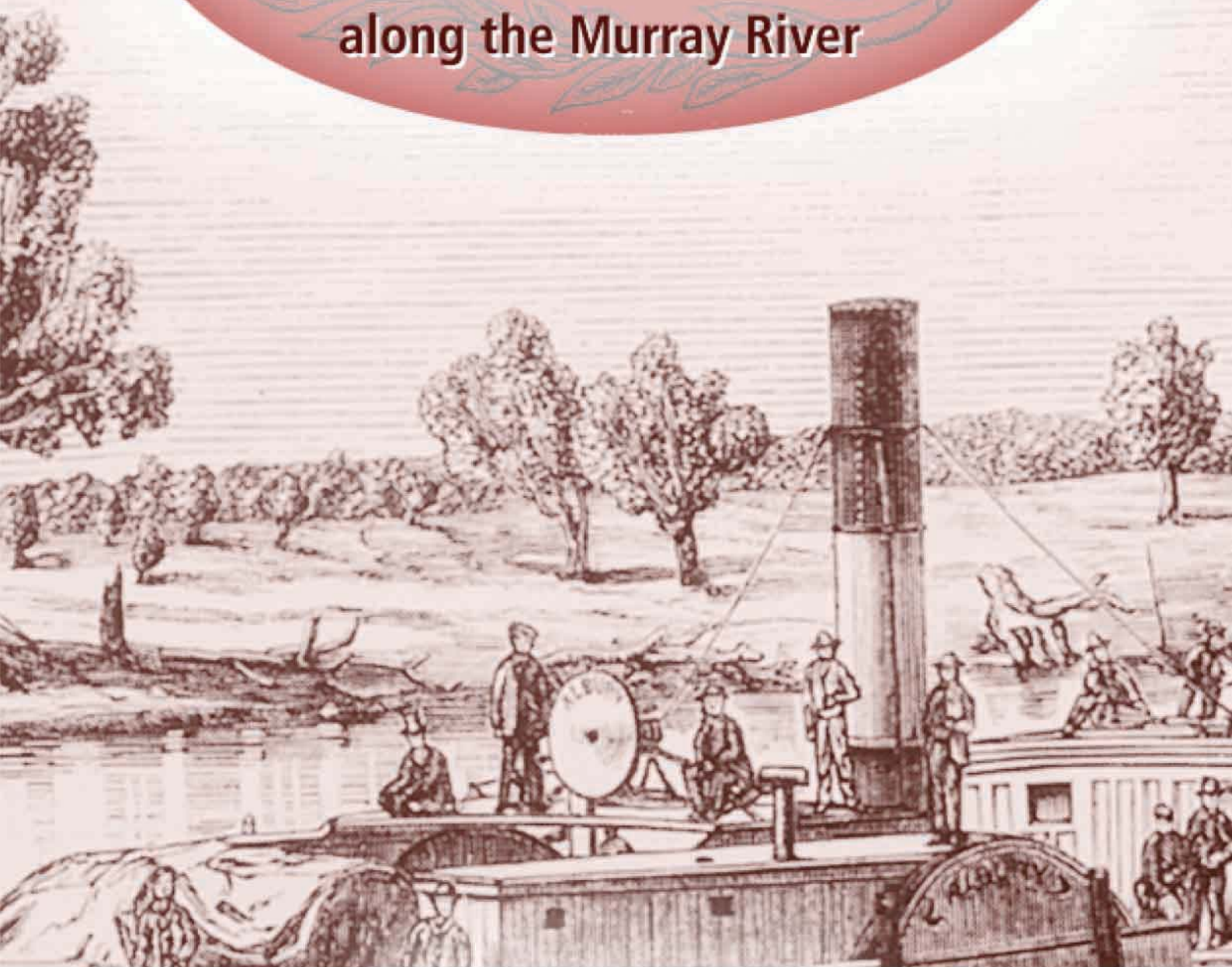


**Guidelines for the
Determination of the State Border
between
New South Wales & Victoria
along the Murray River**



**Land and
Property
Information**



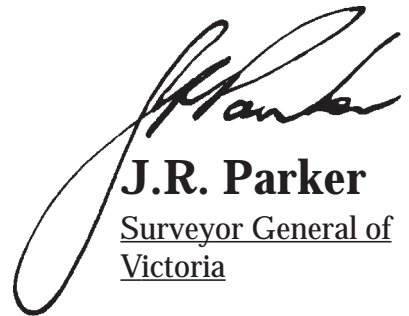
Natural Resources and Environment

AGRICULTURE • RESOURCES • CONSERVATION • LAND MANAGEMENT

**GUIDELINES
FOR THE
DETERMINATION OF
THE STATE BORDER
BETWEEN
NEW SOUTH WALES
AND VICTORIA
ALONG THE MURRAY RIVER**



D.M. Grant
Surveyor General of
New South Wales



J.R. Parker
Surveyor General of
Victoria

These guidelines have been issued by the Surveyors General of New South Wales and Victoria to assist surveyors to determine land boundaries which form part of the State Border along the Murray River. The aim of the guide is to bring some consistency into determinations made in individual surveys, by providing information on past legislation and legal precedents which have been used in previous determinations. The guide is based on the best available information and opinion at this time, but is subject to further interpretation at law.



