Navigating Water Boundaries

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ABSTRACT

The review of Surveyor-General's Direction No. 6 (Water as a Boundary) has been delayed due to a neap tide. Its release is now planned to coincide with the release of the Surveying and Spatial Information Regulation 2023. This is to allow more time for the definitions that need to be refined to be discussed, agreed upon and formalised before the release of the document. There is still much discussion to be had on the fluctuations of understanding about the concepts that underpin water boundaries because there are many points of view and interpretations to consider. The ebb and flow of conversation is paramount to supplying the most considered outcome that will yield the greatest consistency for the profession. The result is intended to be a detailed resource to explain how the industry is to comply with legislation and case law in making valid decisions about the reinstatement of water boundaries. It may be described as a flood of information, however that is preferable to a drought of understanding. A document is required that dispels myths, legends and the folklore of the sea. This paper outlines why context, ethics and transparency are the three most important things when it comes to natural boundaries. Any change that may occur in water boundaries needs to be natural, gradual and imperceptible. The industry needs to remain sure footed on the bank, supported by reports that document the facts. When there are 'Pirates of the Cadastre' roaming about, it is imperative that one must keep their powder dry and not become bogged in the mire of water boundaries.

KEYWORDS: *Water boundaries, legislation, riparian, tidal, Mean High Water Mark, banks.*

1 INTRODUCTION

Boundary definition of natural feature boundaries is considered by a lot of registered surveyors to be one of the most daunting parts of cadastral surveying. The rules do not appear to be clear, and the risk involved in getting the correct answer appears high. Considering that this is sometimes the most valuable land in the area, the process is very different to the approach used when defining right-line boundaries.

The role of the Office of the Surveyor-General is to provide direction to ensure that all natural feature boundaries are surveyed and defined in a consistent manner to allow consistent and reliable outcomes. The reporting requirements that are proposed are to facilitate the transfer of knowledge of what was on the site at the at the time of the last survey and what feature was adopted to the next surveyor or anyone dealing with the plan.

The ability to locate the correct feature is only possible if the surveyor interprets the titling documentation and the law within the context that it was written. The surveyor's role is to

relocate the boundary where it was originally placed or to define the boundary for the first time in the position that complies with the intent of the law and the titling documentation.

The review of Surveyor-General's Direction No. 6 (Water as a Boundary) (DCS Spatial Services, 2016; Fenwick, 2021) has been delayed to allow more time for the definitions that need refining to be discussed, agreed upon and formalised. Its release is now planned to coincide with the Surveying and Spatial Information Regulation 2023. The ebb and flow of conversation is paramount to supplying the most considered outcome that will yield the greatest consistency for the profession. The result is intended to be a detailed resource to explain how the industry is to comply with legislation and case law in making valid decisions about the reinstatement of water boundaries.

2 ETHICS IN SURVEYING

Upon becoming a registered surveyor in NSW, we accept that there is an ethical standard we must adhere to as a professional. The Board of Surveying and Spatial Information (BOSSI) has documented what these standards are (BOSSI, 2021). This is not a recently created document but one that has been in existence for a reasonably long time and is occasionally updated. There have been at least two versions of this document published on the BOSSI website since the early 2000s and possibly before.

Regardless of how long the document has been published on the BOSSI website, a code of ethics has always been a major part of the surveying profession. It forms part of the duty of care that surveyors have for the cadastre. It is the basis of the legal system and is documented in case law, particularly in water boundary cases that deal with the Doctrine of Accretion and Erosion (Doctrine).

The BOSSI Ethics and Code of Professional Conduct document (BOSSI, 2021) is found on the BOSSI website under Publications > Determinations and policies, not to be confused with the Code of Conduct: Board and Committees document also hosted there. The document distinguishes between ethics being the framework for conduct (which are enduring principles) and the code of professional conduct being the professional behaviours that reinforce and clarify the ethical standards. However, the line is very grey, and in this paper both the code of conduct and ethics will be referred to by the word ethics because a surveyor is ethically bound to follow the code of conduct.

The document requires the surveyor to do the following (but is not limited to these points):

- Put the welfare and rights of the community before the profession, other surveyors and/or sectional or private interests. This would/should also include the interests of their client.
- Accurately and conscientiously measure, record and interpret all data.
- Exercise unbiased and independent professional judgement.
- Ensure that their practices comply with the law and the guidance in relation to surveying matters.
- Keep their knowledge and skills current.
- Not to undertake work they are not qualified or competent in or have the authority to undertake.

Hence the ethics of surveying require unbiased and fair boundaries to be determined that comply with the law and the legal principles. But how is that to be achieved?

3 CONTEXT OF LANGUAGE

Pike (1982) states: "*Language is not merely a set of unrelated sounds, clauses, rules, and meanings; it is a total coherent system of these integrating with each other, and with behaviour, context, universe of discourse, and observer perspective*."

One of the biggest issues in cadastral surveying is the ability to communicate. Surveyors are great problem solvers, analysts, mathematicians, have a wealth of knowledge in a vast range of disciplines and excel in dissecting data in the finest detail. However, when it comes to interpreting language, they often become fixated on the meaning of words in isolation. They fail to read the whole sentence, the whole paragraph and the whole document. They fail to analyse the context of the document, why a statement is in a particular location and consider the information around that statement. They do not understand the context of the words with the document as a whole.

The Honourable Justice John Middleton gave the following five insights about statutory interpretation being mostly common sense (Middleton, 2016):

"*The principles governing the interpretation of a statute by a court in a common law setting are, by definition, common law principles and will evolve over time*."

"*As stated by D C Pearce and R S Geddes in their book on statutory interpretation: Legislation is, at its heart, an instrument of communication. For this reason, many of the so-called rules or principles of interpretation are no more than common-sense and grammatical aids that are applicable to any document by which one person endeavours to convey a message to another. Any inquiry into the meaning of an Act should therefore start with the question: What message is the legislature trying to convey in this communication?*"

"*Undoubtedly, there is a need for readily understandable and consistent principles to guide the interpretation of legislation. These principles should basically be guided by common sense, and we should not be blinded by too many rules, over-analysis, or mechanical or scientific analysis. Trawling for rules and cannons of interpretation is not the correct starting point. The starting point should always be to look at the words, their context, and the purpose of the legislation, then applying that to produce a result that is both fair and workable in the particular fact situation you have before you. In addition, a judge should also recall, having regard to the common law principles of precedent, to be mindful of the application of the interpretation of the statute to other cases.*"

"*The High Court of Australia by its actual analysis … has indicated the current approach to statutory interpretation involving the* ***use of text, context and purpose****. This approach to statutory interpretation is based upon various assumptions and a basic common-sense approach to interpreting a statute*."

