



Watercourse and Riparian Assessment: 14 and 16 Wyatt Avenue, Belrose, NSW

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Delivered by email to: johnh@holman.com.au

Mr John Holman
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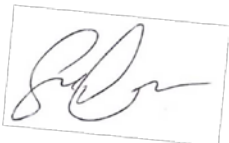
**Re: Assessment of the presence of a waterway and riparian zoning – 14 and 16 Wyatt Avenue,
Belrose, Sydney, NSW, 2085**

Dear Mr Holman

Please find attached our Report in regard to the assessment of the presence of a waterway, as defined by the *Water Management Act 2000* (NSW), at 14 and 16 Wyatt Avenue, Belrose, Sydney, NSW, 2085.

Our Report also considers whether the presence of waterway at the above property should be subject to any other relevant NSW riparian policy or legislation.

Yours sincerely



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Summary

This Report compiled for Mr John Holman identifies a number of items concerning the properties of 14 and 16 Wyatt Avenue, Belrose, NSW 2085. Mr Holman may want wish to consider the Report's findings in any future negotiations with relevant local and state authorities. The Report's summary list of Findings detailed below should be read in conjunction with the whole of the Report.

Findings

1. The current Northern Beaches Council aerial map¹ for 16 Wyatt Avenue, Belrose, depicts a watercourse that did not appear on the map prior to a 2010 site visit by the then Warringah Council.
2. The watercourse depicted on the Northern Beaches Council aerial map does not satisfy the conditions of a 'river' as outlined in the NSW *Water Management Act 2000*, which is the authoritative definition of a river in NSW.
3. The watercourse depicted on the Northern Beaches Council aerial map does not satisfy the conditions required for recognition as watercourse or 'minor stream' as outlined in Clause 3 and Part 2, Schedule 2 of the NSW *Water Management (General) Regulation 2011*. These conditions are that:
 - streams are shown as watercourses on the topographic maps according to the legend, and;
 - the Strahler system is applied to the watercourses shown on the topographic maps as listed in Part 2 - Schedule 2 of the NSW *Water Management (General) Regulation 2011*.
4. The Northern Beaches Council aerial map is not the map used by the NSW *Water Management (General) Regulation 2011* to identify the presence of a watercourse under NSW legislation. The designated authoritative map Part 2 - Schedule 2 of the NSW *Water Management (General) Regulation 2011* is the Hornsby: 9130-4S: 1986, 1:25,000 topographic map.
5. There is no indication on more recent versions of the Hornsby: 9130-4S, 1:25,000 topographic map that are dated at 2001 or the 2017, of the watercourse which appears on the Northern Beaches Council aerial map. These two map versions show the presence of watercourses prior to and after the 2010 site visit conducted by the then Warringah Council, who established the presence of the watercourse.
6. The watercourse depicted on the Northern Beaches Council aerial map does not satisfy the conditions of a 'watercourse' as outlined in the *Local Government (General) Regulation 2005* (NSW) or the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (NSW) Dictionary definitions that emphasise that watercourses represent 'natural systems'. A white PVC storm water pipe (indicated on the Northern Beaches Council aerial map as the watercourse's origin) is not a watercourse as defined under the *Water Management Act 2000* (NSW).

¹ Northern Beaches Council – Waterways and Riparian lands map. Available at: <https://eservices1.warringah.nsw.gov.au/ePlanning/live/Public/XC.Plan/PlanningMapsEsri.aspx?cid=&a=&l=602> (accessed 15 February 2018).



7. Given that the watercourse in question is absent from a 30-year record of multiple versions of the Hornsby: 9130-4S: 1:25,000 topographic map (i.e. 1986, 2001 and 2017) including the authoritative version (1986), there is no legitimate evidence to support the presence of a watercourse, as it appears on the Northern Beaches Council aerial map.
8. Case law decisions made in the NSW Land and Environment Court and detailed in Commonwealth Law Reports have established that in NSW, a watercourse or river, will exhibit certain physical characteristics including, a bed, banks and water. Further, they must also exhibit the attributes of continuity, permanence and unity. The area indicated on the Northern Beaches Council aerial map exhibits none of these physical features.
9. A field assessment of 16 Wyatt Avenue, Belrose conducted on 25 January 2018, revealed the presence of a natural depression or topographic low point some 20–30 metres from the area depicted as a watercourse on the Northern Beaches Council aerial map. There is no physical connection between the natural depression and the Council's marked watercourse.
10. The existing stormwater easement on 14 Wyatt Avenue drains towards a natural depression on 16 Wyatt Avenue. This 'natural depression' feature cannot be defined as a watercourse because:
 - a. the depression does not possess a definable bed, banks and contain flow, which would define it as a watercourse, and
 - b. it does not satisfy the conditions of a watercourse under the regulations required by the *Water Management (General) Regulation 2011* (NSW) i.e. that streams are shown as watercourses on the topographic maps according to the legend of the Hornsby: 9130-4S: 1986: 1:25,000 topographic map.
 - c. it does not satisfy the conditions of a watercourse as defined under NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy, i.e. that assigning riparian parameters to lands is based on watercourse order as classified under the Strahler System of ordering watercourses and using the current topographic maps. The current (2017 version) of the Hornsby: 9130-4S: 1:25,000 topographic map.
11. A historical Parish Map of the Manly Cove records many of the physical features of the 16 Wyatt Avenue, Belrose, including the 'natural depression' at the rear of the property. Moreover, there is no watercourse marked on this map in the area that is indicated on the Northern Beaches Council aerial map.
12. The NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy outlines the methods for categorising riparian lands in NSW as they relate to watercourses, requiring that they must appear on the most current topographic map.
13. The current topographic map that includes 16 Wyatt Avenue, Belrose is the 2017 version of the Hornsby: 9130-4S: 2017: 1:25,000 topographic map. This map shows that there is no watercourse present on the property 16 Wyatt Avenue, Belrose.
14. The Northern Beaches Council, in its Waterways - Protection of Waterways and Riparian Land Policy defers to the NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors requirement that of the most current topographic map (Hornsby: 9130-4S: 2017: 1:25,000) is to be used for establishing the presence of waterway where none is identified by council mapping data and assigning riparian land parameters.
15. The subject watercourse at 16 Wyatt Avenue, Belrose, as depicted in the Northern Beaches Council aerial map is not reflected on the 2017 version of the Hornsby: 9130-4S: 2017:

1:25,000 topographic map, as required by the NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy to assign riparian lands. Therefore, it is not possible to:

- a) submit there is a watercourse present on 16 Wyatt Avenue, Belrose
- b) conclude that there are riparian lands present on 16 Wyatt Avenue, Belrose
- c) subject 16 Wyatt Avenue, Belrose, to any State or Local Government riparian land policies.

16. The Northern Beaches Council aerial map should be amended to reflect the Findings in this Report, namely that the inclusion of the watercourse as it appears on the Council's aerial map, is in error.

Project overview

This Report was commissioned by Mr John Holman to assess and establish the existence of a watercourse, as defined by the Water Management Act, 2000, and to determine the appropriate Riparian Zoning for the properties at 14 and 16 Wyatt Avenue, Belrose, NSW.

Terms of Reference

1. Provide a report which examines the evidence and determines whether any 'waterway' or 'river', as defined by the *Water Management Act 2000* (NSW), exists on, originates or runs through, the properties of 14 and 16 Wyatt Avenue, Belrose.
2. Identify if, as a result of the waterway determination, if the properties of 14 and 16 Wyatt Avenue, Belrose, are subject to any Riparian policy or legislation.
3. Make Findings, based on the field assessment conducted on the 25 January 2018 and a review of the relevant state and local legislation and policies relating to watercourses and riparian lands in New South Wales.

Consultations undertaken for this Report

This report involved the following consultation site visit:

25 January 2018, 14 and 16 Wyatt Avenue, Belrose:

- John Holman, owner of property met with Steven George and Mark P. Taylor and provided site access.

In addition to the above consultation, numerous phone calls and e-mail discussions were undertaken to assist in clarifying matters raised during compilation of this report.