Photo Courtesy of Department of Water Resources.

ACKNOWLEDGMENT

These guidelines were developed by Mr. R.A. Kernebone whilst working as a senior surveyor for the Western Lands Commission of NSW. Active collaboration was provided by Mr. B. Vardy, a senior surveyor with Survey and Mapping, Victoria.

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3rd Edition
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*View on the lower Darling. The Albury steamer at Wentworth.
(Photo courtesy of National Library of Australia).*

CONFIRMATION AND ADOPTION OF DETERMINATIONS

Adoption of a determination by individual surveyors of any part of the NSW/Victorian border is dependent on agreement being obtained from both Surveyors General.

It is recommended that discussion and consultation between the surveyor undertaking the survey and representatives of the Surveyors General take place before and during the survey, to expedite ultimate agreement. It is not the intention of the Surveyors General to impede the determination process, but rather to lend weight to a consistent and defensible determination of the border over time from individual surveys.

If the survey is undertaken by a public agency or authority, both Surveyors General must be advised before the start of the survey.

Both Surveyors General will provide written confirmation of agreement.

PRECEDENTS

Legislation

Act 13 & 14 Vic c 59 (1850) The Separation Act

Act 18 & 19 Vic c 54 (1855) The New South Wales Constitution Act

Australian High Court Judgements

Ward v The Queen (1980) 54 AWR 274-283

Hazlett v Presnell and others (1982) 56 AWR 884-892

Appeal Court Judgements

1. Howard v Ingersoll: USA Supreme Court: 1851 December term pp. 542-574, 13H381.
2. The State of Alabama v The State of Georgia: USA Supreme Court: 1859 December term pp. 687-692, 23H505.
3. Conservators of the River Thames v Smeed, Dean & Co. 1897, 2QB 334-356.
4. Hindson v Ashby 1896 2 Ch. 1-30.
5. Kingdon v Hutt River Board, New Zealand Supreme Court 1904-5, 25 NZLR 145-167.

GUIDELINES

General

1. The creation of a new channel after 1850 by sudden avulsion will not alter the location of the state border.
2. The rule of gradual and imperceptible erosion and accretion will apply.

At the site of the Ward case there is evidence that the top of the bank has been altered due to landslip caused by erosion undermining the upper bank.

In the light of the Ward case decision such landslip is accepted as a natural and necessary consequence of the gradual and imperceptible erosion which has undercut the upper bank during the high river flow.

3. The state border does not follow any particular water level.
4. Border definitions prior to the 1980 Ward case judgement are not binding.
5. Investigation and examination of the watercourse should take place when the river is low so that the natural feature can be appreciated by eye.

The Watercourse

1. The whole watercourse of the Murray River is within New South Wales.
2. The watercourse is the contour feature within which the waters of the River Murray flow.
3. The relevant watercourse is the main channel of 1850, that is: the channel in which the greater flow occurred in 1850.
4. The unchallenged and continuous issue of titles, and licences to occupy, by the two states on either side of a particular channel or contour feature is prima-facie evidence that this was the main channel of 1850. Extremely strong evidence will be required to rebut this assumption.
5. The whole watercourse means the area between the extremities of the banks of the river. Such banks determine the course of the river.

“Indeed, even in times of flood, it might well be said that they, even then, determine the course of the river itself.”

(Barwick C.J., Ward decision)

6. “When ‘watercourse’ is found standing not alone but in conjunction with ‘of the river’, the ordinary meaning which it will convey will be that of the contour feature in which the river flows, and not the flowing water or river.”

(Stephen J., Ward decision)

The Ward Case Circumstances

1. The whole of the contour feature to the top of the southern or left bank is within New South Wales.
2. The boundary line between the states runs along the top of the southern or left bank of the Murray River.
3. “The banks of a river are those elevations of land which confine the water (sc. waters) when they rise out of the bed.” (Stephen J., Ward decision)
4. The state border requires a recognisable and certain boundary line to separate the two independent jurisdictions.

It is not generally possible to peg such a natural boundary, but it is possible to place pegs to indicate which particular bank has been adopted.

A diagram illustrating the circumstances of the Ward case is attached.

Circumstances which Differ from the Ward Case

1. “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 habit 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.” (Stephen J., Ward decision)
2. The location of the top of the bank will not always be as easily identified as at the site of the Ward case, but it will be the top of the bank of the contour feature within which the water flows.
3. Where the shape of the natural feature is different from the particular circumstances found at the site of the Ward case the surveyor must exercise professional judgement in the light of the different circumstances.

sc - i.e. to wit, namely

4. Where there is a confluent stream or river:

The state border will be a line over the bed of that stream or river. Such line will continue the line of the state border adopted on either side of the confluent stream or river.

This will be a straight or a curved line depending on the shape of the contour feature of the watercourse.

5. Where there is a junction with a palaeochannel or ancestral stream bed now filled by deposition of soil:

The state border will follow the top of the bank which determines the course of the flowing water.

Remote higher banks which limit the extent of the water when it overflows the lower bank but which do not determine the course of the flowing water should not be adopted.

6. Where there are narrow or wide flood plains, backwaters, swamps and areas submerged by water backed up behind weirs:

Even though these areas are regularly and in some places almost continually covered by water, the remote banks which limit the extent of the overflow cannot be said to determine the course of the flowing water and should not be adopted.