"*Whilst it would be foolish to regard all statutes as being able to be read and understood by the lay uninitiated citizen, this should at least be an aim in drafting legislation with precision and clarity. Of course, many statutes are interpreted every day by ordinary citizens, public administrators, and non-legal advisers, probably without difficulty. This is important so that the daily affairs of people can be readily guided by the statute, and the expectations of those people are not thwarted by an interpretation of a statute beyond lay comprehension.*"

From this, it seems clear that trying to interpret words without the context is a fraught endeavour. Considering the law does not need to be any more complicated than necessary, surveyors should not be overcomplicating something that should not be complicated. It is the role of a lawyer to argue the semantics of law and legal principle. As surveyors, we should accept the law at face value and interpret it in the context that it was written and intended, bearing in mind the whole of the content and not extracting just those parts that suit the argument while leaving those that do not help the cause.

4 THE LAW OF THE SEA

4.1 Case Law

This section presents a selection of cases that form the basis of water boundary law. There are numerous others, but they are all linked and describe various parts of the same set of principles. The aim of this paper is not to sway the reader into any particular direction, other than to read the words in their original context, as this can only be done by quoting the relevant sections of the cases. This is obviously limited as it is not possible to quote the whole case. At the end of the quotes, parallels are drawn between cases and later in the paper contrasting opinions are outlined.

4.1.1 Attorney-General v Chambers 1854

Context: What is the limit of a Crown grant? How to define a tidal margin?
Surveying principles: Land granted and Mean High Water Mark (MHWM).

There is a lengthy discussion regarding submissions from both sides, but the conclusion by the Lord Chancellor (Lord Cranworth) is insightful and simple in application (extract from page 490):

> "*In this state of things, we can only look to the principle of the rule which gives the shore to the Crown. That principle I take to be that it is land not capable of ordinary cultivation or occupation, and so is in the nature of unappropriated soil. Lord Hale gives as his reason for thinking that lands only covered by the high spring tides do not belong to the Crown, that such lands are for the most part dry and manurable; and taking this passage as the only authority at all capable of guiding us, the reasonable conclusion is, that the Crown's right is limited to land which is for the most part not dry or manurable.*
>
> *The learned Judges whose assistance I had in this very obscure question point out that the limit indicating such land is the line of the medium high tide between the springs and the neaps. All land below that line is more often than not covered at high water, and so may justly be said, it, the language of Lord Hale, to be covered by the ordinary flux of the sea. This cannot be said of any land above that line, and I therefore concur with the able opinion of the Judges whose valuable assistance I had, in thinking that medium line must be treated as bounding the right of the Crown.*" Lord Cranworth

From the Attorney-General v Chambers 1854 case, it should be noted that it is the "*line of the **medium** high tide between the springs and the neaps*", not the arithmetic mean or the median or any other statistical function, and therefore any argument about the word "between" is a semantic argument about the meaning of a word taken out of context.

Further, the current definition of MHWM is only a partial application of the intent of this ruling. This application does not take into account the nature of the land. Is the land useful to the landholder or is it not? There is a principle that land which is not ordinarily cultivatable or occupiable is by its nature unappropriated soil and remains in the Crown estate.

Therefore, the result of this ruling is the Crown intended to grant all the useful soil and the Crown is to keep the soil that is uncultivatable, not manurable, not occupiable or that is mostly wet (being land below the medium tide). This is not a scientific definition but for the 1850s very reasonable when the whole outcome is considered as one concept and not broken up and partially applied.

This paper does not imply that the definition of MHWM in the Surveying and Spatial Information Regulation is going to change. This paper identifies that there is scope in the application and interpretation of the definition of MHWM based within the law to assist with application of the definition in locations that are difficult and where rigorous measurement of the tides does not yield an unwavering result.

4.1.2 The State of Alabama v The State of Georgia 1859

Context: The Supreme Court of the United States of America. Where is the border between two states on a river and how to define something that is several hundred miles long with varying terrain from steep banks to marshland and swamps?
Surveying principles: The bank of a non-tidal water feature.

A little background information is required for this case. In 1851, on this same river a case was heard between Howard v Ingersoll. The same court presided over both cases, and the result of the 1859 case overturned the 1851 result with an erratum noted in the 1859 summary (extract follows):

> "*The boundary line between the States of Georgia and Alabama depends upon the construction of the following words of the contract of cession between the United States and Georgia, describing the boundary of the latter, viz: 'West of a line beginning on the western bank of the Chattahoochee river, where the same crosses the boundary between the United States and Spain, running up the said river and along the western bank thereof.'*
>
> *It is the opinion of this court that the language implies that there is ownership of soil and jurisdiction in Georgia, in the bed of the river Chattahoochee, and that the bed of the river is that portion of its soil which is alternately covered and left bare, as there may be an increase or diminution in the supply of water, and which is adequate to contain it at its average and mean stage during the entire year, without reference to the extraordinary freshets of the winter or spring, or the extreme drought of the summer or autumn.*
>
> *The western line of the cession on the Chattahoochee river must be traced on the water line of the acclivity of the western bank, and along that bank where that is defined; and in such places on the river where the western bank is not defined, it must be continued up the river on the line of its bed, its that is made by the average and mean stage of the water, as that is expressed in the conclusion of the above recited paragraph.*
>
> *By the contract of cession, the navigation of the river is free to both parties.*

> *See the case of Howard v. Ingersoll, 13 Howard, 381, and the correction of its syllabus in the errata in 14 Howard in this, that 'the boundary line runs along the top of the high western bank,' instead of 'the boundary line runs up the river, on and along its western bank, and the jurisdiction of Georgia in the soil extends over to the line which is washed by the water wherever it covers the bed of the river within its banks'.*" Wayne J.

Contained within this case is an in-depth discussion regarding the bed and the variety of ways it is defined around the world. However, the outcome is captured very clearly in the summary.

The errata provides clarity to any confusion a reader may have about where the boundary is due to old English terms such as 'acclivity' for the situation that involves a defined bank. If there is any doubt about what an ill-defined bank is, there is also a description at the end of Georgia's declaration that clarifies this.

For many years, there has been controversy about how to interpret the definition of the 'bed'. This is the origin of the words that have been adopted and therefore they should be interpreted in the context that they were written, and consideration should be given to the paragraph below the words that have been adopted into legislation as this provides a clear interpretation of how these words were meant to be understood by the judges that created the phrase.

4.1.3 Overland v Lenehan 1901

Context: The case is about an erroneous description of land in a subdivision.
Surveying principles: Collecting evidence and interpreting documents.

