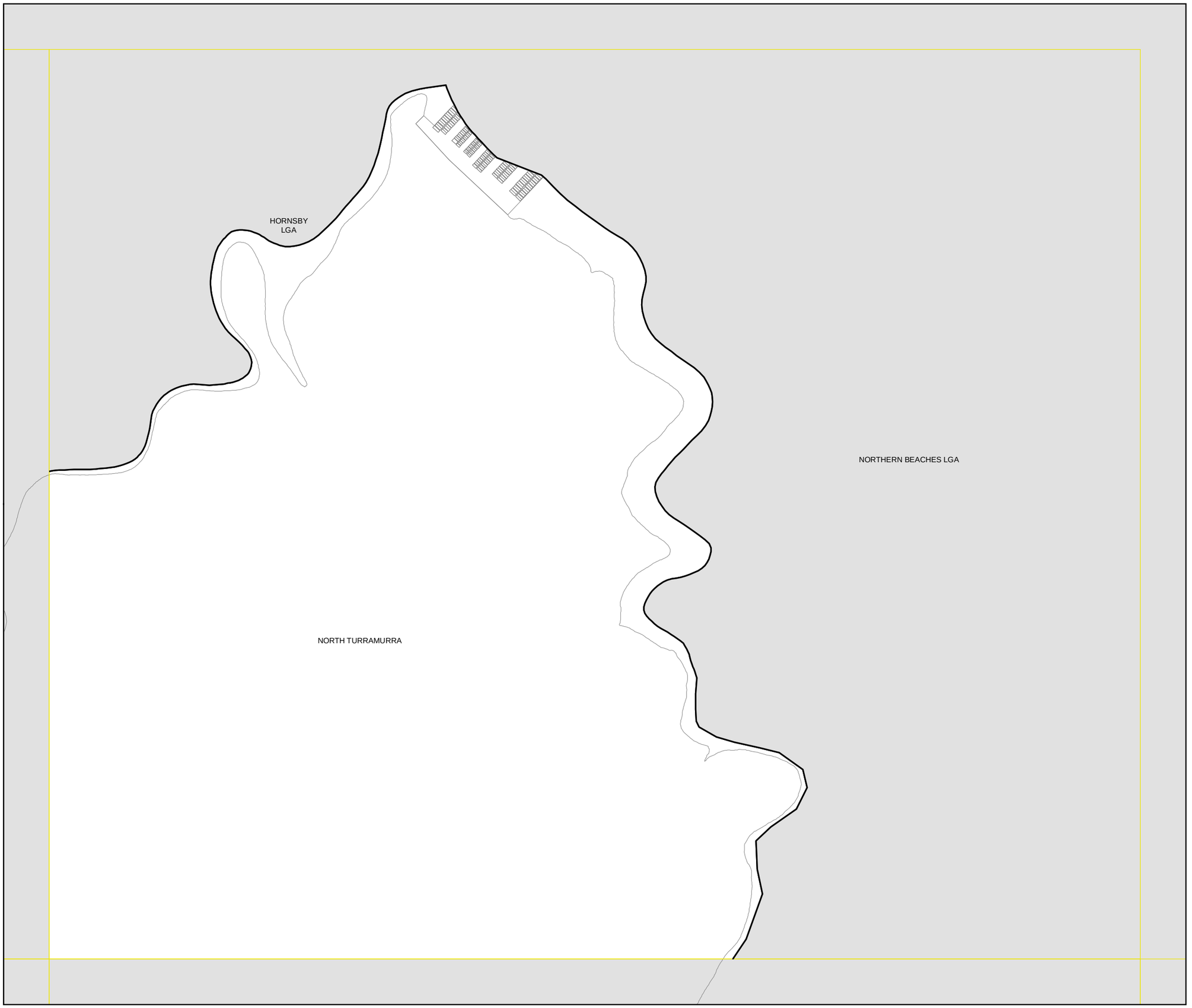
Scale: 1:10,000 @ A3

Projection: GDA 1994
MGA Zone 56

Map Identification Number: 4500_COM_OSD_010_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_011

On Site Detention

OSD Exempt Areas

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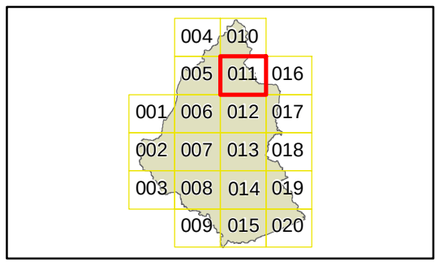