The state border will be along the top of the bank which determines the course of the river, even though the bank is submerged.

The surveyor should look for evidence of a line of living or dead River Red Gums which will indicate the location of the bank. Such a bank might only be observed when the river is low.

7. Where a selection is required between two or more banks:

The surveyor will need to obtain river peak heights and daily heights, for a sufficient length of time to be representative, from the Bureau of Meteorology, Victorian Region, or some other reliable source. A comparison of these heights with the height of the various banks will indicate the areas which are:

(a) covered habitually even if not continually,

(Conservators of the River Thames v Smeed, Dean & Co., Smith L.J. p.338)

(b) covered by the least push of water,

(Hindson v Ashby: Lindley LJ. p.14)

(c) “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 droughts of the summer or autumn.”

(The State of Alabama v The State of Georgia: Wayne J. p.692)

Areas which are covered by (a), (b) or (c) should be considered to be part of the bed of the river and below the banks, except where such areas are part of confluent streams, adjoining palaeochannels or ancestral stream beds or wide flood plains.

8. Where the earth bank has been altered by man and/or beast so that it is no longer possible to identify the bank:

These areas must be considered as lost boundaries.

In these cases, surveyors from both states will need to meet on the site for inspection in order to adopt a line which is mutually acceptable to both and which meets the requirements of the High Court judgement as well as possible.

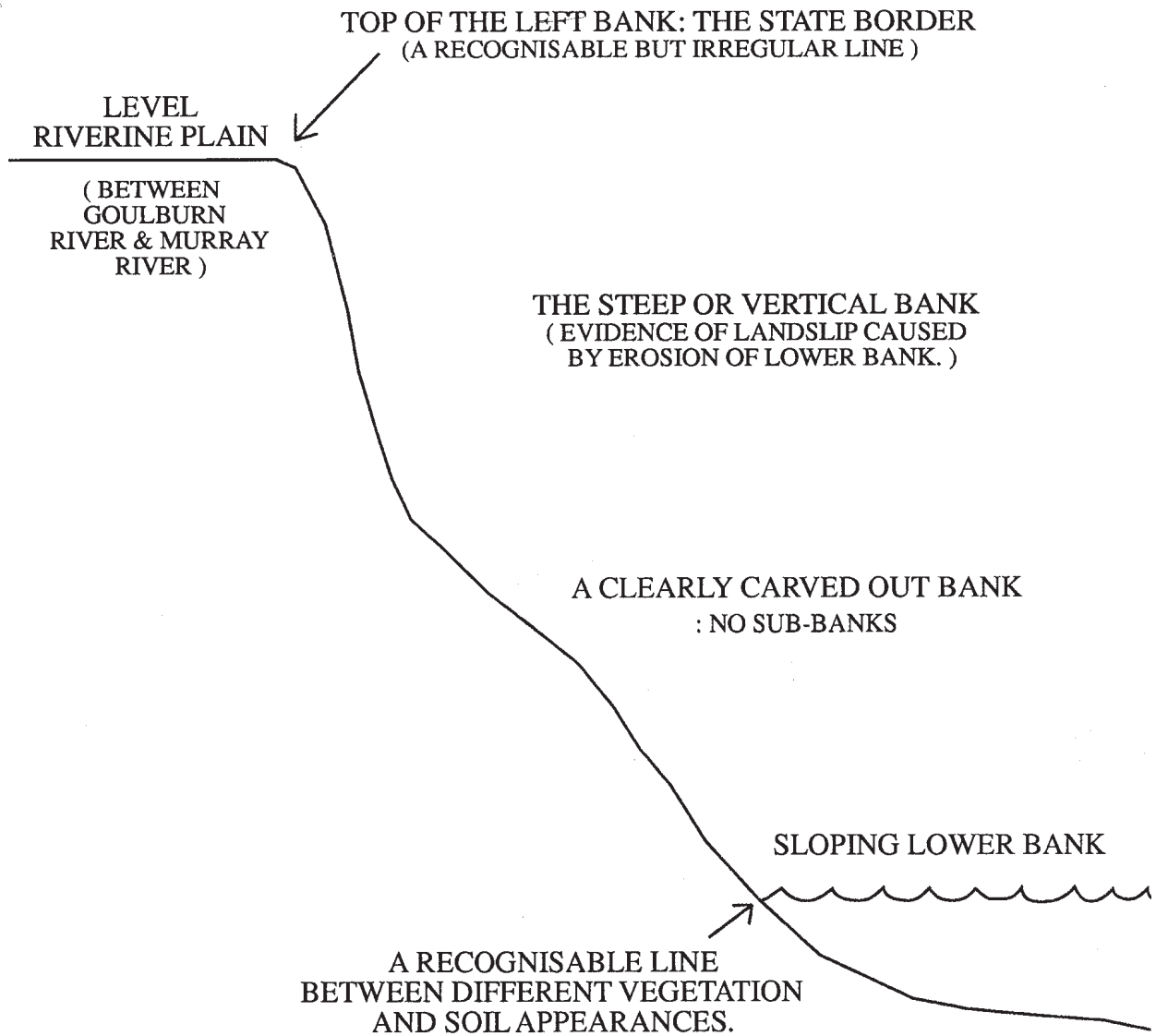
For further reading:

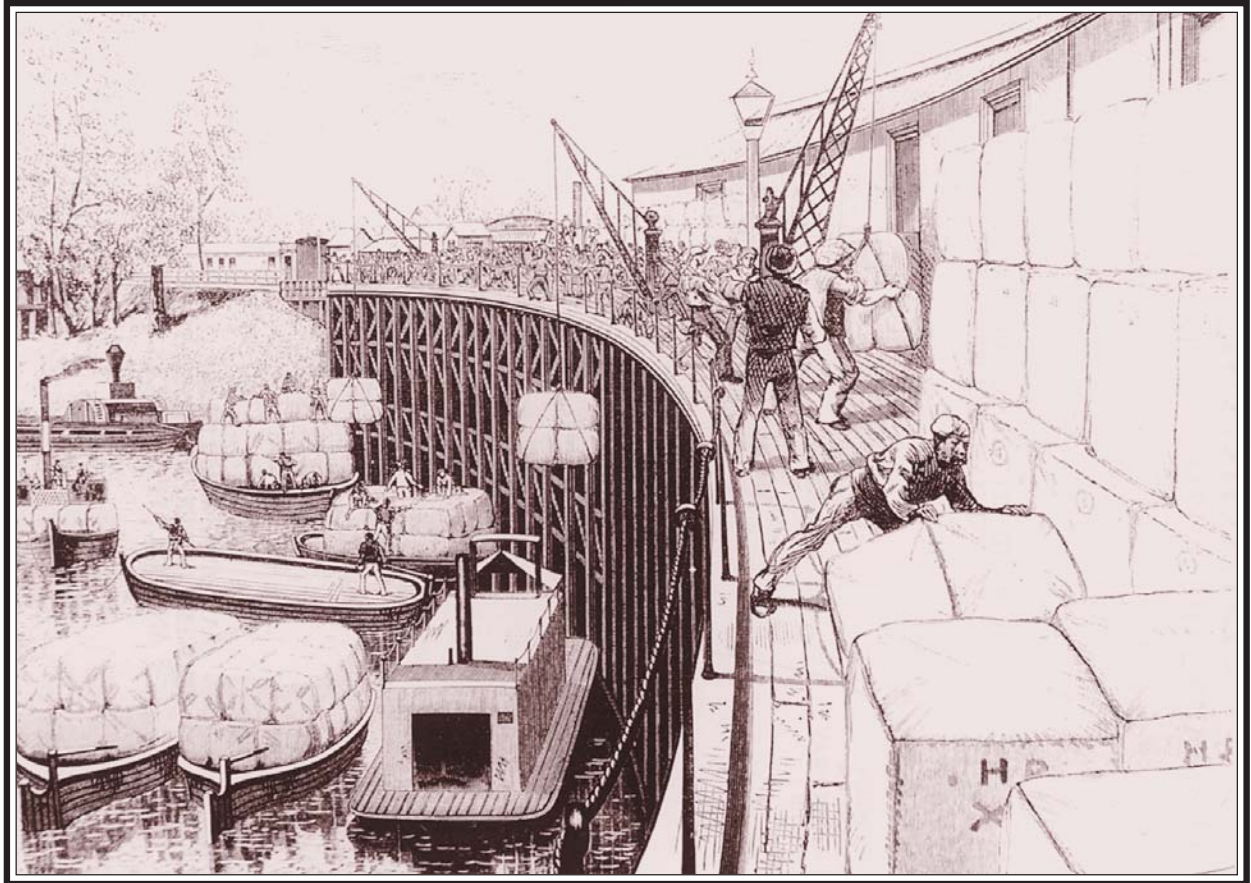
R.A. Kernebone: “North Bank Right Bank, Left Bank South Bank: Paper No. 2, Technical Papers 33rd Australian Survey Congress, Albury, April 1991. (The Institution of Surveyors, Australia, Incorporated.)



DIAGRAM

ILLUSTRATING THE WARD CASE CIRCUMSTANCES





*Activity at the Echuca Wharf during the 1874 Wool season.
(Photo courtesy of National Library of Australia).*

APPENDIX

Further Background
to determining the location of the
State Border between
New South Wales and Victoria
along the Murray River

(Shown as part of a report on a survey at Echuca)

The necessary investigations were conducted on Monday 24 June 1991 and Tuesday 25 June 1991. Pegs were placed in company with and with the agreement of Senior Surveyor B Vardy on Tuesday 25 June 1991. These pegs indicate the recommended location of the state border in accordance with the principles provided in the High Court of Australia judgements *Ward v The Queen* (1980) 54 ALJR 271-283 and *Hazlett v Presnell and others* (1982) 56 ALJR 884-892.

The “top of the bank” is an irregular natural feature and cannot be pegged. The pegs placed indicate, at the location of the peg, the “top of the bank” adopted by agreement to represent the state border.

A series of photographs were taken by me on Wednesday 26 June 1991 and copies of these photographs accompany this report.

Mr Surveyor R Lander of Land Management Division, Narrandera, attended and joined in the discussion.

While at Echuca I also discussed river behaviour and water levels with:

1. Mr M Bruty, Deputy Engineer, Echuca City Council.
2. Mr K Harris, Environmental Officer, Department of Water Resources at Deniliquin.
3. Mr R Stratton, engineering staff of Murray Shire at Moama.
4. Mr K Hutchison, Echuca City Council Wharf Shipwright.