> "*In my opinion the question to be determined is what was the western boundary of subdivision 10 as understood by the persons concerned at the time when the mortgage of subdivision 1B and the transfer of subdivision 10 were executed. In the case of Donaldson v Hemmant (ante p.35) I quote from Taylor on Evidence (4th Ed., p.1029) some rules which, I think should be applied in construing instruments relating to land for the purpose of determining the identity of the subject matter. They may be summed up by saying that most weight should be given to those points on which the parties at the time were least likely to be mistaken.*" Griffith C.J.

There is no water boundary involved, but this case does require the judge to consider the evidence that was available to the parties of the transfer. Hence, when trying to understand what land was granted in a Crown grant, surveyors are undertaking the same process as described here. Consider how this affects the interpretation of the Crown grant when the boundary is described as the bank or the river.

This paper does not imply that the Crown grants are erroneous. The aim is to correctly interpret the instrument that defines the land. To do this, the document must be read in context, with the intent that it had at the time it was written and with the understanding of those that were dealing with the grant at the time. What is the most unmistakeable feature of a bank, considering the water level could be at any height? What does the average person consider the limit of the river if it is limited by the bank, bearing in mind that the banks from part of the river?

4.1.4 Kingdon v The River Hutt Board 1905

Context: There are 14 questions answered by this case in the Supreme Court of New Zealand. The River Hutt is a river with defined banks and an irregular flow. There was a claim for Ad Medium Filum Aquae and a dispute over the ownership of shingle beds. In NSW, this case is most well known in relation to defining a bank.
Surveying principles: The bank of a non-tidal water feature.

> "*The Hutt River is a river in a river district constituted under 'The River Boards Act, 1884', and within the jurisdiction of the respondent Board. It has defined banks, but the flow of water between such banks is irregular. During the dry months, and for the greater part of the year, it flows in a small channel considerably to the east of the claimant's land. In wet weather the flow is greatly increased, and seven or eight times in a year during such wet weather the water flows from bank to bank, and this flow is called by the witnesses 'ordinary freshes'. In very wet weather the river is 'in flood', and then it overflows its banks.*" Stout C.J. (p.156)

The concept that is being portrayed here is that all rivers consist of low flows and high flows. In New Zealand on this river, the high flow occurs apparently seven or eight times a year. In NSW, they occur very randomly as here there are long drought cycles, some periods of wet weather that cause high flows and then occasionally there are floods. Sometimes there are many floods in a row, but this does not change the concept being put forth.

The concept put forth is that even though there may be a small channel that contains the low flow, that low channel is not the limit of the river. The limit of the river is another bank that contains the high flow before flooding occurs.

4.1.5 Williams v Booth 1910

Context: An appeal to the High Court of Australia where an Intermittently Closed and Open Lake or Lagoon (ICOLL) became closed to the sea by a sand bar. Claims for Ad Medium Filum Aquae were lodged and claims of accretion made. The lagoon was some 62 acres in size and had largely dried up at the time the case was heard.
Surveying Principles: The Doctrine of Accretion and Erosion, Ad Medium Filum Aquae application to marine lagoons or ICOLLs and the interpretation of documents defining land.

> "*Held, also, that the medium filus rule is not applicable to marine lagoons, and that if it were so applicable, the fact that such lagoons are substantially part of the sea, and may be of public use for the purposes of fishing and navigation, would exclude the application of the rule in the present case.*" Griffith C.J. (p.342)

There is discussion throughout the case that debates the legal reason why this decision was reached, but the outcome is all that is relevant to surveying. All that a surveyor needs to decide is whether they are dealing with an ICOLL or not, and that will determine if Ad Medium Filum Aquae applies or not.

> "*The effect of that contention is that a large quantity of Crown land has suddenly become private land. The principal of accretion is not applicable to a change of that kind.*" Griffith C.J. (p.345)

A consideration of one part of the Doctrine: Was the change gradual or sudden? The claim was that there was a sudden change that occurred at the time the sand bar closed and therefore the change was not gradual. However, there is more in this statement. The indication of a large quantity of land (some 62 acres) overnight. This is also a consideration of the concept 'gradual'.

On page 346 of the case, there is a very interesting judgement made by Griffith C.J. regarding having all of the correct facts before making a decision. This is of immense importance to the surveying profession and is strongly implied but not explicitly stated in the ethical guidelines supplied by BOSSI (2021).

On page 350, there is an excellent explanation by Griffith C.J. about how a large quantity of land cannot one day belong to the King and the next belong to a freehold owner, occurring at the instant the sand bar closed. There are some references to Hall's essay and the beginnings of a discussion about imperceptibility: "*The word 'imperceptible' refers to the slowness of the additions to the soil.*" However, more clarity is provided later in the case. This page adds more context to the application of the concept of 'gradual' more than imperceptible.

> "*The first rule of interpretation applicable to any written contract is to ascertain the intentions of the parties by construing the language they have used according to its ordinary meaning.*" O'Connor J. (p.352)

In this statement the judge explains that no document can be misconstrued by inferring the meaning of words from a different time period when interpreting an instrument of land. Instruments of land are documents of agreement between two parties that are to take effect at the time of signing, and therefore we must read the document through the eyes of the two parties involved in the document. To read the document in any other way is an injustice to the parties involved, and there is a strong probability that the interpretation will result in the incorrect outcome.

> "*In Hall's Essay on the Sea Shore, 2nd ed., at p. 117, the true nature of the accretion of which a land owner can take advantage against the Crown is clearly explained. 'It is not,' he says, 'indeed, either the sudden or the gradual nature of the event which governs the law, but the perceptible or imperceptible nature of the acquisition; and therefore the direction of the evidence will be to show the greater or less degree of distinctiveness and certainty with which the quantum of soil claimed can be ascertained to have accrued within time of memory. Whatever reason and common sense denominates imperceptible and indefinable, or which even if perceptible and definable is still too minute and valueless to appear worthy of legal dispute or separate ownership, will be deemed part of the adjoining soil, and, as it were, to have grown out of it. In all other cases the King's right will attach.'*" O'Connor J. (p.356)

The first important point to note in the above paragraph is that **it is not the sudden or gradual nature of the event** which governs the law, but it is whether the change occurred by an imperceptible process. It would appear form the above passage that the rules of the Doctrine are not hard and fast as we would be led to believe, but there is limited flexibility within the limits of reason. Consideration must be made to the fair and equitable exchange of land and the intention of the grant. Any grant bound by the river of the bank had the intention that the natural feature would remain the boundary and if the river boundary moves in a fair and equitable manner, so does the boundary.