List of abbreviations and terms

Term	Abbreviation
Commonwealth Law Reports	CLR
Department of Infrastructure, Planning and Natural Resources (NSW)	DIPNR (now known as the NSW Department of Planning and Environment)
Local Government Area	LGA
New South Wales Land and Environment Court	NSWLEC
<i>Water Management Act 2000</i> (NSW)	WMA
<i>Water Management (General) Regulation 2011</i> (NSW)	WMGR

Relevant legislation and policies relied on in this Report

Water Management Act 2000 (NSW).

Water Management (General) Regulation 2011 (NSW).

Northern Beaches Council Policy - Policy No. PL 740: Waterways Protection of Waterways and Riparian Land Policy.

NSW Government - Department of Primary Industries – Office of Water: Controlled Activities on Waterfront Land - Guidelines for riparian corridors.

Determinations from the NSW Land and Environment Court (NSWLEC) and case law reports detailed in Commonwealth Law Reports (CLR).

A summary of the properties – 14 and 16 Wyatt Avenue, Belrose

The properties of 14 and 16 Wyatt Avenue, Belrose lie within the Local Government Area (LGA) of the Northern Beaches Council (formerly Warringah Council, Figure 1). Both properties belong to Mr John Holman who has resided at number 16 for some years. Mr Holman is aware of discrepancies between what he believes are the actual physical and topographical characteristics of his properties and those recorded on Northern Beaches Council aerial map. A primary concern for Mr Holman has arisen from the inclusion of a river or watercourse on the council's aerial map of 16 Wyatt Avenue where there was not one previously. This situation became apparent following a visit, at the request of Mr Holman, from Warringah Council in 2010.

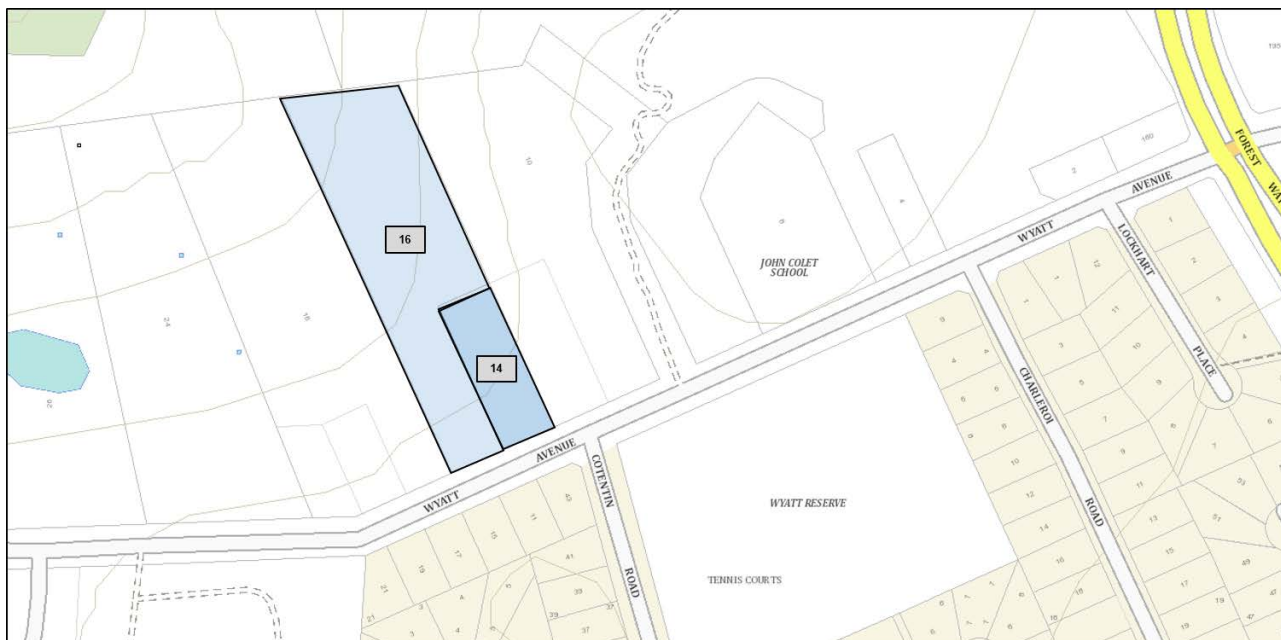


Figure 1. The properties of 14 and 16 Wyatt Avenue, Belrose as indicated on the NSW Government online mapping facility, SIX Maps.²

Site visit - Warringah Council - 1 September, 2010

On the 1 September 2010, a representative of Warringah Council (now Northern Beaches Council) attended 14 and 16 Wyatt Avenue, Belrose at the request of the Mr Holman. At the time, the Council representative conducted a walking inspection of the properties to establish a range of physical aspects including, the existence and course of any watercourses on the property. On this occasion, the Council representative formed the opinion that there was a watercourse on 16 Wyatt Avenue. Following the visit, aerial maps produced by the Council reflected this opinion, with the watercourse marked on the Northern Beaches council aerial map as a blue line (Figure 2). The aerial map was produced and published by Northern Beaches Council in 2014 and published in the NSW Government Gazette in 2016.

This subsequent passage of this watercourse is indicated as flowing to the north-west and into bushland at the rear of 16 Wyatt Avenue, Belrose. Relevantly, the origin of the watercourse corresponds exactly with the point where a white PVC stormwater drainage pipe (Figures 2 and 5) is present at surface of the ground. This pipe was installed by Mr Holman in 2001 to address

² NSW Government, Spatial Services – SIX Maps online mapping data of 14 & 16 Wyatt Avenue, Belrose. Available at: <https://maps.six.nsw.gov.au/> (accessed 15 February 2018).

excess stormwater not adequately contained or conveyed by the drainage easement located at 14 Wyatt Avenue. The white pipe, as evident in Figure 5, discharges excess water (when flowing) at the boundary fence with the neighbouring property, 18 Wyatt Avenue, Belrose.

Site visit – Macquarie University - 25 January 2018

On 25 January 2018, at the request of Mr Homan, Professor Mark Taylor and Steven George from Macquarie University attended 14 and 16 Wyatt Avenue, Belrose. Mr Holman outlined his concerns that the aerial map, produced following the Warringah Council visit in 2010, indicated a watercourse on 16 Wyatt Avenue where none was previously depicted. Mr Holman also expressed his concern as to the possible implications for the property under state and local government riparian policy and legislation if it were legally determined that there is indeed a watercourse on 16 Wyatt Avenue. The purposes of the meeting and subsequent field assessment was to 'ground truth' 14 and 16 Wyatt Avenue, Belrose to establish if the actual physical features and topography of Mr Holman's properties corresponded to those represented on the Northern Beaches Council aerial map.