On Monday 24 June 1991 Senior Surveyor B Vardy, Surveyor R Lander and I inspected the site of the High Court judgement in the Reed murder case (*Ward v The Queen*) where we discussed the High Court decisions and the application of these decisions to varying situations in close proximity.

At the time of inspection the water level was low and it was possible to appreciate the shape of the bed and bank.

At the site of the Reed murder and at Echuca there is a definite line along the earth bank which shows a difference in soil appearance and difference in vegetation as envisaged by the judges of the United States of America Supreme Court in the decision delivered in *Howard v Ingersoll* 13H. 542-574 (1851), I say this even though Stephen J (p.277 *Ward* case) comments “...the sort of line or level contemplated in the judgement in *Howard v Ingersoll*, ante, would not seem to exist....”.

Wayne J. p.561:

“When the commissioners used the words bank and river, they did so in the popular sense of both. When banks of rivers were spoken of, those boundaries were meant which contain their waters at their highest flow, and in that condition they make what is called the bed of the river. They knew that rivers have banks, shores, water, and a bed, and that the outer line on the bed of a river, on either side of it, may be distinguished upon every stage of its water, high or low; at its highest or lowest current. It neither takes in overflowed land beyond the bank, nor includes swamps or low grounds liable to be overflowed, but reclaimable for meadows or agriculture, or which, being too low for reclamation, though not always covered with water, may be used for cattle to range upon, as natural or unenclosed pasture. But it may include spots lower than the bluff or bank, whether there is or is not a growth upon them, not forming a part of that land which, whether low or high, we know to be upland or fast lowland, if such spots are within the bed of the river. Such a line may be found upon every river, from its source to its mouth. It requires no scientific exploration to find or mark it out. The eye traces it in going either up or down a river, in any stage of water.”

Wayne J. p.562:

“Both bank and bed are to be ascertained by inspection and the line is where the action of the water has permanently marked itself upon the soil.”

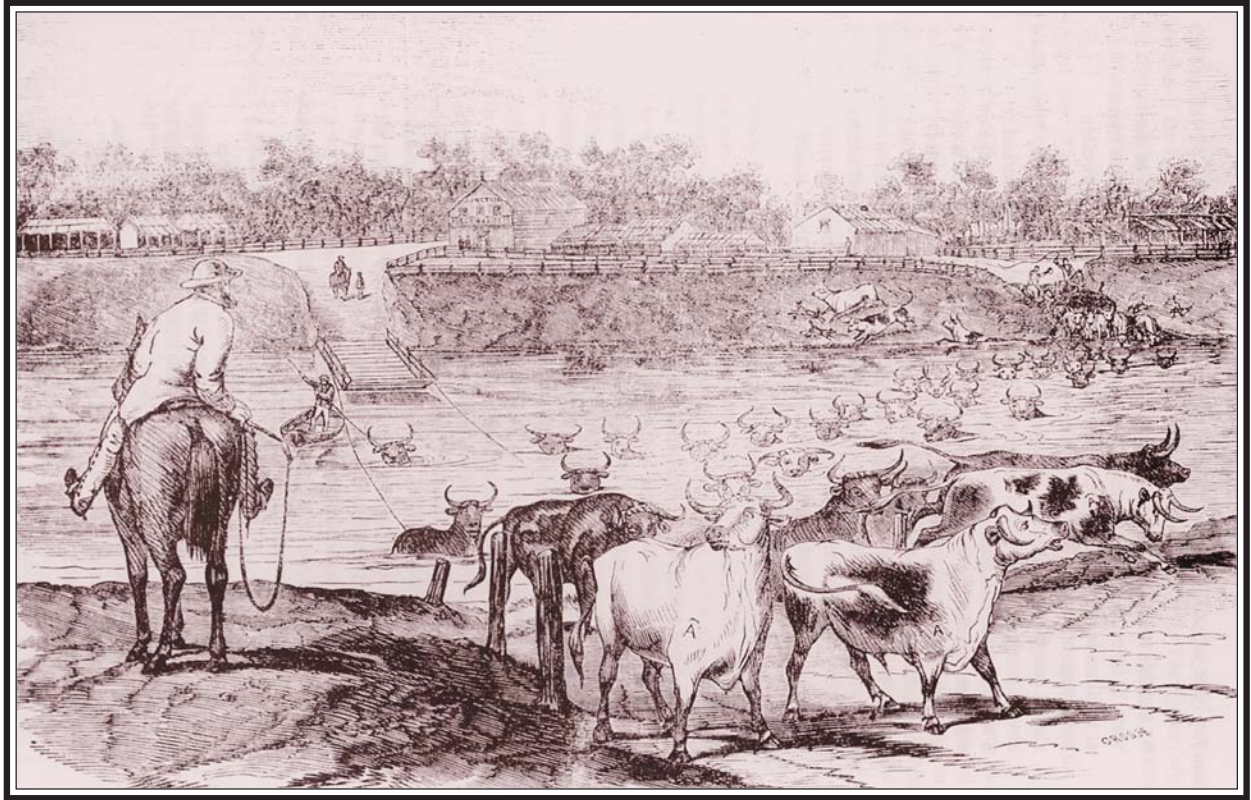
Nelson J. p. 569-570:

“....the line marked by the permanent bed of the river by the flow of the water at its usual and accustomed stage, and where the water will be found at all times in the season except when diminished by drought or swollen by freshets. This line will be found marked along its borders by the almost constant presence and abrasion of the waters against the bank. It is always manifest to the eye of any observer upon a river, and is marked in a way not to be mistaken. The junction of bank and water at this stage of the river, satisfies the words of the cession, and furnishes a line as fixed and certain as is practicable; and is just and reasonable to all the parties concerned. It excludes the high bluffs or banks, which the river touches but occasionally, when swollen with freshets or floods; and also an intermediate line, which can be neither marked nor described; and adopts a boundary along the bank and margin of the river of some permanency, and which parties providing for a river boundary between them would naturally have in their minds.”

Curtis J. p. 573:

“The banks of a river are those elevations of land which confine the waters when they rise out of the bed; and the bed is that soil so usually covered by water as to be distinguishable from the banks, by the character of the soil, or vegetation, or both, produced by the common presence and action of flowing water. But neither the line of ordinary high-water mark, nor of ordinary low-water mark, nor of a middle stage of water, can be assumed as the line dividing the bed from the banks. This line is to be found by examining the bed and banks, and ascertaining where the presence and action of water are so common and usual, and so long continued in all ordinary years, as to mark upon the soil of the bed a character distinct from that of the banks, in respect to vegetation, as well as in respect to the nature of the soil itself. Whether this line between the bed and the banks will be found above or below, or at a middle stage of water, must depend upon the character of the stream. The height of a stream, during much the larger part of the year, may be above or below a middle point between its highest and least flow.

Something must depend also upon the rapidity of the stream and other circumstances. But in all cases the bed of a river is a natural object, and is to be sought for, not merely by the application of any abstract rules, but as other natural objects are sought for and found, by the distinctive appearances they present; the banks being fast land, on which vegetation, appropriate to such land in the particular locality, grows wherever the bank is not too steep to permit such growth, and the bed being soil of a different character and having no vegetation, or only such as exists when commonly submerged in water.



Drovers swimming their cattle across the Murray. (Photo courtesy of National Library of Australia).

Taking along with us these views respecting the bed and banks of a river, it will be obvious that the lowest line of the bank, being the line which separates the bank from the bed, is a natural line, capable of being found in all parts of the river, impressed on the soil; and this is true of no other line on the bank; for though in some places the banks of a river may have so marked a character, that there would be no difficulty in tracing the upper line of the bank, and pronouncing, with certainty, that the bank there terminates, yet it is not to be supposed that this would be true throughout the course of a long river, and one of these cases finds, that in some places the banks of this river are low, and the adjacent lands on either side subject to occasional inundation. In such places, it would be impracticable to fix on a precise line as the upper termination of the bank.”

In the light of the relevant legislation of 1850 and 1855 the Australian High Court held that the border between New South Wales and Victoria is to be located at the top of the bank because the “whole watercourse” is within the territory of New South Wales.

At the site of the Reed murder there is such a definite, although irregular, “top of the bank” to be discerned easily by eye.

In the decision *Ward v The Queen* there are two references where it is explained what is meant by the “bank”.

Barwick, C.J. p.272:

“...the administration of inter-colonial customs evidently gave rise to doubts and difficulties. Those doubts were intended to be laid to rest by the Act of 1855, 18 & 19 Vict. c. 54. This Imperial statute declared “that the whole Watercourse of the said River Murray” was within the colony of New South Wales. To my mind, bearing in mind the antecedent historical events, beginning with the erection of the Port Phillip District of the colony of New South Wales, the Imperial statement that the whole watercourse of the river was within the territory of New South Wales meant, and, in my opinion, unambiguously meant, that the colony of New South Wales extended territorially to the southern bank of the River Murray. 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. Indeed, even in times of flood, it might well be said that they, even then, determine the course of the river itself. I agree entirely with what my brother Stephen has written on the connotation and the denotation of the expression “watercourse of the river”. For my part, I derive somewhat more than my brother seems willing to take from the emphatic use of the word “whole”, particularly bearing in mind the circumstances in which it was statutorily employed. The whole watercourse of a river must, in my opinion, include the territory which lies between its banks.

If, as is the case with English or some European continental streams, there is a seasonal flooding, the extremity of the stream’s watercourse may extend to the seasonal flood bank. But no such question arises in this case. When this river bursts its banks in flood, so far as presently relevant, it submerges adjacent lands without forming either a flood plain or a flood bank. Here, the southern bank of the river is clearly apparent and easily defined.

The absence of a pattern of seasonal flooding of a fairly regular nature contributed to the decision in quite early colonial days to vest flowing water in the Crown, thus avoiding arguments as to the use of flowing waters between proprietors on either bank, as well as between upper and lower riparian owners.

To my mind, the statutory assertion in 18 & 19 Vict. c.54 that the whole watercourse of the river was within New South Wales was, as a matter of statement, unambiguous. When the antecedent history is taken into account, including the influential and cogent opinion of the law officers of the colony of New South Wales which is recited in my brother's reasons for judgement, I have no doubt that the meaning of the expression "the whole watercourse" of the river was intended to ensure that all within the banks of the river was accepted as being within New South Wales."