> "*Various authorities were cited to show that accretion arises only by imperceptible addition to property, and with one exception I make no further reference to them than to say that the principle they affirm is opposed to the respondent's view. That exception is the now classic observation of Alderson B. in re Hull and Selby Railway (I), that 'that which cannot be perceived in its progress is akin to be as if it never had existed at all'.*" Issacs J. (p.111)

An interesting side note is that sometimes, particularly in the old cases, the term 'gradual, slow and imperceptible' is used. The grouping should imply that slow is interchangeable with imperceptible as per the discussion on page 350 as opposed to be used to consider the concept of 'gradual'. However, imperceptible has a very specific meaning, being that an observer cannot see any change occurring (see discussion in the Southern Centre of Theosophy v The State of South Australia 1982 case in section 4.1.9).

4.1.6 Yukon Gold Company v Boyle Concessions Limited 1916

Context: A mining right boundary dispute in British Columbia. Does a 1916 mining rights boundary move due to the Doctrine if the river moves due to flooding?
Surveying principles: The Doctrine of Accretion and Erosion.

> "*The mining rights and areas secured by the due location of river claims are fixed by said location once and for all, and are not subject to diminution by erosion any more than they are entitled to augmentation by accretion.*" Martin, J.A. (p.103)

At first glance this case does not have any impact on the application of the Doctrine as the Doctrine does not apply to this case. However, it was discussed, and the fundamental concepts are still applied.

> "*Under the regulations then in force the side boundaries were declared to be low-watermark as it was on the 1st of August of the year in which the lease was granted.*" MacDonald C.J.A. (p.111)

This paragraph states the reason why the Doctrine does not apply to this case. Mining rights in the Yukon gold fields in the early 1900s are limited by right line boundaries, not ambulatory boundaries. This is included for completeness, and it is important to understand the context of the case and why certain points apply or not.

> *"By the action of the river and of surface water, part of the river bank included within the boundaries of said claim No. 12 have become eroded and submerged. This erosion was not gradual or imperceptible, but occurred in the spring of each year: the encroachments in the three years in question here approximate 100 feet. ... The authorities to which we were referred shew that as between landowners on opposite sides of a river ownership does not change in case of sudden erosion or accretion, such as took place yearly in this case. This is a rule of common law, and unless it be inapplicable...*" MacDonald C.J.A. (p.112)

This is an interesting paragraph, which could be misconstrued to mean that erosion by flooding does not comply with the Doctrine. But consider the context in the case along with the other arguments, and it does not mean that at all. This paragraph supplies no detail as to how to interpret or apply the Doctrine. There is no reasoning as to why the erosion is deemed to be

sudden. It is merely a statement that confirms that in this case the erosion was deemed to be sudden erosion and that does not comply with the Doctrine.

> "*In these regulations 'river bed' is defined to mean 'the bed and bars of the river to the foot of the natural banks', and by section 4.*" Galliher J.A. (p.120)

Here is another interesting side note about statements made in court cases. This is specific to the Yukon Mining Regulation, which makes sense due to the lease area being for dredging and that requires the land to be covered by water. Hence, this is not applicable to the conversation about how to define a river 'bed' in NSW.

> "*The trial judge has decided as a fact that the erosion does not belong to the class which is referred to in the authorities as gradual or imperceptible, nor yet to the class where it is caused by sudden changes that occur by a violent effort of nature, but rather to an intermediate class, being due to the nature of the soil forming the surface of the land being principally composed of muck, and the action of the waters caused by the melting of the snow in or about the month of June in each year. I have scaled the distance on map 1.2, and roughly I should say that the bank has eroded at the average rate of 25 feet per year between the years 1910 and 1913. I do not think this could by any stretch of imagination be deemed to be gradual or imperceptible, but occurs at certain periods of the year and in very considerable quantities, so that the trial judge, in my opinion, put the case rather favourably to the defendant in terming it an intermediate change. I should say it partakes rather of the nature of sudden change, and in that view the authorities are clear that the plaintiff does not lose its right.*" Galliher J.A. (p.121)

The case does consider if the Doctrine would have applied to these boundaries if they were ambulatory. The concept of imperceptible is not considered in detail, even though it is mentioned. However, the erosion appears to be considered and would not comply under the concept of a gradual change. The change is considered "considerable in size" and therefore worthy of legal dispute as they are mining for gold of reasonable value. Also consider the size of the area lost compared to the width of a lease that is only the width of the river. Hence why this is considered of the nature of sudden change.

It is important to note that none of the judges stated that the change failed to comply with the Doctrine simply due to the fact that the change occurred by the action of flooding. Flooding is mentioned and may be the reason that the change occurred, but it is not the reason that the change is sudden and does not comply with the Doctrine. The change is substantial, recognisable and valuable; the change is not fair and equitable.

4.1.7 Humphrey v Burrell 1951

Context: A case where a very large flood carved a new channel through a property, cutting off a substantial portion of land (several acres).
Surveying principles: The Doctrine of Accretion and Erosion.

> "*In Secretary of State for India v. Rajah of Vizianigaram (1921, L.R. 49 Ind.App. 67), the Court (per Lord Carson, at pp. 71, 73) pointed out that the application of the test 'gradual' to rate of progress necessary to satisfy the rule when used in connection with English rivers was not necessarily the same when applied to the rivers of India, saying 'The recognition of title by alluvial accretion is largely governed by the fact that the*

> *accretion is due to the normal action of physical forces; and conditions of Indian and English rivers differ so much that what would be abnormal and almost miraculous in the latter is almost commonplace in the former.'*
>
> *In New Zealand the application of the rule is complicated by the fact that there is a great diversity of streams and rivers – some comparable to the rivers of England, flowing in well defined courses, with banks well consolidated, through country cultivated and stable, others springing from the mountains or hills and becoming at times raging torrents, swollen and tumultuous, and which, whilst in that state, are prone to carve out new channels; some are narrow, and some have a width from bank to bank of two miles or more. There is indeed an infinite variety.*" Greeson J. (p.628)

The application of a principle must be undertaken with the recognition of where it is being applied. Expecting to get a meaningful result by applying rules developed in another country or even in a different climate is misguided and devoid of context. Without context, any words or concept will fail to have significance and will result in an absurd outcome that defies logic or common sense and the intention of the original document. Furthermore, it will not be fair or equitable to the parties involved, and it will be highly likely that the next person to be involved making the decision will come up with a different outcome. The context of the situation being considered is an integral part of the outcome decided.

> "*In my opinion, the cumulative effect of the evidence is to establish affirmatively that the river took up its present course as the result of a sudden break at the time of a very high flood, when it carved out for itself a new course substantially the same as that in which it now flows; but even if the evidence, considered as a whole, fails to do this, at least it fails to establish (as I hold defendant must do to succeed) that by a gradual accretion, imperceptible in its progress, this large area became the property of the defendant.*" Greeson J. (p.628)

As stated in Hall's essay mentioned by O'Connor J. in Williams v Booth 1910 (see section 4.1.5) and here again confirmed by Greeson J., it is not the fact that a flood occurred that is the reason the change fails the Doctrine. It is the fact that the change has not occurred by accretion, i.e. the river slowly moving across the landscape in an imperceptible motion. The change occurred by erosion cutting a new path through the property and severing the land. This is not the intent of the Doctrine.