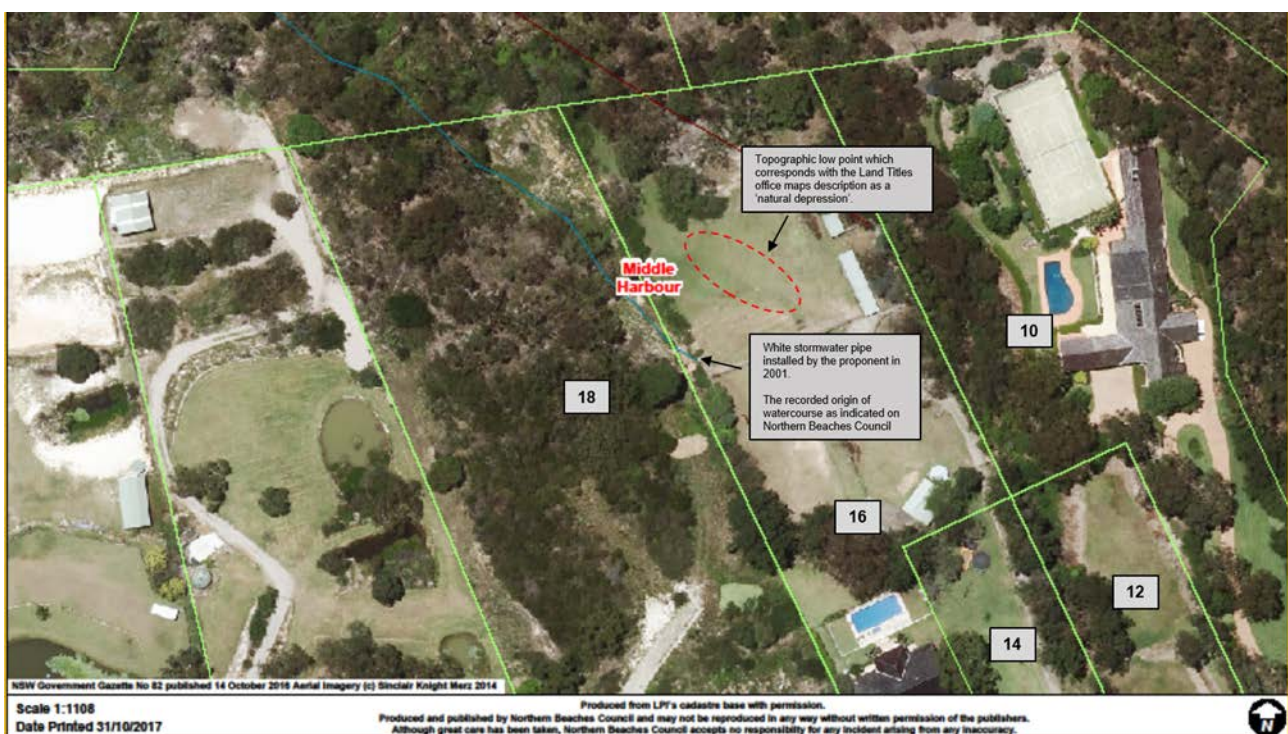


Figure 2. Northern Beaches Council aerial map showing 14 and 16 Wyatt Avenue, Belrose (both owned by Mr Holman) and bordering properties. Map indicates the origin of a watercourse (starting at a white drainage pipe) determined from Council site visit on 1 September 2010. The Council's map also indicates a topographic low point or natural depression.³

A field assessment was conducted of 14 and 16 Wyatt Avenue, Belrose, (both owned by Mr Holman). From the field assessment, it was evident that the point marked on the Council's aerial map indicating the origin of a watercourse on 16 Wyatt Avenue, corresponds to the location where the white PVC stormwater drainage pipe emerges. During the field assessment it became apparent that the physical characteristics of the landscape of the properties did not satisfy the criteria

³ Northern Beaches Council – Waterways and Riparian lands map. Available at: <https://eservices1.warringah.nsw.gov.au/ePlanning/live/Public/XC.Plan/PlanningMapsEsri.aspx?cid=&a=&l=602> (accessed 15 February 2018).

required under the relevant legislation to establish that a river or watercourse was present on either 14 or 16 Wyatt Avenue, Belrose.

What legally constitutes a river or watercourse

The authoritative definition for determining a river in New South Wales is found within the NSW *Water Management Act 2000* (WMA). In defining what constitutes a river or watercourse, the WMA provides that a:

river includes:

- (a) any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved, and
- (b) any tributary, branch or other watercourse into or from which a watercourse referred to in paragraph (a) flows, and
- (c) anything declared by the regulations to be a river, whether or not it also forms part of a lake or estuary, but does not include anything declared by the regulations not to be a river.⁴

The *Water Management (General) Regulations 2011* (NSW) (WMGR) outlines definitions and specifies procedural and technical matters to assist in implementing the provisions of the WMA. As outlined in paragraph (c) of the WMA definition of a river, reference is made to the regulations in the determination of what *does* or *does not* constitute a river or watercourse under the WMA. In addressing this point, the regulations provide that:

For the purposes of paragraph (c) of the definition of **river** in the Dictionary to the Act, the following are declared to be a river in the WMGR:

- (a) any watercourse, whether perennial or intermittent, comprising an artificial channel that has changed the course of the watercourse,
- (b) any tributary, branch or other watercourse into or from which a watercourse referred to in paragraph (a) flows,⁵

**** Hereafter, the term 'watercourse' will be used to describe any river, stream or the blue line indicated on the Northern Beaches Council aerial map.**

Whilst there is no definition for the term 'watercourse' contained in the WMA, the term is defined in a number of other relevant documents. The NSW Land and Environment Court decision, *Silva, Nelson v Ku-ring-gai Council* [2009] NSWLEC 1060 addressed two such examples. The *Local Government (General) Regulation 2005*, (NSW) Guidelines for categorisation of land as a watercourse provides that:

Land that is categorised as a natural area should be further categorised as a watercourse under s 36 (5) of the Act if the land includes:

- (a) any stream of water, whether perennial or intermittent, flowing in a natural channel, or in a natural channel that has been artificially improved, or in an artificial channel that has changed the course of the stream of water, and any other stream of water into or from which the stream of water flows ...⁶

⁴ Water Management Act 2000 No 92 (NSW) Schedule 12- Dictionary. *River* – Definition, page 250. Available at: <https://www.legislation.nsw.gov.au/inforce/10be4a97-110c-c0e0-c5ad-c6a8646a369e/2000-92.pdf>

⁵ Water Management (General) Regulation 2011. Dictionary. *River* – Definition, page 16. Available at: <https://legislation.nsw.gov.au/inforce/fe049dad-f250-e070-b872-f5f6956a1f0a/2011-469.pdf> (accessed 12 February 2018).

⁶ NSW Land and Environment Court, *Silva, Nelson v Ku-ring-gai Council* [2009] NSWLEC 1060 (accessed 20 February 2018).

And, contained in the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (NSW) Dictionary:

watercourse means any river, creek, stream or chain of ponds, whether artificially modified or not, in which water usually flows, either continuously or intermittently, in a defined bed or channel, but does not include a waterbody (artificial).⁷

It is noted in the decision of Silva, *Nelson v Ku-ring-gai Council* [2009] NSWLEC that in these definitions:

there is an emphasis on natural systems. This is mirrored in part (a) of the Dictionary definition of 'rivers' but any notion of naturalness is equivocal with respect to part (b) of 'Rivers' in the WMA Dictionary.⁸

Whilst the term 'naturalness' may be open to interpretation in a range of circumstances, it is highly doubtful that the term could be applied to the white PVC drainage pipe installed by Mr Holman to address storm water runoff at 16 Wyatt Avenue, Belrose.

The WMGR also details the manner in which the existence and ordering of watercourses (stream order) will be determined under the WMA. The WMGR outlines that:

The method of determining the stream order of a watercourse shown on a topographic map is the Strahler system.... The Strahler system is applied to the watercourses shown on the topographic maps as listed in Part 2.⁹

Furthermore, in defining a 'minor stream' the WMGR states that:

(a) any stream or part of a stream:

- (i) the location of which is represented on any of the topographic maps listed in Part 2 of Schedule 2, and
- (ii) that is a first or second order stream, or part of such a stream, as determined in accordance with the system set out in Part 1 of Schedule 2, and
- (iii) which does not maintain a permanent flow of water, being a visible flow which occurs on a continuous basis, or which would so occur if there were no artificial abstractions of water or obstruction of flows upstream, and
- (iv) which does not at any time carry flows emanating from a third, fourth or higher order stream as determined in accordance with the system set out in Part 1 of Schedule 2, and

(b) any stream or part of a stream the location of which is not represented on a topographic map listed in Part 2 of Schedule 2.¹⁰

Importantly, and outlined in the regulations, for the purposes of paragraphs (a) (i) and (b), the streams are shown as watercourses on the topographic maps according to the legend.¹¹ The symbols contained in the map legend that indicate the presence of a watercourse are seen in Figure 3.

⁷ NSW Land and Environment Court, *Silva, Nelson v Ku-ring-gai Council* [2009] NSWLEC 1060 (accessed 20 February 2018).

⁸ *Ibid.*

⁹ Water Management (General) Regulation 2011: Diagram and map references relating to streams, page 109. Available at: <https://legislation.nsw.gov.au/inforce/fe049dad-f250-e070-b872-f5f6956a1f0a/2011-469.pdf> (accessed 12 February 2018).

¹⁰ Water Management (General) Regulation 2011. Dictionary. *Minor stream* – Definition, pages 15-16. Available at: <https://legislation.nsw.gov.au/inforce/fe049dad-f250-e070-b872-f5f6956a1f0a/2011-469.pdf> (accessed 9 February 2018).