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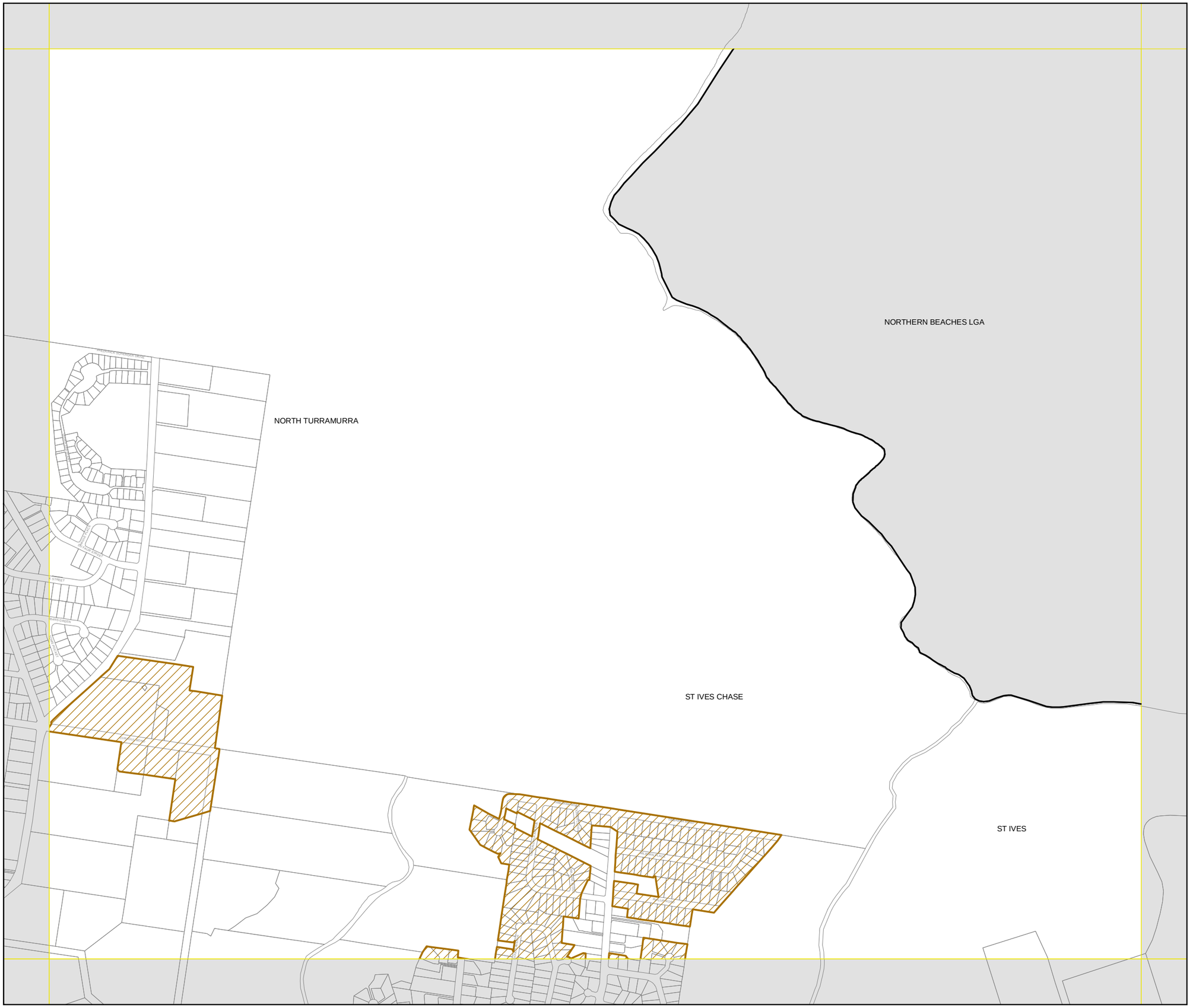
Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_011_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_012

On Site Detention

OSD Exempt Areas

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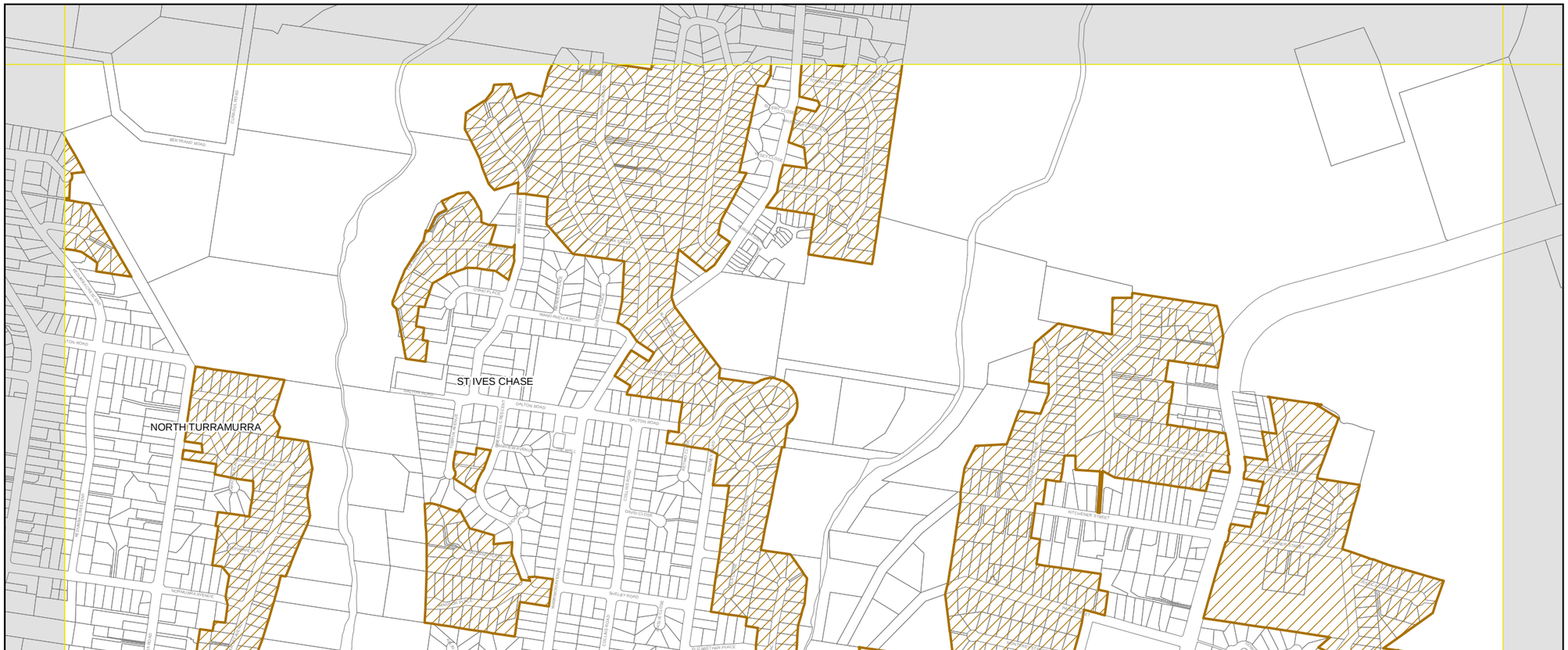