4.1.8 Ward v The Queen 1980

Context: Heard in the High Court of Australia, this case is to determine the location of the border between NSW and Victoria based on the words in the Separation Act 1855 and the Constitution. The case has a very specific location. The result of this appeal will determine in which jurisdiction a crime occurred and which law applies. However, the concepts in this case can and have been applied to other locations as this case forms the basis for the joint Guidelines for the Determination of the State Border between New South Wales & Victoria along the Murray River.
Surveying Principles: The bank of a non-tidal water feature.

> "*Whatever ambiguity might remain in the description 'Watercourse' when used alone, in my opinion 'the whole Watercourse' of a river definitely means the area between the*

extremities of the banks of the river: they, except in times of flood, determine the course of the river." Barwick J. (p.2)

This paragraph reinforces the concepts in The State of Alabama v The State of Georgia 1859 (see section 4.1.2), i.e. the concept that the river is contained by the channel that contains its flow at all stages until it breaks its banks and flooding occurs. Interestingly, the US case from 1859 was not referenced in the Ward case but the same outcome was arrived at.

"38. So much for some of the practical difficulties involved in a resolution of the question of the Murray River boundary. This Court is neither a treaty-making body nor a boundaries commission, nor is it presently concerned with the resolution of such a dispute between states as that to which s.(iv.) of the Constitution refers ... although in arriving at a decision it cannot be unaware of the broader consequences that that decision may entail, ... Reference was made in the argument of the Solicitor-General for Victoria to the weight given to matters of convenience where the United States Supreme Court has been concerned with border adjudication.... The approach of the United States Supreme Court in Howard v. Ingersoll (1851) 13 How 381 (14 Law Ed 189) and in Handly's Lessee v. Anthony [1820] USSC 19; (1820) 5 Wheat 374 (5 Law Ed 113) as well as in subsequent cases involving the determination of border questions between States, ..." Stephen J. (p.16)

The above paragraph shows that while this case has a specific purpose it also noted that it will set precedents that must be followed. The confusing thing about this statement is the understanding that Howard v Ingersoll 1851 was a case about the state border because it is not. Howard v Ingersoll is a case about a mills water wheel that had stopped working by the construction of a dam built by another party.

The State of Alabama v The State of Georgia 1859, which overturned Howard v Ingersoll 1851, is the case about the state border, yet this case is not referenced in the decisions of the Ward v The Queen case with the same context. This is important to understand before reading the next quote because Stephen J. refers to Howard v Ingersoll when discussing the banks of a river. It is not clear why, but the judge obviously thought it important to include this point.

"*54. My conclusions concerning s. are, then, that it is expressed in language which refers not to the flowing waters of the Murray but, rather, to the contour feature within which those waters flow: that, although it was the product of problems relating to the collection of customs duty on Murray River traffic, it is expressed to be, and takes the form of, a measure for defining territorial boundaries: that in taking this form it gives effect to the proposals of its initiators in New South Wales: that, on its proper construction, it declares the whole of the contour feature, to the top of the southern bank, to be the territory of New South Wales. It follows that the boundary line between the States runs along the top of the southern bank of the Murray, all territory to the north being within New South Wales. In referring to the 'bank' of the river / adopt the description given in Howard v. Ingersoll (1851) 13 How, at p. 427 (14 Law Ed 209): 'the banks of a river are those elevations of land which confine the waters when they rise out of the bed'. In Jones v. Mersey River Board (1958) 1 QB 143, Jenkins L.J., after citing with approval this passage from Howard v. Ingersoll (1958) 1 QB, at p. 151, pointed out that the identification of the 'bank' at any particular point along a river 'must be a question very largely of fact to be decided in each particular case by reference to the size and habits of the river, the geological composition of the land, and the level of the land as compared with the river,*

and no doubt, other circumstances of that kind'. The relevant topography at the site of the shooting in the present case leaves no room for doubt: the bank is well defined and its top can be instantly recognized. His Lordship, having regard to the statutory context there in question, would have included in 'banks' rather more than 'the slope or vertical face' which confines the waters when they rise out of the bed, extending its meaning to land adjoining the river (1958) 1 QB, at p. 151. However in the present case it will be along the top or upper edge of 'the slope or vertical face' of the southern bank that the boundary between the States is to be found (at p. 337)." Stephen J. (p.22)

The conclusion of the Ward v The Queen case is that the border of NSW and Victoria is the top of the southern bank, the point that is unable to contain the water when flooding occurs. This therefore defines the limit of the watercourse.

The context of this case is not to define the limit of the 'bed' and seems to imply that the banks are not part of the bed even though every other concept of a river includes the bank as part of the bed. Also bear in mind that both The State of Alabama v The State of Georgia and Ward v The Queen result in the same outcome.

4.1.9 Southern Centre of Theosophy v The State of South Australia 1982

Context: Considered by the Privy Council, this case considered if the effects of wind-blown sand could be accepted as accretion and whether the Doctrine applies to non-tidal lakes. The latter will not be considered in this paper as it does not apply to NSW as noted in the case.
Surveying principles: The Doctrine of Accretion and Erosion.

"*Before examining the authorities, which are copious and in their result clear, their Lordships find it advisable to consider briefly the nature of the doctrine of accretion. This is a doctrine which gives recognition to the fact that where land is bounded by water, the forces of nature are likely to cause changes in the boundary between the land and the water. Where these changes are gradual and imperceptible (a phrase considered further below), the law considers the title to the land as applicable to the land as it may be so changed from time to time. This may be said to be based on grounds of convenience and fairness. Except in cases where a substantial and recognisable change in boundary has suddenly taken place (to which the doctrine of accretion does not apply), it is manifestly convenient to continue to regard the boundary between land and water as being where it is from day to day or year to year. To do so is also fair.*" Lord Wilberforce (p.4)

The beginning of this case is a wonderful discussion on the holistic approach of applying the Doctrine. The discussion maintains that a water boundary is a boundary of convenience, but not necessarily a convenient boundary. It is a boundary based in fairness and equity not just to the landowner but to the adjoining owners and all interested parties. Water boundaries are a matter of ethics more than measurement and science.