¹¹ *Ibid.*

Part 2 of Schedule 2 of the WMGR clearly references the specific topographic maps required to determine the presence watercourses and their location under the WMA. The Schedule includes the specific map name, map designation, edition (year) and required map scale. The map specified by Schedule 2 that relates to 14 and 16 Wyatt Avenue, Belrose is the Hornsby: 9130-4S: 1986: 1:25,000 topographic map.¹² Figure 3 is an image taken from the map legend of the specified Hornsby maps as required under the WMGR. It depicts the relevant symbols required, under the WMGR, to appear on the map to indicate the location of a watercourse for it to be recognised under the WMA.

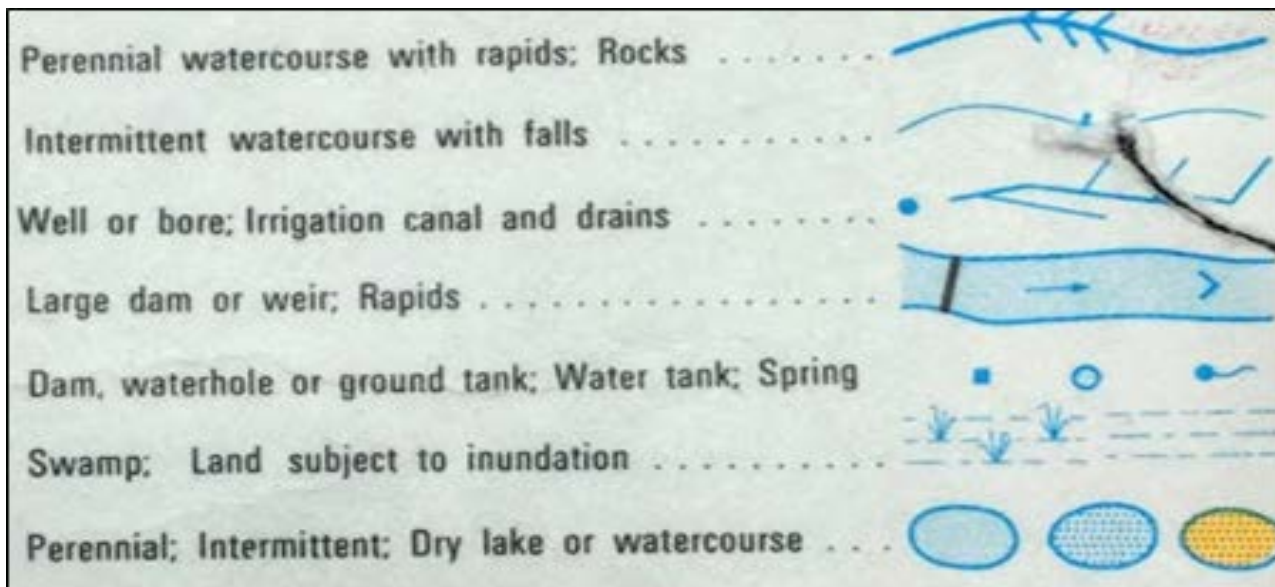


Figure 3. The relevant references and symbols for watercourses in the map legend for the Hornsby: 9130-4S: 1986: 1:25,000 topographic map, the subject of 14 and 16 Wyatt Avenue, Belrose.¹³

Figure 4(a) is the portion of the Northern Beaches Council aerial map showing 14 and 16 Wyatt Avenue's property boundary highlighting the location of the Council's alleged watercourse. Figure 4(a) also highlights the absence of a watercourse on 14 Wyatt Avenue. Figure 4(b)(inset) is the corresponding portion of 16 Wyatt Avenue taken from the Hornsby: 9130-4S: 1986: 1:25,000 topographic map as specified in the WMGR. The property's boundary relative position in Figure 4(b) is extrapolated from Figure 4(a).

In Figure 4(a), the origin of the watercourse as determined by the Northern Beaches Council (orange edged-box) and its passage are highlighted and are shown as a blue line continuing through the neighbouring property, 18 Wyatt Avenue, and into bushland to the north-west. It is clear that the symbols required by the WMGR in the map legend (Figure 3) that indicate a watercourse, are absent in the specified Hornsby topographic map (Figure 4(b)). A condition required by the WMGR and outlined above for a watercourse to be legally recognised, under the Act (WMA), is that that, streams are shown as watercourses on the topographic maps according to the map legend.

¹² Water Management (General) Regulation 2011: Schedule 2, Part 2 – References to topographic maps with stream locations, page 124. <https://legislation.nsw.gov.au/inforce/fe049dad-f250-e070-b872-f5f6956a1f0a/2011-469.pdf> (accessed 12 February 2018).

¹³ NSW Government - Topographic Map: Hornsby: 9130-4S: 1986: 1:25,000 – Map held in Special Collection at the NSW State Library (viewed and section photographed by S. George on 13 February 2018).

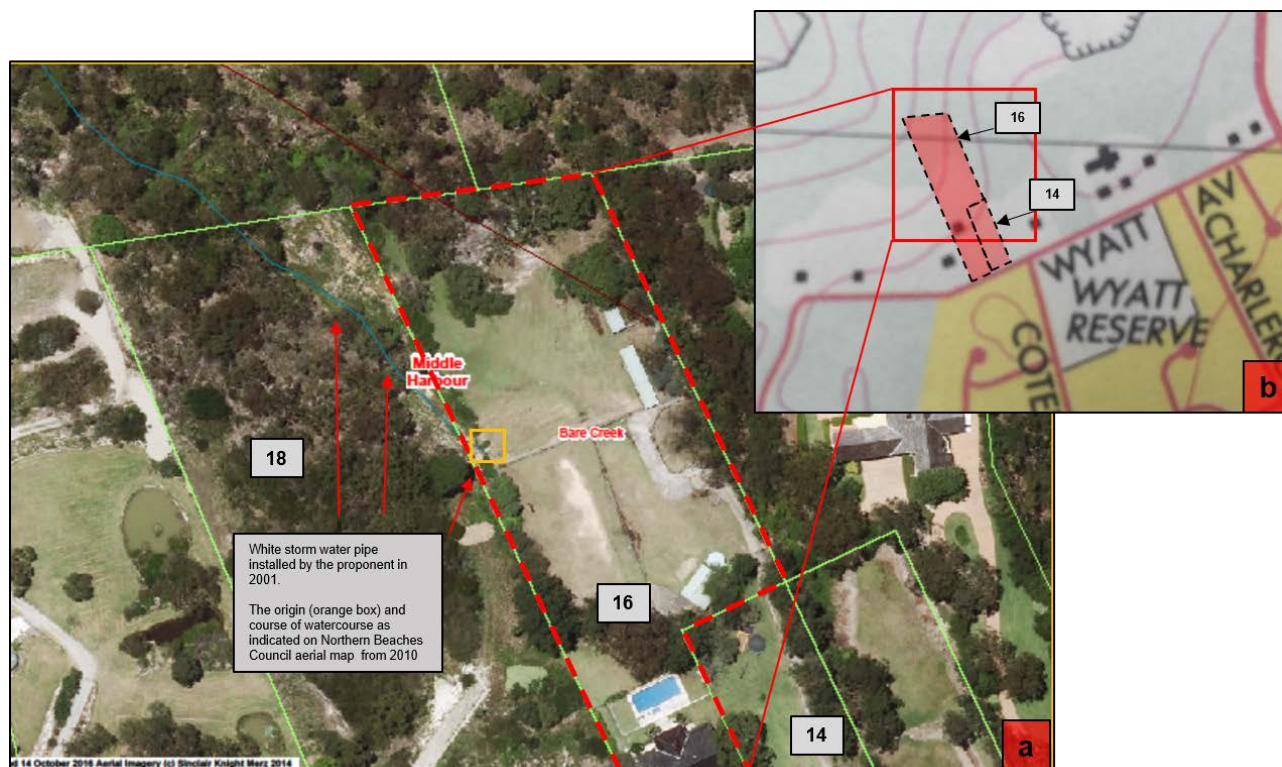


Figure 4. (a)¹⁴ and (b)¹⁵. (a) is a portion of the Northern Beaches Council aerial map showing 14 and 16 Wyatt Avenue, Belrose property lots and the watercourse as determined in 2010 (orange edged-box). (b) Shows property lots 14 and 16 Wyatt Avenue, Belrose taken from a portion of the Hornsby: 9130-4S: 1986: 1:25,000 topographic map required to show a watercourse under the relevant legislation. The blue line indicating the watercourse on the council aerial map (Figure 4(a)) is absent from the 16 Wyatt Avenue property on the Figure 4(b) topographic map and there is no watercourse indicated on 14 Wyatt Avenue on either map.