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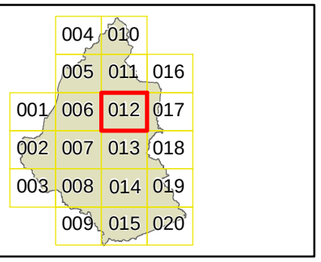

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Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_012_010_20220708

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_013

On Site Detention

OSD Exempt Areas

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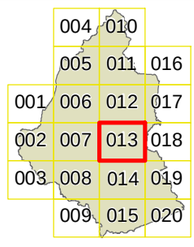

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Projection: GDA 1994
MGA Zone 56

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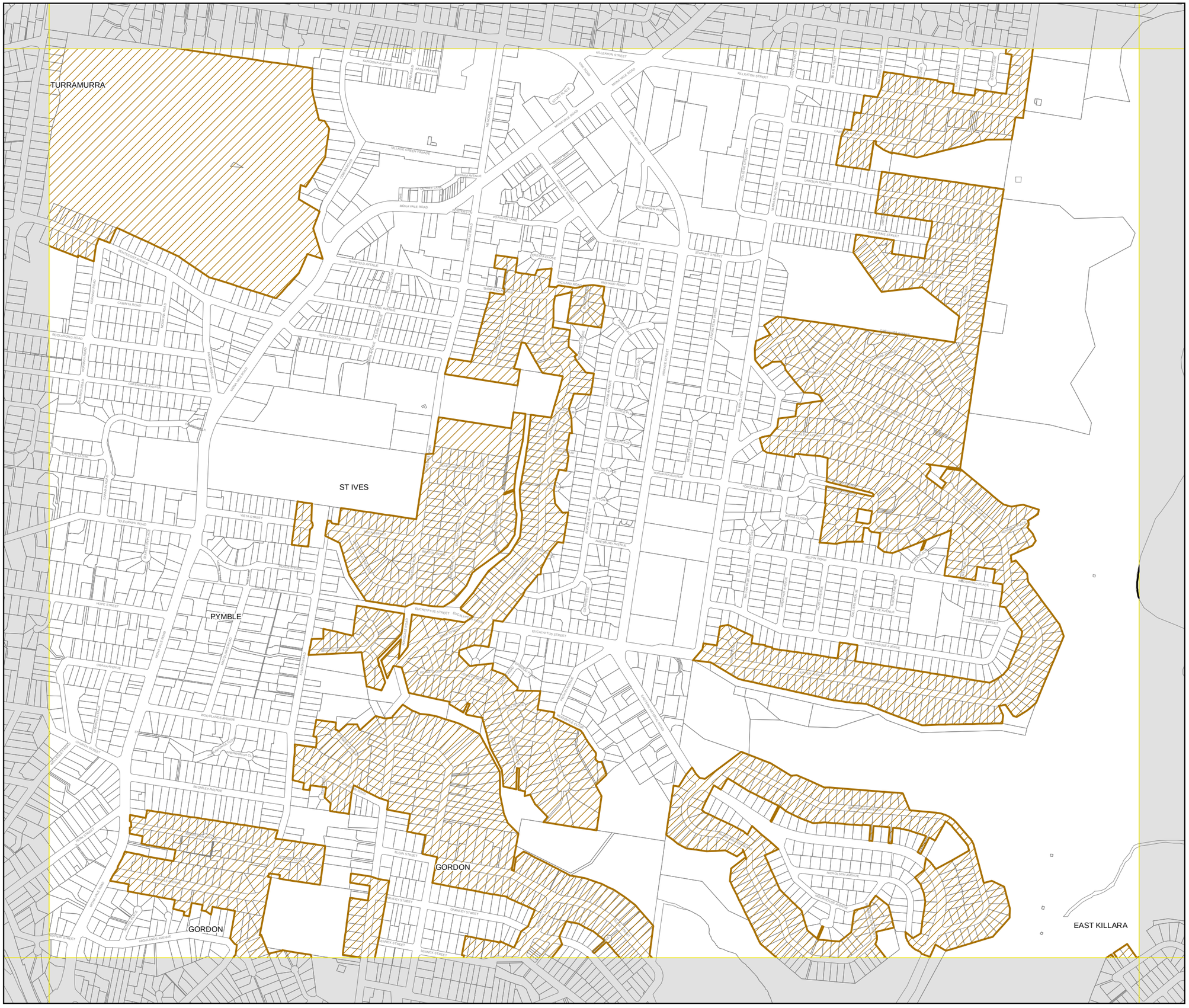
Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_013_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_014