Stephen J. p.281 :

My conclusions concerning s. 5 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 of 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 I adopt the description given in *Howard v. Ingersoll* (1851) 13 How. 381 at p. 427: "the banks of a river are those elevations of land which confine the water (sc. waters) when they rise out of the bed". In *Jones v. Mersey River Board* (1958) 1 Q.B. 143, Jenkins L.J., after citing with approval this passage from *Howard v. Ingersoll*, pointed out, at p. 151, that the identification of the "bank" at any particular point along the 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 (sc. shooting) in the present case leaves no room for doubt: the bank is well defined and its top can be instantly recognised. 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 - at pp. 152-3. 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."

I have drawn the following principles from these passages:

Principle 1 The state border is located along the top of the bank wherever circumstances are similar to the site of the Reed murder.

Principle 2 The banks determine the course of the flowing waters. Even in times of flood the banks determine the course of the river, i.e. the flowing or running water.

Principle 3 The banks of a river are those “elevations of land which confine the water (sc. waters) when they rise out of the bed” which was the definition provided by Curtis J. in *Howard v. Ingersoll*.

Principle 4 The location of the top of the bank will not always be as easily identified as at the site of the Reed murder, but it will be the top of the bank of the contour feature within which the waters flow.

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 habit of the river, the geological composition of the land, and the level of the land as compared with the river, and other circumstances.

Principle 5 Where different circumstances exist, it is not absolutely necessary to follow the top of the bank rule that was adopted at the Reed murder site because of the relevant circumstances there.

The High Court decision has left a residual problem which needed to be addressed before the border at Echuca could be determined.

In the Hazlett decision pp. 887-888 the application of the rule of gradual and imperceptible processes of erosion or accretion was considered:

“There is nothing in the subject matter or context of the provisions of the Imperial Acts of 1850 and 1855 fixing the New South Wales and Victorian boundary which would justify the conclusion that the ordinary principles of common law as to changes by erosion and accretion were not applicable so as to result in the boundary changing in accordance with such changes to the course or whole watercourse of the river or, more particularly, to the south bank. Nor is the application of those principles excluded by practical considerations. The requirement that erosion and accretion must be gradual and imperceptible (see *Southern Centre of Theosophy Case*, above, at pp. 552-553) excludes, from those processes, sudden variations in the boundary or dramatic alterations in the status, rights or duties of individuals. Indeed, acceptance of the ordinary principles as to erosion and accretion is actually in the interests of certainty since the effects of gradual and imperceptible erosion and accretion along the banks of a great river will inevitably be incapable of precise determination. We respectfully agree with Stephen J. (in *Ward’s Case*, above) that, upon the proper construction of the statutory provisions, the ordinary common law principles of erosion and accretion are applicable. Different considerations and principles apply in respect of the more sudden and observable changes which result from avulsion.”

However at the site of the Reed murder and also at Echuca, there is evidence that there has been alteration to the shape of the bank, and thus to the location of the top of the bank, because of landslips.

The lower bank has been eaten away by gradual and imperceptible erosion during high rivers undermining sections of the bank which subsequently collapse by landslide.

Principle 6 I have taken the high court decision to mean that the gradual and imperceptible erosion refers to the undercutting by water abrasion and the subsequent landslide is not to be considered "avulsion" but a natural and necessary consequence of the erosion, and I have applied this principle to the river bank at Echuca.

There are occasional indications on the ground, such as old tree roots and stumps, where it is possible to see that the bank has shifted because of erosion and landslide, but no definite line to measure to or to provide a certain boundary line remains at the original location.

Principle 7 In the interests of certainty a definite and visible line is to be sought for the border.

Principle 8 At those points where the Murray River watercourse is joined by confluent watercourses and ancestral stream beds on the left bank, and there is no bank or no definite bank then the line of the top of the adjoining bank which has been adopted is joined across the gap.

Although water from the Murray River will back up and cover such areas, even when the Murray River would not be considered to be in flood, such areas lack the kind of bank envisaged in the judgements of Barwick C.J. and Stephen J. because any remote banks do not give direction to the course of the flowing water and they do not "confine the water (sc. "waters"; see *Howard v. Ingersoll* p. 573) when they rise out of the bed".

On Tuesday 25 June 1991 these principles were applied to the task of adopting an agreed border line.

Pegs were placed at locations by mutual agreement, and Senior Surveyor B. Vardy advised that his staff will make connections to Permanent Survey Control Marks and to the Victorian Cadastral Survey. Surveyor R. Lander placed two Survey Co-ordination Permanent Marks in Echuca in close proximity to the subject area, and advised that he will connect these marks to the pegged line and to the New South Wales Control Survey and Cadastral Survey.

Some further explanation for the line adopted is warranted.

- (1) Line between pegs 1 and 2, and pegs 8, 9, 10 and 11.