"*Since Bracton, the requirement of imperceptibility has been affirmed by the highest authority, R. v. Lord Yarborough (1828) 2 Bligh N.S. 147; Attorney-General v. M'Carthy (I.c.). The word, of course, has to be interpreted. In R. v. Lord Yarborough, Abbott C.J., giving the judgment of the King's Bench ((1824) 3 B. and C. 91 at page l07), said that it must be understood as 'expressive only of the manner of accretion ... and as meaning imperceptible in its progress, not imperceptible after a long lapse of time'. The gain to the land in that case, by recession of the sea, was said to have been on average, over 26-*

> *27 years, of about 5½ yards in a year, or (according to other witnesses) greater and it was held that the jury could properly hold this to be imperceptible. In the opinion which Best C.J., on behalf of the judges, later gave to the House of Lords there is this passage: 'Land formed by alluvion must become useful soil by degrees, too slow to be perceived. What is deposited by one tide will not be so transient as to be removed by the next. An embankment of a sufficient consistency and height to keep out the sea must be formed imperceptibly'. (2 Bligh N.S. 147, 158.)*" Lord Wilberforce (p.8)

One could take from this that there is a time component to accretion, but they would be mistaken. Accretion does not need to take a long time, just long enough to become soil or usable consolidated material. The same rules apply to accretion as erosion. Erosion may only take minutes to occur, provided it is minute (small), un-noticeable and valueless. Therefore, accretion can occur in the same time period. It is really a question of whether the addition is soil or loose sediment that can be washed away. The other side of this concept that is confused with time is quantity and value. If the accretion is a large and valuable area, was it formed gradually? If a very large area is claimed, then it must have been formed by lots of small un-noticeable changes and be unlikely to revert back to the original state any time soon.

> "*Another, and perhaps more realistic, explanation is (as already suggested) that the rule is one required for the permanent protection of property and is in recognition of the fact that a riparian property owner may lose as well as gain from changes in the water boundary or level. But whatever is the true explanation of the rule – and there may well be more than one reason for it – what is certain is that it requires a distinction to be made between such progression as may justly be considered to belong to the riparian owner, and such large changes or avulsions as should more properly be allocated to his neighbour. Since there is a logical, and practical, gap or 'grey area' between what is imperceptible and what is to be considered as 'avulsion', the issue of imperceptibility or otherwise was always considered to be a jury question (see Attorney-General v. M'Carthy, i.e. page 296 per Gibson J.).*" Lord Wilberforce (p.9)

This is an interesting passage that confirms the thoughts of Middleton (2016) that were previously discussed. The law is not meant to be any more complicated than necessary. As these are the boundaries of the land owned by the public, they should be able to understand what they own and where they are entitled to farm or frolic. Further, it revolves around the ethics of the outcome and whether it passes the 'pub test', i.e. is it fair and equitable.

> "*The evidence certainly shows, and their Lordships would accept, that in certain conditions of wind and weather (their Lordships do not know how frequently these occurred) movement could be detected by an observer – not at a great rate but still detectable. Professor van der Borch said variously: 'noticeable in the course of a day with a yard as an upper figure – you would notice it (the movement of a drift) within a day in some exceptional cases with certain wind directions and velocities ... you may certainly see sand moving in a slip face within an hour which means if slowly moving they would move a millimetre or centimetre or something like that' (one may compare this with the movement of the hour hand of a clock).*
>
> *Their Lordships find this lacking in the vital precision. Movement of parts of the dunes, or of drifts of sand upon the dunes, is not the same thing as movement of the land boundary out into the sea. The one may be observable but does not, of its nature, constitute the other. The real question is how long it takes for a consolidation to take*

> *place bringing about a stable advance of the land. And the evidence takes the form 'I would expect that' rather than 'I saw and measured'.*" Lord Wilberforce (p.9-10)

The concept of imperceptibility seems complex but can be explained in very simple terms. If an observer cannot see the boundary moving, then any movement is imperceptible. If the observer needs to place a marker and see if they can estimate the movement, it is imperceptible. Furthermore, just because the observer can see sediment moving does not mean they can see the boundary moving. Consider the grains of sand at the beach, they swish back and forth, but the observer is unable to determine if more grains are coming or going. Any change that may be occurring is imperceptible but yet they can see something happening.

This paragraph also comes back to the point about consolidation. Sediment is not accretion until it is consolidated and useful or has become soil depending on what the sediment is made from.

> "*Their Lordships are far from confident that the evidence taken as a whole gives a complete and reliable picture of the movement of sand between 1888 and 1975, but they are of opinion that the figures arrived at by Mr. Armstrong, based as they are upon actual observations by air photograph, over 30 years, give reasonably acceptable evidence as to the long term rate of advance. This is not inconsistent with this advance having taken place unevenly, and at times by perceptible jumps, but it was for the trial judge (who in fact viewed the location) to consider together the two indications as to long term and short term movement. Taken together they provide material on which, in their Lordships' opinion, his Honour was entitled to come to the conclusion that the movement was imperceptible within the meaning of the authorities. The case was finely balanced but the evidence was not such that he was bound to draw an inference that any sudden movements of the dunes were necessarily accompanied by consolidated intrusions of the shoreline into the lake. On this point therefore their Lordships uphold the finding of the trial judge.*"
> Lord Wilberforce (p.10)

Finally, the conclusion of the case and some very important concepts are revealed. A perceptible jump, meaning a change that the observer can see after the event, is deemed accretion if the observer could not see it occurring. Also not all accretion must occur in a slow continuous growth, it may grow quickly, then pause and then grow quickly and pause. It may grow slowly for a while and then quickly again or it may stop. Each change just needs to be un-noticeable while it is occurring. These changes are known as perceptible jumps. Consider many small un-noticeable, valueless changes that occur by many floods. Does this meet the criteria?

4.2 Crown Grants

On pages 348 and 349 of the Williams v Booth case in 1910 (see section 4.1.5), there is an interesting discussion regarding rules of construction of Crown grants and Ad Medium Filum Aquae, however for brevity it has not been included. The point was also made by Issacs J. (p.352) of the same case as noted above. This discussion supports the concept that Crown grants should be read at face value and as the ordinary person would understand them, unless there is some compelling rule of interpretation that should apply.

Crown grants are the first transfer of that land out of the Crown estate. As such, they are the primary document that defines what was granted. Land cannot be excised out of the Crown estate unless it has been granted by a Crown grant. The majority of the Crown grants that create an ambulatory boundary along a natural feature refer to the bank, a river, the cliff or watershed/

ridgeline or some other natural feature. There are some exceptions of course, such as swamps and marshes as they (in the majority of cases) do not have definable edges. These grants should be considered as granting land to a right-line boundary as defined by the first survey.