On Site Detention

OSD Exempt Areas

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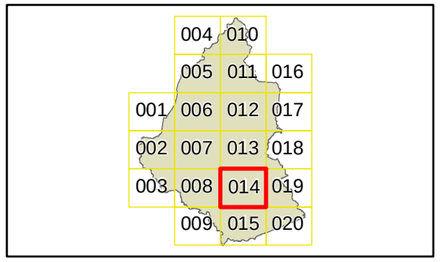

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Projection: GDA 1994
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Scale: 1:10,000 @ A3

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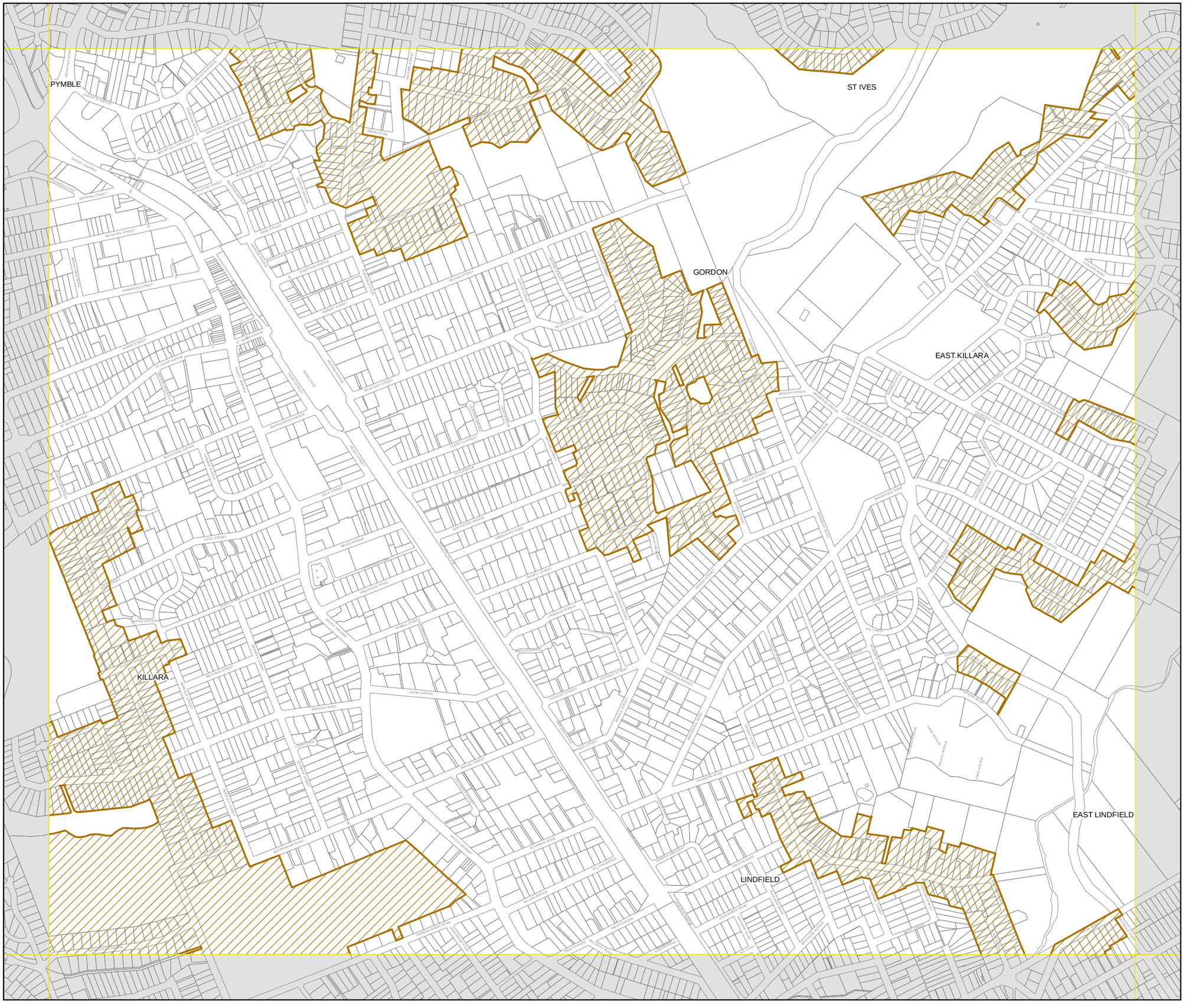

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_015

On Site Detention

OSD Exempt Areas

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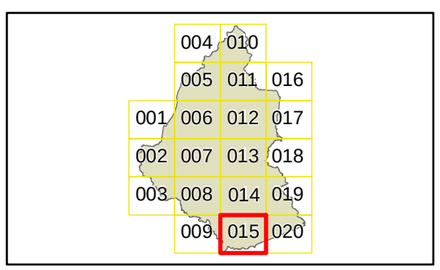