It should also be noted that in other more recent versions (2001 and 2017) of the same Hornsby topographic map, there is an absence of a watercourse in the location indicated by the Council's aerial map. Indeed there is no watercourse indicated at the 16 Wyatt Avenue at all. This raises the obvious question that if there were indeed a watercourse where the Council's aerial map indicates, why was not it included in the topographic map specified in the WMGR and why was it present on updated versions of the same map? This continuity of absence for this watercourse strongly suggests that it did not and does exist as suggested pursuant to the Council's 2010 determination.

¹⁴ Northern Beaches Council – Waterways and Riparian lands map. Available at: <https://eservices1.warringah.nsw.gov.au/ePlanning/live/Public/XC.Plan/PlanningMapsEsri.aspx?cid=&a=&l=602> (accessed 15 February 2018).

¹⁵ NSW Government, Spatial Services – Topographic map (1986) - Hornsby: 9130-4S: 1986: 1:25,000. Map held at NSW State Library, Macquarie Street, Sydney 2000 – Special collection (viewed and photographed on 13 February 2018).

Findings relating to legal determination of a river or watercourse

1. The current Northern Beaches Council aerial map for 16 Wyatt Avenue, Belrose, depicts a watercourse which did not appear on the map prior to a 2010 site visit by the then Warringah Council.
2. The watercourse depicted on the Northern Beaches Council aerial map does not satisfy the conditions of a 'river' as outlined in the *NSW Water Management Act 2000*, which is the authoritative definition of a river in NSW.
3. The watercourse depicted on the Northern Beaches Council aerial map does not satisfy the conditions required for recognition as watercourse or 'minor stream' as outlined in Clause 3 and Part 2, Schedule 2 of the *NSW Water Management (General) Regulation 2011*. These conditions are that:
 - streams are shown as watercourses on the topographic maps according to the legend, and;
 - the Strahler system is applied to the watercourses shown on the topographic maps as listed in Part 2 - Schedule 2 of the *NSW Water Management (General) Regulation 2011*.
4. The Northern Beaches Council aerial map is not the map used by the *NSW Water Management (General) Regulation 2011* to identify the presence of a watercourse under NSW legislation. The designated authoritative map Part 2 - Schedule 2 of the *NSW Water Management (General) Regulation 2011* is the Hornsby: 9130-4S: 1986, 1:25,000 topographic map.
5. There is no indication on more recent versions of the Hornsby: 9130-4S, 1:25,000 topographic map that are dated at 2001 or the 2017, of the watercourse which appears on the Northern Beaches Council aerial map. These two map versions show the presence of watercourses prior to and after the 2010 site visit conducted by the then Warringah Council, who established the presence of the watercourse.
6. The watercourse depicted on the Northern Beaches Council aerial map does not satisfy the conditions of a 'watercourse' as outlined in the *Local Government (General) Regulation 2005 (NSW)* or the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (NSW)* Dictionary definitions that emphasise that watercourses represent 'natural systems'. A white PVC storm water pipe (indicated on the Northern Beaches Council aerial map as the watercourse's origin) is not a watercourse as defined under the *Water Management Act 2000 (NSW)*.
7. Given that the watercourse in question is absent from a 30-year record of multiple versions of the Hornsby: 9130-4S: 1:25,000 topographic map (i.e. 1986, 2001 and 2017) including the authoritative version (1986), there is no legitimate evidence to support the presence of a watercourse, as it appears on the Northern Beaches Council aerial map.

The physical characteristics of a watercourse

There are numerous physical characteristics that are typically present in a landscape associated with a river or a watercourse. Further, there are numerous examples, presented before the NSW Land and Environment Court (NSWLEC) and in cases present in the Commonwealth Law Reports (CLR), where the definition of a river has been at the centre of legal argument. In *Silva, Nelson v Ku-ring-gai Council* [2009] NSWLEC 1060, a number of these determinations were outlined. These show that, although there are subtle differences in the determinations of what constitutes a river as made by the NSWLEC, there is general agreement in regard to the major physical characteristics required for a *bona fide* river to be present. Some of these case law decisions are outlined below:

As Windeyer J noted in *Gartner v Kidman* (1962) 108 CLR 12,

...a watercourse was defined to consist of:
bed, banks and water: yet the water need not flow continuously and there are many watercourses which are sometimes dry.¹⁶

And:

In *Knezovic v Shire of Swan-Guildford* (1968) 118 CLR 468. According to the judgment of Barwick CJ (at 475-476):

a watercourse consists of a stream with a bed, with banks, and water ...¹⁷

And, also by Barwick J:

... in my opinion, must exhibit features of continuity, permanence and unity, best seen, of course, in the existence of a defined bed and banks with flowing water. It must, in my opinion, essentially be a stream and be sharply distinguished from a mere drain, or a drainage depression in the contours of the land which serves to relieve upper land of excess water in times of major precipitation.¹⁸

This decision by Barwick has been applied in more recent matters heard before the NSWLEC. In *Jugiong Quarries Pty Limited v Water Ad I Corporation* [1995] NSWLEC 74 (11 May 1995) Talbot J noted (at 22) that the “normal” understanding of the word river:

...is the flow or stream of water evident for the most part together with the area of land contained within a defined bank or shore associated directly with that body of water. The area of land would encompass the bed of the river.¹⁹

In *Don Burke v Hawkesbury City Council* [2001] NSWLEC 222, Sheahan J followed the reasoning developed in these previous cases to determine that a waterbody under consideration did not exhibit the features of continuity, permanence and unity, and did not display identifiable margins.²⁰

¹⁶ NSW Land and Environment Court, *Silva, Nelson v Ku-ring-gai Council* [2009] NSWLEC 1060 (accessed 21 February 2018) taken from Taylor, M.P., Stokes, R. 2005. Up the creek: What is wrong with the definition of a river in New South Wales? *Environment Planning and Law Journal*, 22, 193-211.

¹⁷ *Ibid.*

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ Referenced in *Silva, Nelson v Ku-ring-gai Council* [2009] NSWLEC 1060 (accessed 21 February 2018) and Taylor, M.P., Stokes, R. 2005. Up the creek: What is wrong with the definition of a river in New South Wales? *Environment Planning and Law Journal*, 22, 193-211.

Detailed below is a comprehensive list of observable physical features used during field assessments to differentiate between a river or stream and a drainage depression.²¹ Establishing the presence or absence of these fluvial features helps to establish the requirements to determine the presence of *bona fide* a river. These are listed below in Table 1. Relevantly, the sentiments expressed in various court decisions detailed above are also reflected in Table 1 with respect to required physical attributes of bed, banks and water flow and the characteristics of continuity, permanence and unity.

Table 1. The physical features used during field assessments to determine the difference between drainage lines and rivers or streams.²²

Are there definable channel banks and a channel bed?
Are there fluvial bedforms e.g. pools, riffles, sediment point bars etc and if so what are they?
Is there any evidence for substantial erosion from water flow within the drainage feature?
Are there any spring lines that may indicate seasonally intermittent or perennial flow?
Is the catchment large enough to sustain perennial or intermittent groundwater flow?
Are there any indicators of prolonged wetness within the drainage feature?
If surface flow is present, is it continuous and how extensive across the base of the drainage feature is it?
Are there any visible habitats that might sustain aquatic fauna?
Are there any aquatic flora present that would require periods of uninterrupted moisture?

Upon identifying the location of the Council's watercourse, an in-depth appraisal of the surrounding area was conducted. The purpose of this was to establish the presence or absence of any of the features listed in Table 1. The field inspection revealed that none of the characteristics listed in Table 1 or outlined in the NSWLEC determinations were present at either the Council's marked watercourse's origin or that associated with its apparent course.