From information supplied by Survey and Mapping Victoria the normal waterline, i.e. the distinguishable line where there is a difference in soil appearance and vegetation has a height of about 87 metres AHD and the closest definite bank to this line has a height of about:

- 92 metres AHD - pegs 1 - 2 (section A - A)
- 91 metres AHD - pegs 8 - 9 (section C - C)
- 90 metres AHD - pegs 9 - 10 - 11 (section D - D)

Information supplied by the Bureau of Meteorology Victorian Regional Office, (Mr Mike Cawood, Tel. (03) 669 4945, GPO Box 1636M, Melbourne Vic. 3001) indicates that the Murray River at Echuca Wharf rises above 92 metres AHD in about 65 years out of about 120 years.

The river rises above 91 metres AHD in about 79 years out of about 120 years and above 90 metres AHD in about 92 years out of about 120 years.

In other words any area covered by water above 90 metres AHD cannot be said to be covered “constantly” or “habitually” in the “ordinary and regular course of nature”,

A.L. Smith, L.J. p. 338. (*Conservators of the River Thames v Smeed, Dean & Co.*, 2. Q.B. 1897, pp. 334 350.)

“Then what is the prima facie meaning of the words the “bed of the Thames”?”

In my judgement they denote that portion of the river which in the ordinary and regular course of nature is covered by the waters of the river. It need not be constantly covered if in the ordinary course of things it is habitually covered. I will cite a passage from the judgement in an American case, namely that of the *State of Alabama v. State of Georgia* (1), which I cited in my judgement in *Hindson v. Ashby* (2), for it exactly conveys what I understand by the meaning of the phrase “bed of a river”. It is this: “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 droughts of the summer or autumn”.

This, when applied to a tidal river means without reference to extraordinary tides at any time of the year. This in my judgement is the prima facie meaning of the words ‘bed of the Thames’,”,

nor can it be said that “the least push of water brings the river over most, if not all, of the land in question” (i.e. over the land at Echuca above 90 metres AHD). (See Lindley L.J., p.14 *Hindson v. Ashby* 2 Ch. 1896 pp. 1-30), nor can it be said that the area above 90 metres AHD is covered by the definition of the “bed” quoted by A.L. Smith L.J. from the *State of Alabama v. the State of Georgia* (1859 23H 505 pp. 687-692).

The line of pegs 1 - 2, and X - 9 - 10 - 11 has been adopted as the line of the “top of the bank” conforming best to the circumstances and principles of the High Court judgement in *Ward v. The Queen*. The line has been affected by erosion and landslip and I have addressed this issue earlier in this report.

This line is an irregular but reasonably definite and identifiable line.

(2) Line between pegs 2, 3 and 4.

This bank is very low and follows the normal water line which is identifiable by a difference in vegetation and soil appearance.

According to information from Mr K. Harris, Department of Water Resources in Deniliquin, there has been considerable deposition of soil in this section, because of the Wharf at Echuca, immediately downstream of peg 4. This has caused an alteration to the shape of the bank by accretion. He said that a large amount of soil was deposited during the four months that the river was high in 1974.

This deposition of soil has been accepted as gradual and imperceptible accretion.

The section pegs 2 - 3 - 4 is the junction of an ancestral stream where it joins the present watercourse and is now silted up by deposited soil.

The junction of a watercourse where it flows into the Murray River does not present the same set of circumstances as presented at the site of the Reed murder (*Ward v. The Queen*).

At such a junction there is no bank, no “top of the bank” to observe or to measure and so the “top of the bank” line of pegs 1 - 2 and pegs 4 - 5 - 6 has been continued along the top of the line of bank or earth wall which determines the course of the water and confines the normal flow of water and is distinguished by the change of soil appearance and vegetation.

Any bank more remote from the line adopted cannot be said to determine the course of the river.

An area of low lying land immediately south of the line 2 - 3 - 4 is regularly (probably annually) covered by water as it rises in the winter and spring.

However, this is not considered to be part of the bed of the Murray any more than the bed of rivers such as the Goulburn River or the Campaspe River would become part of the bed of the Murray River simply because water from the Murray would back up to cover such beds when these rivers are low.

(3) Line of pegs 4 - 5 - 6.

Peg 5 was placed previously by Survey and Mapping Victoria for other purposes.

This line follows a line of bank beneath the Echuca Wharf.

It is not possible to ascertain with certainty how much interference due to human activity, whether cut or fill, has taken place and has affected the shape of the bank.

The line adopted is an irregular line, but it appears by eye to continue the line of the bank adopted for line of pegs 1 - 2 and 8 - 9 - 10 - 11.

(4) Line of pegs 6 - 7 - 8.

Pegs 6 and 7 were placed previously by Survey and Mapping Victoria for other purposes.

The line of the bank between 4 and 5 and between 8 - 11 is not found between 6 and 7, although there is an occasional indication there was such a lower line of bank.

The only definite bank at this section of the river is a high bank at a height of about 94 to 95 metres AHD.

The shape of this bank is similar to that at the site of the High Court judgement in the Ward case. There has been pronounced landslip in this section, and this has been considered to be landslip that has naturally and necessarily followed the gradual and imperceptible erosion which has undermined the wall of the high bank and caused the slip.

Senior Surveyor B. Vardy and I have agreed to confer in order to draw up guidelines to assist other surveyors in the task of similar border definition.

It is recommended that the bank pegged on 25 June 1991 and illustrated on the accompanying diagram be adopted as the border between New South Wales and Victoria on that date.

(Diagrams and photographs accompanying the original report are not shown in this appendix).



Photo courtesy of Department of Water Resources.