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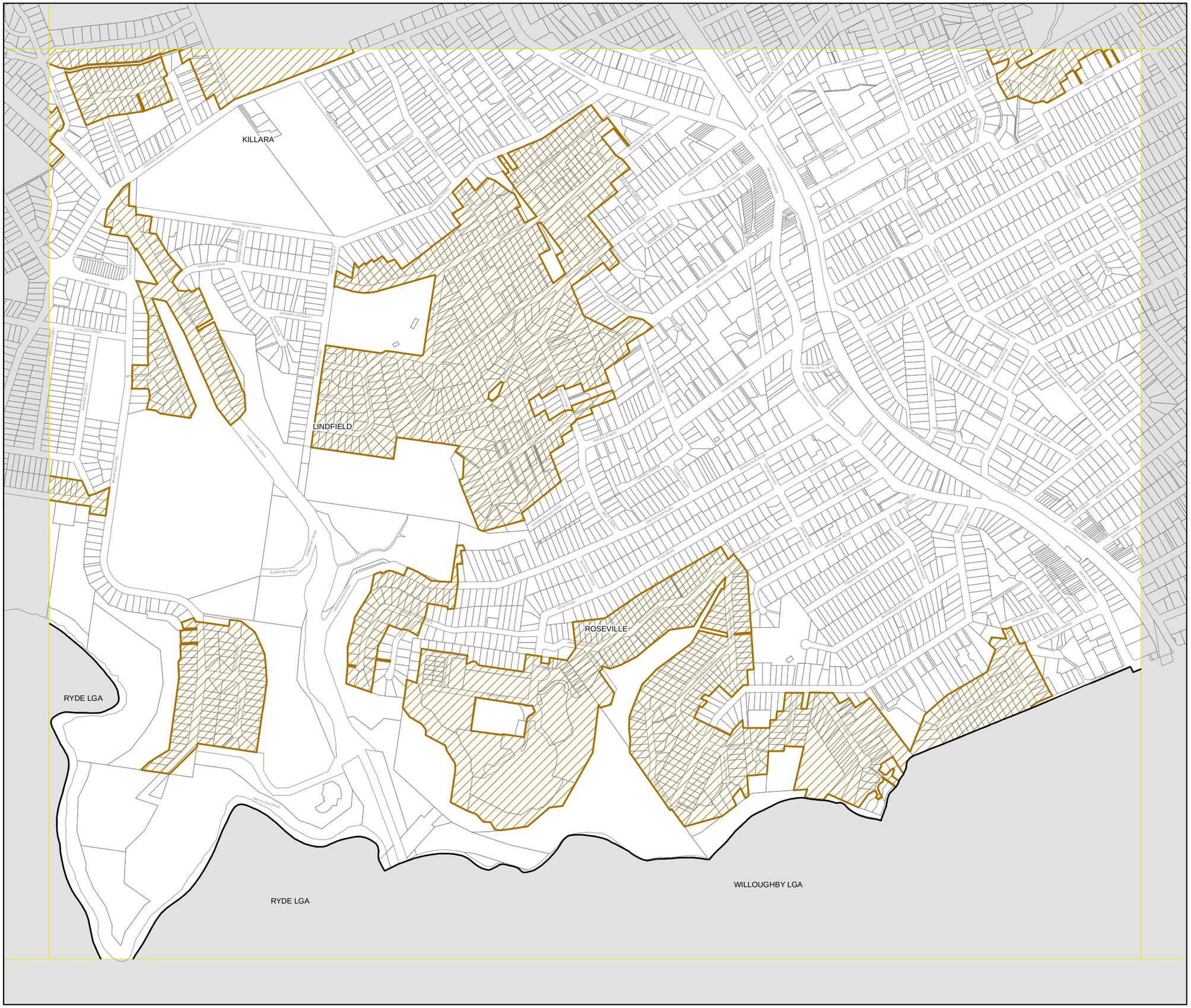
Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_015_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_016

On Site Detention

OSD Exempt Areas

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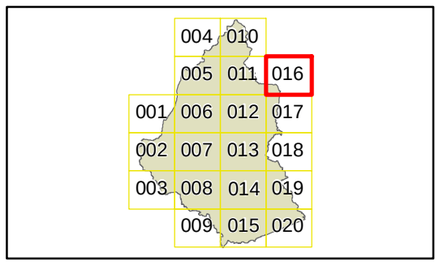