Therefore, as there were no definable bank structures, there can be no channel or bed as required under case law. These features, as indicated in the NSWLEC determinations are considered characteristics of permanence. None of the features associated with the Council's watercourse exhibit any sign of permanence. The absence of these features is clearly depicted in Figure 5, which also highlights the proximity of the fence line to the pipe's discharge point. Indeed, the area in the near vicinity of the pipe and the alleged? watercourse were devoid of any discernible physical features with the exception off surface foliage in the form of grass and small shrubs that run parallel to the boundary fence with 18 Wyatt Avenue.

²¹ Taylor, M.P., Stokes, R. 2005. Up the creek: What is wrong with the definition of a river in New South Wales? *Environment Planning and Law Journal*, 22, 193-211.

²² Ibid.

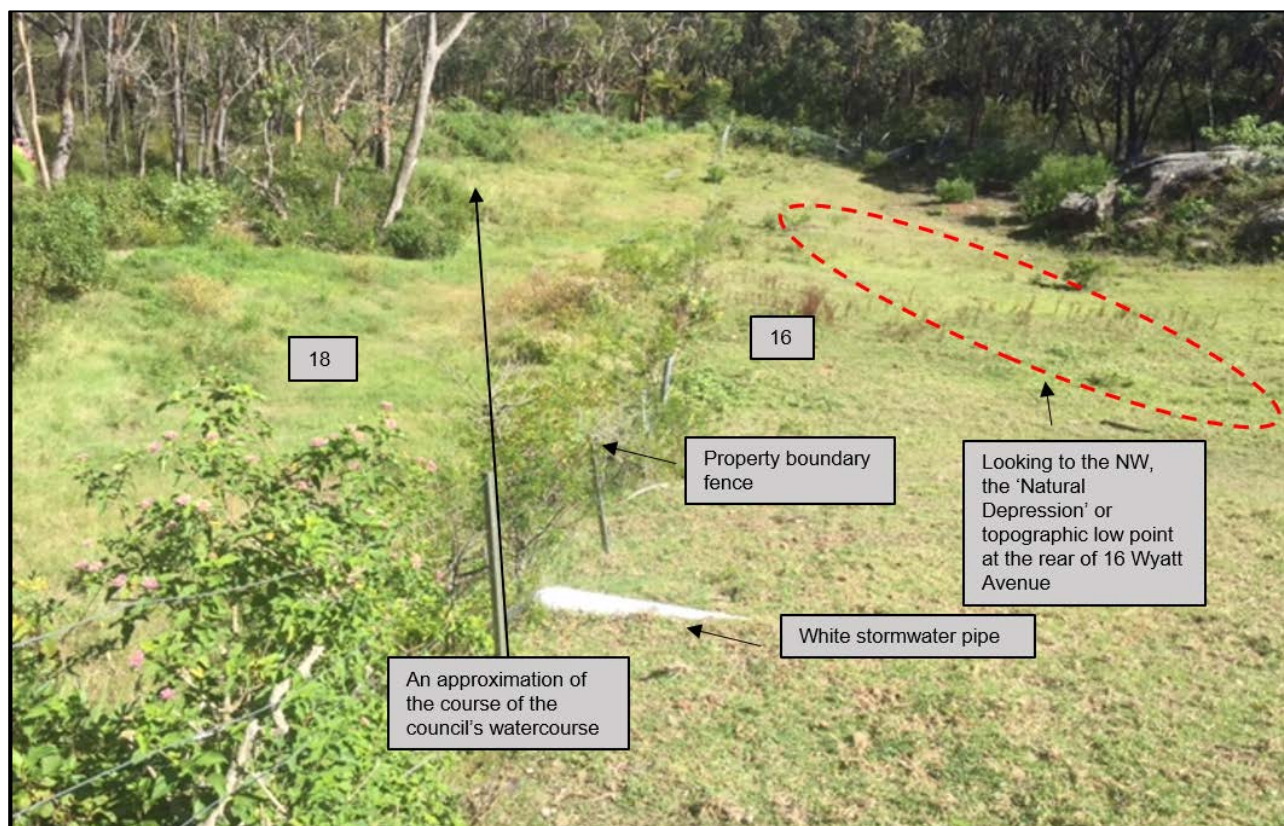


Figure 5. Photograph of discharge point of white PVC stormwater pipe and property boundary between No's 16 and 18 Wyatt Avenue. Also indicated is an approximation of the course of the council's watercourse. Photo source: S. George.

During our field assessment, a subtle but topographic depression at the rear of 16 Wyatt Avenue was identified. This topographic low point is highlighted in Figure 5 and is orientated in a north-west direction at the rear of the property. It is located 20-30 metres from the watercourse shown on the Council's aerial map. Figure 5 also demonstrates that there are no physical structures in the landscape that connect this depression to the white PVC pipe.

The topographic depression feature exhibits none of the physical characteristics associated with a river or stream commonly identified in the NSWLEC determinations in terms of possessing a definable bed, banks and channel or water. Its primary physical attribute is that it is a low point in the landscape, suggesting that in times of heavy rain, it would act as a conduit by which excess overland flow would drain from Mr Holman's properties in a north-west direction. Furthermore, in differentiating between a stream and drainage channel, Barwick (1968) determined that:

It must, in my opinion, essentially be a stream and be sharply distinguished from a mere drain, or a drainage depression in the contours of the land which serves to relieve upper land of excess water in times of major precipitation.²³

Barwick's decision highlights the importance of a physical feature exhibiting certain physical characteristics to define it as a drainage depression or a watercourse. From observations made on the 25 January 2018 site assessment and as evidenced in Figure 5, the topographic depression

²³ Referenced in Silva, Nelson v Ku-ring-gai Council [2009] NSWLEC 1060 (accessed 21 February 2018) and Taylor, M.P., Stokes, R. 2005. Up the creek: What is wrong with the definition of a river in New South Wales? *Environment Planning and Law Journal*, 22, 193-211.

identified at 16 Wyatt Avenue, Belrose would constitute a drainage line however, not a watercourse. Moreover, the field observations outlined in Table 1 clearly support this Finding.

It is interesting to note that this topographic depression does seem to be a feature of a 'permanent' nature. This is evidenced in a historical Parish Map of the Manly Cove (Figure. 6). Upon the purchase of the property, 16 Wyatt Avenue, Mr Holman came into possession of the map which depicts land parcels along the Wyatt Avenue portion of Belrose. The map (date unclear) depicts the 14 and 16 Wyatt Avenue properties and adjacent properties including a number of physical features. According to the NSW Government, Land and Property information fact sheet on historical Parish Maps, these maps often highlighted:

...boundaries of individual land parcels in relation to physical features such as roads, rivers, railways and water bodies.²⁴

It is clear from Figure 6 that at the time the parish map was made, considerable effort was made to identify and reflect accurately the physical attributes of the roadways, the relative proximity of land parcels and land features such as easements and topographic depressions. Consequently, the drainage easements and the 'natural depression' marked on the map reflect the features in the landscape as they appear today.

The parish map highlights the drainage easements running from the frontages of 12 and 14 Wyatt Avenue to their confluence, which occurs on 14 Wyatt Avenue. As depicted in Figure 6, any water conveyed via the easements would drain into the 'natural depression' described above, towards the rear of 16 Wyatt Avenue.

It is evident that the parish map makes no indication that the easements (which are clearly marked as such) or the 'natural depression', are considered watercourses. Moreover, they do not appear on the Northern Beaches Council aerial map and that its blue line at the rear of 16 Wyatt Avenue does not correspond to the drainage depression feature marked on the parish map.

As outlined in the Northern Beaches Council, Policy for Protection of Waterways and Riparian Land:

Where a waterway has not yet been identified on Council's Waterways and Riparian Land Map, the riparian land widths are to be applied from relevant State guidelines.²⁵

Relevant State guidelines to be applied in this instance, would be the NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy used to regulate riparian lands, zones and buffers. This policy requires that the current topographic map be used for determining stream ordering of watercourses and applying riparian parameters to the associated lands. The current topographic map is the Hornsby: 9130-4S: 2017: 1:25,000 version. On this map, there are no watercourses identified on 14 Wyatt Avenue, Belrose.