4.3 The Surveying and Spatial Information Regulation

The requirement of clause 19(1) of the Surveying and Spatial Information Regulation 2017 (NSW Legislation, 2023a), which has existed in many previous editions of the Regulation, appears to have the same outcome as Chief Justice Griffith explained in Overland v Lenehan 1901 (see section 4.1.3). This is the requirement to replace the original intention based on the evidence that is least likely to be mistaken, i.e. the original pegs marked on the ground or the bank, MHWM or natural feature that was defined in the first survey.

4.4 The Crown Lands Management Act 2016

Section 13.3(9) of the Crown Lands Management Act 2016 (NSW Legislation, 2023b) includes a list of definitions for terms that relate to natural features. The most notable that is not discussed is the term ‘river’. The other terms are lake, bed and bank. Some of these terms are discussed ad-nauseam and yet there is no resolution or agreement as to how these terms should be applied.

> “*River includes any stream of water, whether perennial or intermittent, flowing in a natural channel, and any affluent, confluent, branch or other stream into or from which the river flows.*”

The Crown Lands Management Act 2016 only refers to these terms for section 13.3 as this is specified in section 13.3(9) “*In this section*”. The rest of the document uses the definition in section 5.33 or the common English meaning of watercourse.

This raises a very interesting question about what the intention of section 13.3 is. Unfortunately, that is a question of law and beyond the scope of this paper. However, no evidence has been found, including researching the Hansard records from 1931, that shows that the intention was anything other than to describe the rights of the adjoining owner to use the ‘bed’ of any water body.

5 COMPARISION OF PHILOSOPHIES

5.1 Definition of the Bank for Non-Tidal Waters

The first point worth noting is that there is a definition of ‘river’ in the Crown Land Management Act 2016, yet it is not used when surveying a Crown grant that is bound by the word river in the Crown grant for that specific lot. Why should there be two ways for defining the same river just because one grant stated river and the next grant stated bank? This is illogical. However, it would seem reasonable that the same location on the ground is measured regardless of what word is used in the Crown grant.

Hence the term bank should mean:
- The channel capable of containing the/any perennial or intermittent river.
- The channel capable of containing the/any perennial or intermittent river that is also the limit of the bed.

Or perhaps:

- The channel capable of containing the/any perennial or intermittent non-tidal water without reference to flooding that is also considered to be the limit of the bed.

This deals with the defined bank scenario and is also similar to the existing definition. In NSW, ill-defined features should not be used as boundaries. This has been the case since the 1886 Instruction to Licenced Surveyors. The intention is not to reword the definition but to understand how to apply the definition we have.

Another way to consider this is through the primary cases from section 4: The State of Alabama v The State of Georgia 1859, Kingdon v The River Hutt Board 1905 and Ward v The Queen 1980. However, Attorney-General v Chambers 1854, Williams v Booth 1910, Overland v Lenehan 1901 and Humphrey v Burrell 1951 also have a role to play.

When these cases are read in context and in conjunction with each other, they create the concept that the Crown grant granted all the land that satisfies the following points (excluding the concept of Ad Medium Filum Aquae, which is a separate rule of construction and only considered after the initial grant is understood):

- All the useable land that was ordinarily occupiable or cultivatable.
- All the land to the top of the bank before flooding occurs.
- All the land that can be flooded from time to time, but not the land capable of containing an ordinary fresh in the river.
- The bank should be easily identifiable and unmistakeable at any time except during a flood.
- The bank should be the natural feature that an ordinary person would expect to contain the whole flow of the water except during times of flooding.
- The boundary is designed to be ambulatory; it will move in accordance with the Doctrine.

Interpreting Crown grants that are bound by a river or by the bank should be simple and straight forward. When the grant is read in context and taken at face value using the terms as they would be used at the time the grant was written, the river or bank should have the meaning as implied by several court cases that are mentioned above.

However, by contrast, surveyors construct elaborate arguments using the cases above to define the boundary as the mean and average stage for every river. These arguments consider such points as the river does not get regular freshes, it is in drought most of the time and therefore the boundary is the bank that is only capable of containing the daily flow and if the water rises above that bank it is flooding. In some cases, this may be true if there is only one bank. But if there are multiple banks in close proximity, is it still true?

An example of this argument is the claim that there are not regular freshes that occur six or eight times a year in Australia as stated in Kingdon v The River Hutt Board 1905, or even two or three times a year as suggested in Hallmann (2007, 13.65). Therefore, the daily low flow is all that is required to be considered.

Is the definition of a bank about the duration between freshes as the deciding factor? Or is it the fact that the channel can contain all the ordinary freshes that occur whenever that may be? This needs to be tempered with the same concept that applies to the Doctrine as explained in Humphrey v Burrell 1951. From the context of this case, it is clear that there must be a consideration of the way that rivers move, flow and behave in the location of the case being decided upon. The judge made clear that rivers in England move and behave by different

processes to that of rivers in New Zealand as an example, and therefore what is acceptable change in one location may not be acceptable change in another location.

There are also semantic arguments about the function of the word 'and' in the definition of the bed in the Crown Land Management Act 2016. The common argument is that it is a limiting variable, therefore the surveyor finds the full bank capacity value and then finds the mean stage and places the boundary at that location. Therefore, arguing that both component parts of the definition are met. The meaning of 'and' is to connect phrases that are to be considered jointly, i.e. both must be satisfied in full; 'and' is not a limiting variable.

There are two significant problems with these arguments. The first is that they take the words out of context and apply some other meaning to them. The second is they are not defining a natural feature, i.e. there is nothing on the ground at these locations that is obvious and unmistakeable.

Furthermore, the definition in the Crown Lands Management Act 2016 is taken directly from the words in the case The State of Alabama v The State of Georgia 1859 and, as previously noted, this overturned Howard v Ingersoll 1851. Is it reasonable trying to interpret a definition that is the result of a case in 1859 by the words of the overturned case in 1851? This results in the definition meaning the outcome from 1851 and is in stark contrast to the intent of the hearing in 1859. The words need to be interpreted as they were intended by the case they are adopted from.

The holistic concept, as the courts have described it, is a simple and a common-sense approach that everyone can understand. Once the whole channel is full and there is nuance water flowing over the land, uncontained by any distinct natural feature, there is flooding, i.e. the water has left the container. This also must be tempered with where is the edge of the usable and ordinarily occupiable land. The point of flooding is variable like all other factors in water boundaries. No two sites are the same. There needs to be a common principle that everyone applies in the same way to achieve consistency and to define the natural feature that is observable and un-mistakeable on the ground. The top of the bank does not mean the top of the bank able to contain flooding. It is the bank that contains all the ordinary freshes.