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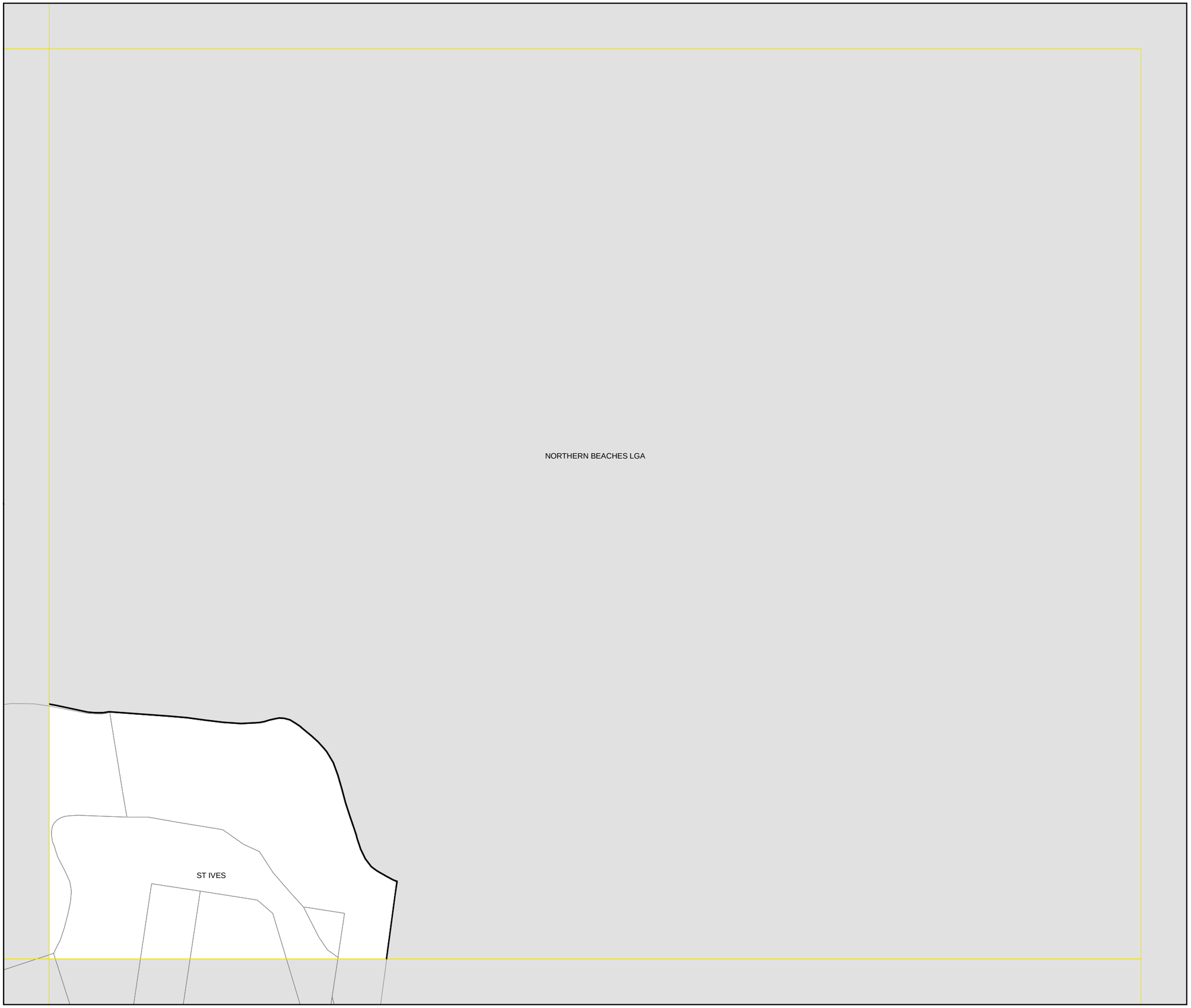
Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_016_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_017

On Site Detention

OSD Exempt Areas

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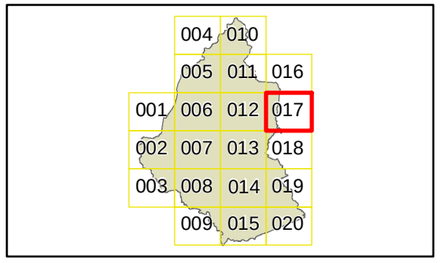

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Scale: 1:10,000 @ A3

Projection: GDA 1994
MGA Zone 56

Map Identification Number: 4500_COM_OSD_017_010_20220708

Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_018

On Site Detention

OSD Exempt Areas

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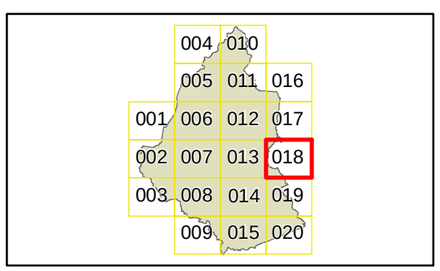

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Projection: GDA 1994
MGA Zone 56