This revelation is consistent with earlier Findings, establishing that there are no watercourses identified on the earlier version (1986) of the Hornsby: 9130-4S: 1986: 1:25,000 topographic map either. This condition, contained in the WMGR, must also be satisfied for a watercourse to be recognised on 14 Wyatt Avenue, Belrose under the WMA.

²⁴ NSW Government Department of Finance & Services – Land and Property information fact sheet: Historical parish Maps. Available at http://www.nswlrs.com.au/_data/assets/pdf_file/0008/182177/Historical_Parish_Maps.pdf (accessed 8 February 2018).

²⁵ Warringah Council Policy - Policy No. PL 740: Waterways Protection of Waterways and Riparian Land Policy. Available at: <https://files.northernbeaches.nsw.gov.au/sites/default/files/documents/policies-register/waterways-and-riparian-land/protection-waterways-and-riparian-land-policy/protectionofwaterwaysandriparianlandpolicy.pdf> (accessed 21 February 2018).

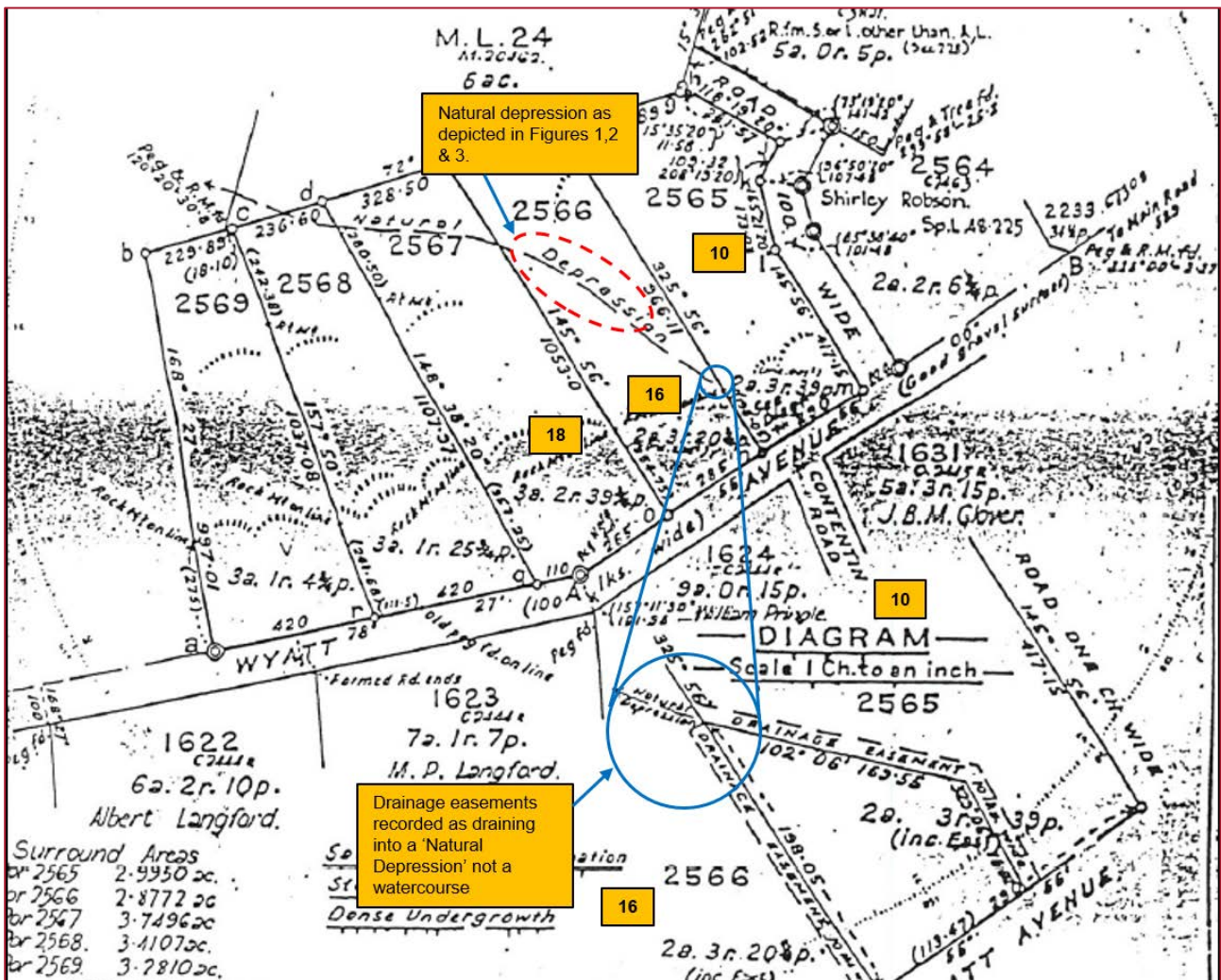


Figure 6. NSW Land Titles Office of NSW, Parish Map of Manly Cove Parish. The map indicates the same physical features as they appear in 2018 including drainage easements, property boundaries and the ‘natural depression’ running to the north-west at the rear of 16 Wyatt Avenue. Moreover, there is no indication of any watercourse or river on any property on the map. Map source: John Holman.²⁶

²⁶ NSW Government - Land Titles Office - Parish map – Parish of Manly Cove: County Cumberland – Shire of Warringah. Wyatt Avenue, Belrose. Map in possession of Mr John Holman.

Findings relating to the physical characteristics of a watercourse

8. Case law decisions made in the NSW Land and Environment Court and detailed in Commonwealth Law Reports have established that in NSW, a watercourse or river, will exhibit certain physical characteristics including, a bed, banks and water. Further, they must also exhibit the attributes of continuity, permanence and unity. The area indicated on the Northern Beaches Council aerial map exhibits none of these physical features.
9. A field assessment of 16 Wyatt Avenue, Belrose conducted on 25 January 2018, revealed the presence of a natural depression or topographic low point some 20–30 metres from the area depicted as a watercourse on the Northern Beaches Council aerial map. There is no physical connection between the natural depression and the Council's marked watercourse.
10. The existing stormwater easement on 14 Wyatt Avenue drains towards a natural depression on 16 Wyatt Avenue. This 'natural depression' feature cannot be defined as a watercourse because:
 - a. the depression does not possess a definable bed, banks and contain flow, which would define it as a watercourse, and
 - b. it does not satisfy the conditions of a watercourse under the regulations required by the Water Management (General) Regulation 2011 (NSW) i.e. that streams are shown as watercourses on the topographic maps according to the legend of the Hornsby: 9130-4S: 1986: 1:25,000 topographic map.
 - c. it does not satisfy the conditions of a watercourse as defined under NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy, i.e. that assigning riparian parameters to lands is based on watercourse order as classified under the Strahler System of ordering watercourses and using the current topographic maps. The current (2017 version) of the Hornsby: 9130-4S: 1:25,000 topographic map.
11. A historical Parish Map of the Manly Cove records many of the physical features of the 16 Wyatt Avenue, Belrose, including the 'natural depression' at the rear of the property. Moreover, there is no watercourse marked on this map in the area that is indicated on the Northern Beaches Council aerial map.

What constitutes riparian land or riparian corridors

The NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy is used to administer and regulate controlled activities carried out in, on or under waterfront land. In doing so, the Office of Water has the responsibility to regulate riparian corridors. Riparian corridors are defined as:

...a transition zone between the land, also known as the terrestrial environment, and the river or watercourse or aquatic environment.²⁷

Riparian corridors are important in providing a range of environmental functions including providing stability to beds and banks of watercourses, reducing channel erosion, assisting in the conveyance of flood waters and are vital for a range of ecological functions.

The conditions required by the Office of Water to establish if a section of land should be considered a riparian corridor are clear:

The riparian corridor consists of:

- (a) the channel which comprises the bed and banks of the watercourse (to the highest bank) and
- (b) the vegetated riparian zone (VRZ) adjoining the channel.²⁸

The Northern Beaches Council policy relating to riparian lands are addressed in their Waterways - Protection of Waterways and Riparian Land Policy.²⁹ In this policy, the Council defers to the NSW State Government Guidelines on Riparian Corridors outlined above to establish recommended riparian land widths and buffers. The State Government Guidelines utilise the Strahler stream ordering system to identify the type of watercourse and then assigns riparian zones depending on the stream order classification of each watercourse. The core riparian zone and a vegetated buffer are combined, under the policy, into a single vegetated riparian zone (VRZ)³⁰.