5.2 The Application of the Doctrine of Accretion and Erosion

Throughout the surveying industry, there are many different understandings of how the Doctrine should be applied. The Registrar-General's guidelines state (NSW LRS, 2023): "*Erosion – This is the natural and gradual retreat of the bank into the adjoining land caused by the action of a river or stream. The change in the position of the bank must only be discernible over a significant period of time not as a result of a sudden storm or flood.*"

This could be interpreted in three ways:

1) Lots of small changes un-noticeable in each flood event cause the overall long-term change and the land is eroded. Does the boundary move? Does this agree with the intent of the Doctrine?
2) A change that cuts a new path through the property, severing the land in a single event or in a series of events. During this change the river has not migrated across the landscape, but a new channel has been made. Does the boundary move? Does this comply with the Doctrine?

3) Any change caused by flooding does not comply with the Doctrine. Or put another way, if flooding can be proven to have occurred at any time, the change does not comply with the Doctrine and the boundary does not move. Does this outcome match the intent of the case law when read in context?

From Humphrey v Burrell 1951, the other interesting point to note is that the change failed as the change did not occur by accretion. The river carved a new channel, it did not move across the land in a continuous evolution of location eroding in front and accreting behind. There was further consideration that there is a considerable area ("this large area") of land that would change ownership as a result of an inequitable change.

The key message from Williams v Booth 1910 is on page 356, stating that it is not the sudden or gradual nature of the event which governs the law, but it is whether the change occurred by an imperceptible process.

Once the Doctrine has been considered and the boundary is determined, how does the surveyor convey all this information to those that are dealing with this matter? The current approach is to draw a plan and file the investigation in a filing cabinet. Is there a better approach?

6 REPORTS

One of the proposals being put forward is that every plan that defines a natural feature boundary must supply a report. This question was asked as part of the industry engagement process, and 92% of surveyors answering the question agreed that a report would be beneficial when re-defining that boundary. Interestingly, only 63% thought that a report should be a requirement.

The purpose of the report is a record of what was on the ground at the time of the survey and what feature the surveyor located in the survey as the boundary. The report is not intended to be a long or overly complicated document. The main beneficiary of these documents will be the next surveyor to survey that site or any subsequent surveyor.

A draft proforma report has been generated, which is 2-3 pages long:

- Page 1 includes information about the site:
  - River particulars, including name.
  - Title particulars.
  - Date of the Crown grant.
  - Is the title tidal or non-tidal?
  - Are there any 100-foot reserves or fixed-width reserves?
  - Could Ad Medium Filum Aquae apply?
  - Followed by a half-page size image.
- Page 2 includes:
  - A list of questions (14) about the Doctrine to assist the surveyor in deciding if any change has occurred, whether the change complies with the Doctrine and why.
  - Each question only requires a one-sentence answer.
  - Followed by a third-page size image.
- Page 3 includes:
  - More images.
  - Extracts from the search of important information.

The aim of the report is transparency and consistency. By making reports compulsory, it is a fair and equitable outcome, and everyone is required to produce a report. So next time you get a plan surveyed after 2023, there will be some images of the site as it was, and you will know exactly what feature the last survey adopted and why. All this will be available before you leave the office, even if there was no change to the boundary.

7 CONCLUDING REMARKS

Before navigating water boundaries, one must undertake a voyage of discovery through the annals of the courts. Open the mind, leave the preconceived and bias beliefs behind and consider the original words and concepts as a whole within the context they were written.

At first glance, water boundaries appear to be very confused and full of rules that appear to contradict depending on the circumstance applied. However, if the documents are read in full, the context understood and taken at face value without applying any modern slant, the majority agree. If, at first, they do not appear to agree, reconsider the intent of the concept described by the words with less emphasis on the individual words themselves. There will always be cases where one judge disagrees about a point here or there, but in general they all agree. If any do not, it will be obvious that the judge did not consider the context but tried to apply a meaning of a word or phrase in isolation or has taken the words completely out of context.

The role of the Office of the Surveyor-General is not to provide legal advice but to provide guidance, hence each surveyor must make up their own mind. The draft of the updated Surveyor-General's Direction No. 6 (Water as a Boundary) has been written according to the principles described in this paper. A key decision made early in this review was that all documents researched will have been interpreted in context and the integrity of the Torrens titling system held in the highest regard.

Context, ethics and transparency are the three most important things when it comes to natural boundaries. Without these the system is in constant tension and surveyors are constantly trying to justify why their plan is different to the last, even though nothing has really changed to any substantial degree.

REFERENCES

BOSSI (2021) Ethics and code of professional conduct, https://www.bossi.nsw.gov.au/__data/assets/pdf_file/0003/223671/BOSSI_Ethics_and_Code_of_Professional_Conduct_E1.1.pdf (accessed Mar 2023).

DCS Spatial Services (2016) Surveyor-General's Direction No. 6: Water as a Boundary, https://www.spatial.nsw.gov.au/surveying/surveyor_generals_directions (accessed Mar 2023).

Fenwick W. (2021) Surveyor-General's Direction No. 6: Water as a Boundary – The process of review, *Proceedings of APAS Webinar Series (AWS2021)*, 24 March – 30 June, 188-191.

Hallmann F. (2007) Legal aspects of boundary surveying as apply in New South Wales (2nd edition), The Institution of Surveyors NSW, Australia.

Middleton J. (2016) Statutory interpretation: Mostly common sense? *Melbourne University Law Review*, 40(2), 626-656.

NSW Legislation (2023a) Surveying and Spatial Information Regulation 2017, https://legislation.nsw.gov.au/view/html/inforce/current/sl-2017-0486 (accessed Mar 2023).

NSW Legislation (2023b) Crown Land Management Act 2016, https://legislation.nsw.gov.au/view/html/inforce/current/act-2016-058 (accessed Mar 2023).

NSW LRS (2023) Registrar General's guidelines: Accretion and erosion, https://rg-guidelines.nswlrs.com.au/deposited_plans/natural_boundaries/accretion_erosion (accessed Mar 2023).

Pike K.L. (1982) *Linguistic concepts: An introduction to tagmemics*, University of Nebraska Press, Lincoln, 146pp.

Attorney-General v Chambers (1854) EngR 733, 4 De G M and G 206, 43 ER 486.

Howard v Ingersoll (1851) 54 U.S. 381.

Humphrey v Burrell (1951) SC Palmerston North NZLR 262.

Kingdon v The River Hutt Board (1905) 25 NZLR 145.

Overland v Lenehan (1901) 11 QLJ 59.

Southern Centre of Theosophy v The State of South Australia (1982) AC 706.

The State of Alabama v The State of Georgia (1859) 64 U.S. (23 How.) 505.

Ward v The Queen (1980) 142 CLR 308.

Williams v Booth (1910) HCA 12 CLR.

Yukon Gold Company v Boyle Concessions Limited (1916) 10 W.W.R 585, 34 W.L.R.