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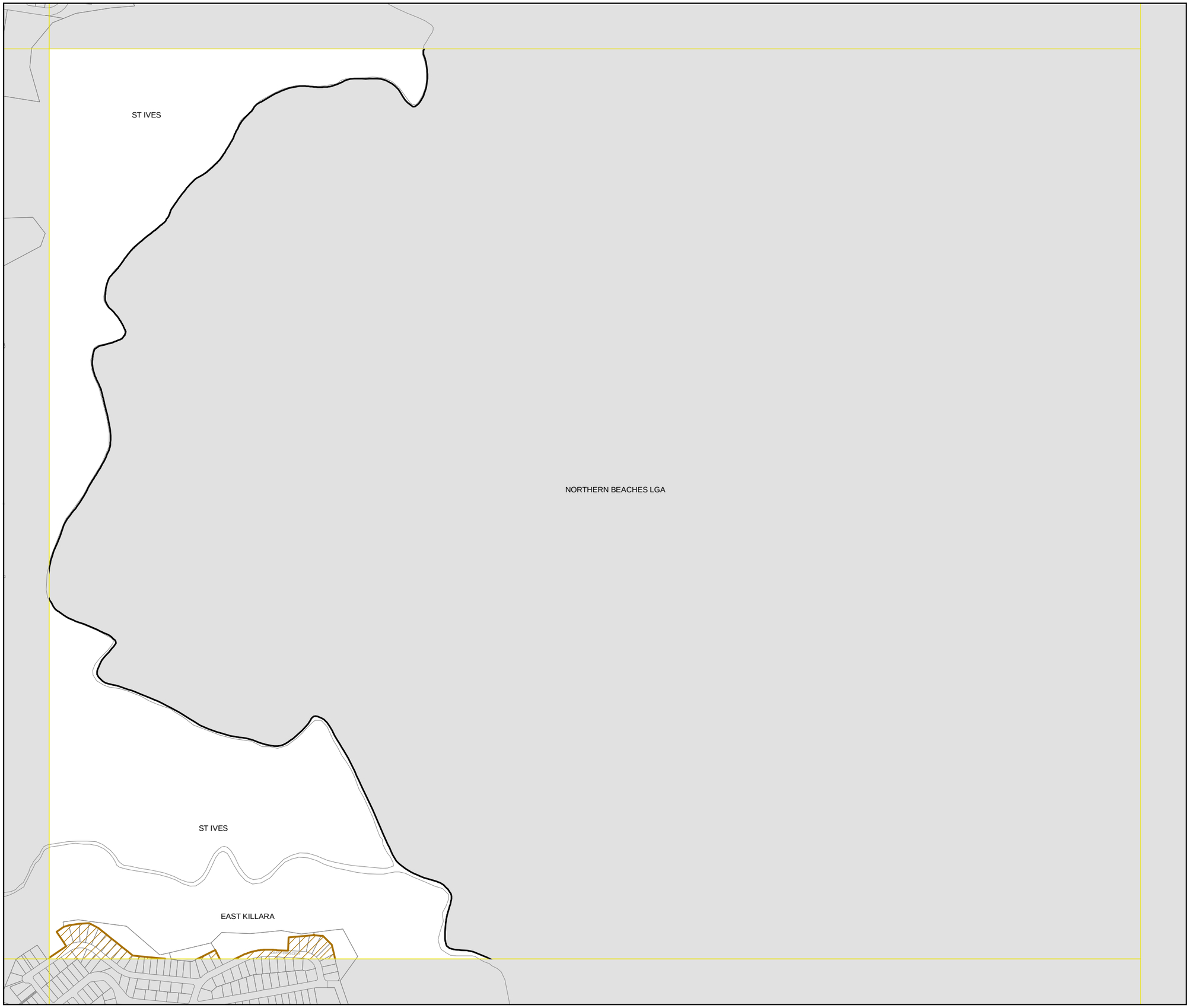
Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_018_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_019

On Site Detention

OSD Exempt Areas

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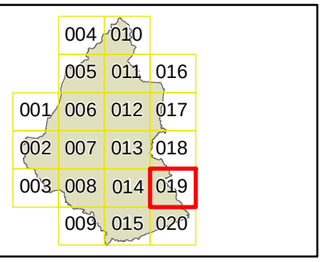

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Projection: GDA 1994
MGA Zone 56

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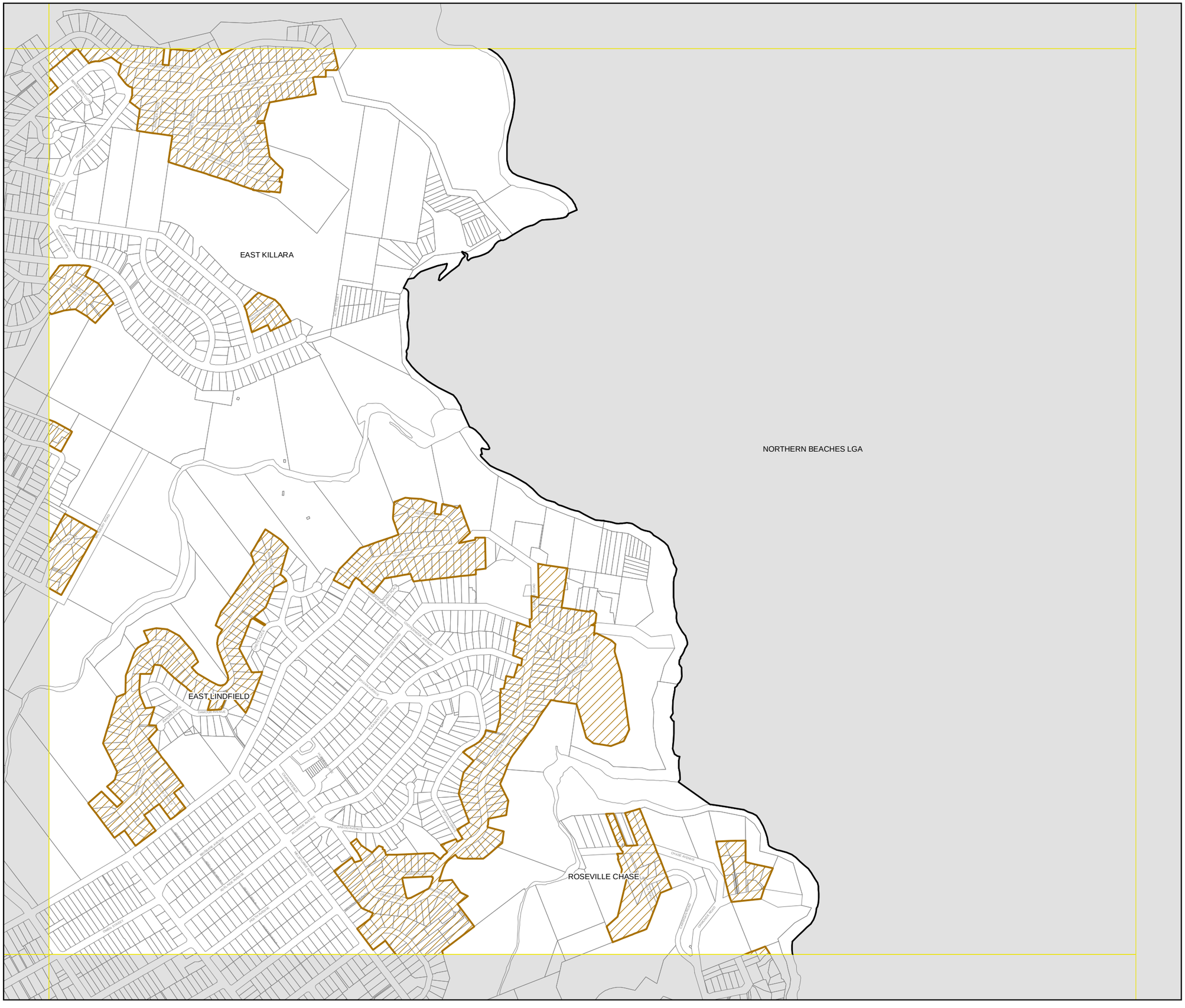
Scale: 1:10,000 @ A3