When considering the width of any vegetated riparian zone (VRZ) the Office of Water:

...recommends a VRZ width based on watercourse order as classified under the Strahler System of ordering watercourses and using current 1:25 000 topographic maps. The width of the VRZ should be measured from the top of the highest bank on both sides of the watercourse.³¹

The crucial component outlined in the Office of Water Policy is that to establish riparian land, corridors or the VRZ, one must first establish the presence of a watercourse using the current 1:25,000 topographic map. The current 1:25,000 topographic map is the 2017 version, (Hornsby: 9130-4S: 2017: 1:25,000)(Figure. 7). As per the 1986 and 2001 versions of the same map, no watercourse is indicated on this current 2017 version where the Northern Beaches Council aerial map identifies the presence a watercourse at 16 Wyatt Avenue. Furthermore, there are no

²⁷ NSW Government Department of Primary Industries – Office of Water: Controlled Activities on Waterfront Land - Guidelines for riparian corridors. What is a riparian corridor? Available at http://www.water.nsw.gov.au/_data/assets/pdf_file/0004/547222/licensing_approvals_controlled_activities_riparian_corridors.pdf (accessed 6 February 2018).

²⁸ Ibid.

²⁹ Warringah Council Policy - Policy No. PL 740: Waterways Protection of Waterways and Riparian Land Policy. Available at: <https://files.northernbeaches.nsw.gov.au/sites/default/files/documents/policies-register/waterways-and-riparian-land/protection-of-waterways-and-riparian-land-policy/protectionofwaterwaysandriparianlandpolicy.pdf>. (accessed 21 February 2018).

³⁰ NSW Government Department of Primary Industries – Office of Water: Controlled Activities on Waterfront Land - Guidelines for riparian corridors. What is a riparian corridor? Available at http://www.water.nsw.gov.au/_data/assets/pdf_file/0004/547222/licensing_approvals_controlled_activities_riparian_corridors.pdf (accessed 21 February 2018).

³¹ Ibid.

watercourses, which satisfy the regulations as set out in either the WMGR or in the Guidelines on Riparian Corridors Policy anywhere on 14 or 16 Wyatt Avenue.

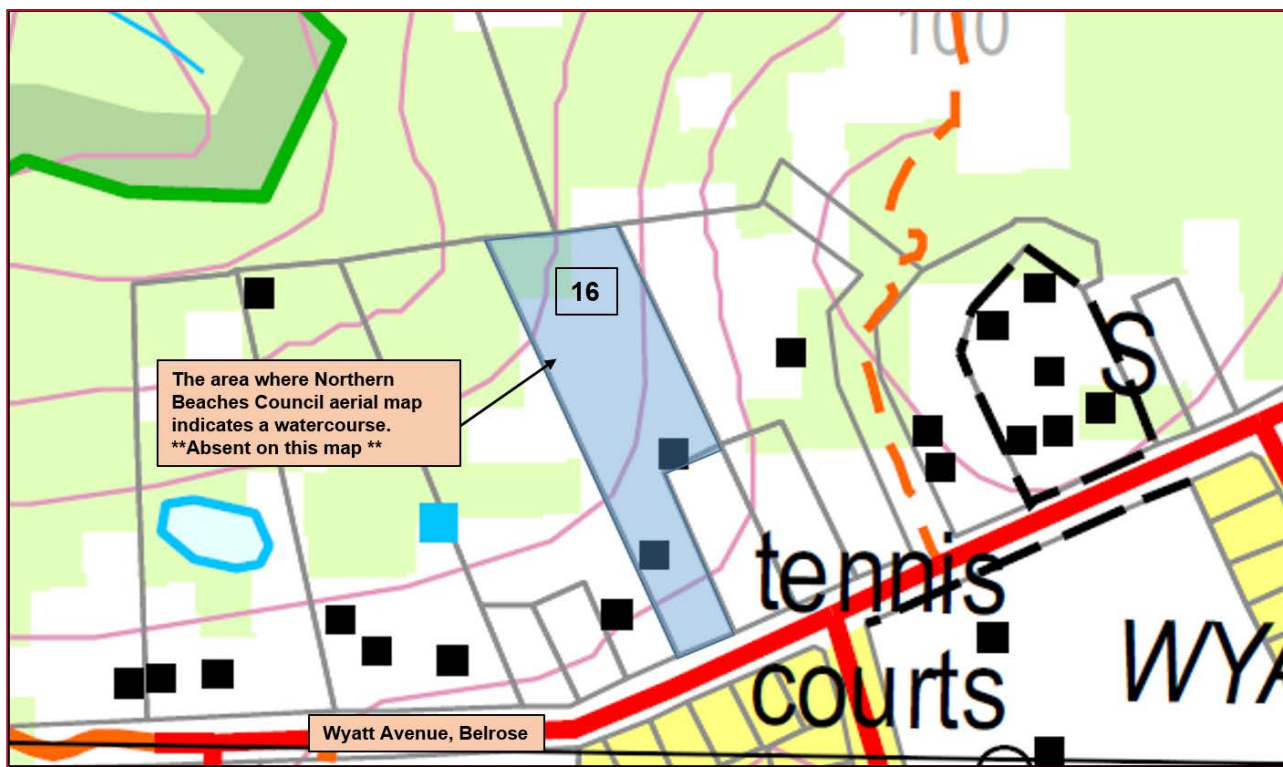


Figure 7. 16 Wyatt Avenue, Belrose as depicted on the current 2017 Hornsby: 9130-4S: 2017: 1:25,000 topographic map version as required by the NSW Government, Office of Water. No watercourse is indicated in the location identified as that on the property.³²

The requirements, outlined by the NSW Government, Office of Water, to determine riparian corridors and VRZ's are clear. A watercourse needs to exist on the map specified in the policy to assign any riparian buffers, corridors or parameters of any kind. It has been established, in this Report, that under the *NSW Water Management Act 2000* (NSW), the *NSW Water Management (General) Regulation 2011* and in line with determinations made in case law from the NSWLEC and detailed in Commonwealth Legal Reports that no watercourse exists on either 14 or 16 Wyatt Avenue, Belrose, where the Northern Beaches Council aerial mapping indicates a water is present.

³² NSW Government, Spatial Services – Topographic map (2017) - Hornsby: 9130-4S: 2017: 1:25,000.

Findings in relation to riparian land or riparian corridors

12. The NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy outlines the methods for categorising riparian lands in NSW as they relate to watercourses, requiring that they must appear on the most current topographic map.
13. The current topographic map that includes 16 Wyatt Avenue, Belrose is the 2017 version of the Hornsby: 9130-4S: 2017: 1:25,000 topographic map. There is no watercourse shown for the properties of 16 Wyatt Avenue, Belrose on this map.
14. The Northern Beaches Council, in its Waterways - Protection of Waterways and Riparian Land Policy defers to the NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors requirement that of the most current (2017 version) of the Hornsby: 9130-4S: 2017: 1:25,000 topographic map be used for establishing waterways where none are identified on council mapping data and for assigning riparian land parameters.
15. The subject watercourse at 16 Wyatt Avenue, Belrose, as depicted in the Northern Beaches Council aerial map is not reflected on the 1:25,000 2017 topographic map, as required by the NSW Department of Primary Industries, Office of Water - Guidelines on Riparian Corridors policy to assign riparian lands. Therefore, it is not possible to;
 - a. submit that there is a watercourse present on 16 Wyatt Avenue, Belrose,
 - b. conclude that there are riparian lands present on 16 Wyatt Avenue, Belrose, and
 - c. subject 16 Wyatt Avenue, Belrose to any State or Local Government riparian land policies.
16. The Northern Beaches Council aerial map should be amended to reflect the Findings in this Report, namely that the inclusion of the watercourse as it appears on the Council's aerial map, is in error.



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