Map Identification Number: 4500_COM_OSD_019_010_20220708



Ku-ring-gai Development Control Plan

On Site Detention Exempt Areas - Sheet OSD_020

On Site Detention

OSD Exempt Areas

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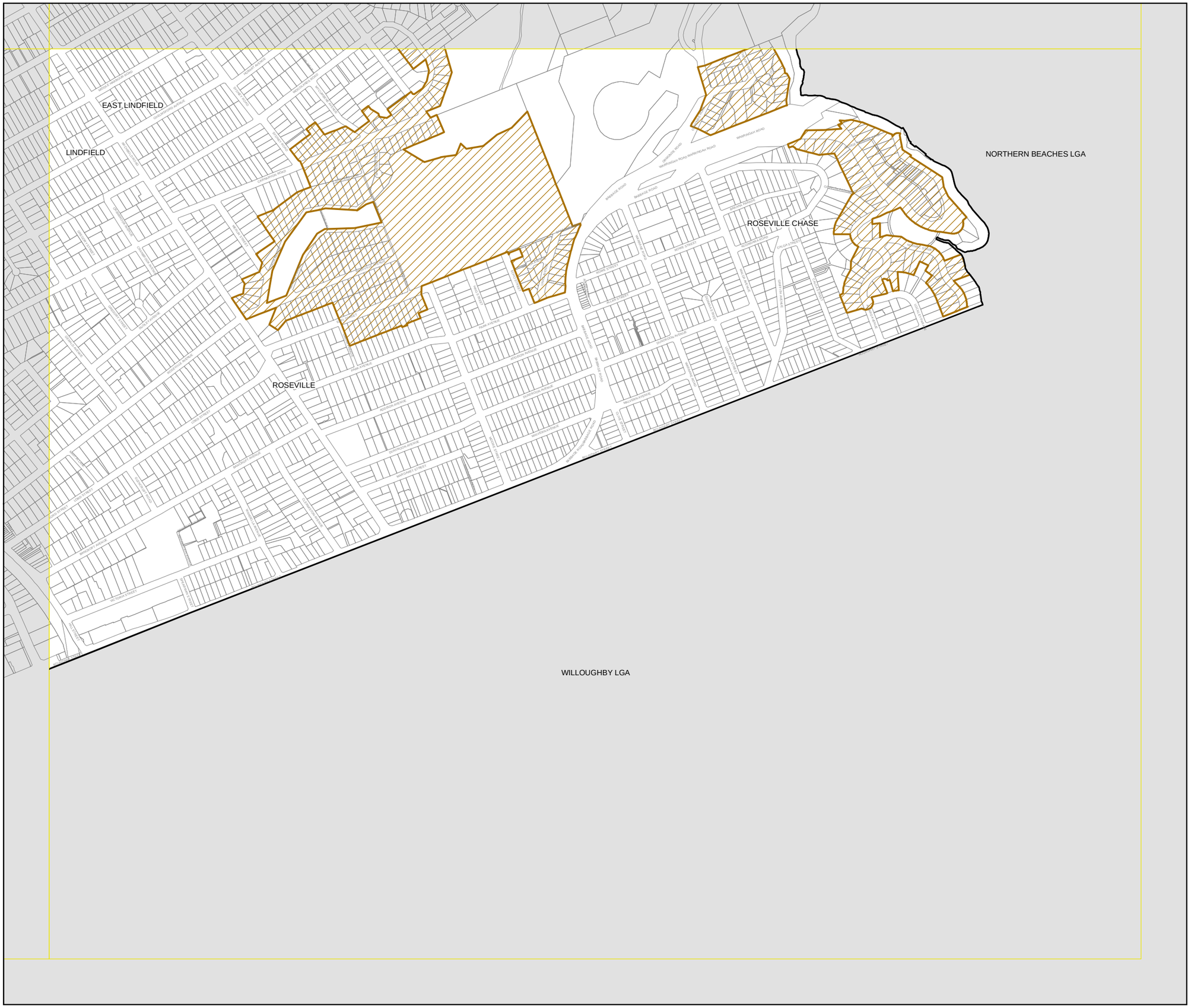

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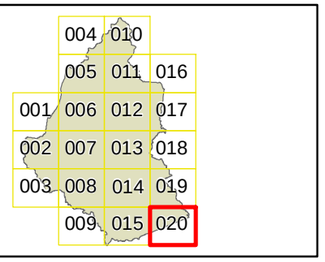

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Scale: 1:10,000 @ A3

Projection: GDA 1994
MGA Zone 56

Map Identification Number: 4500_COM_OSD_020_010_20220708