

Braided Rivers: Between Land and Water, between Law and Science — *Canterbury Regional Council v Dewhirst Land Company*

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Braided rivers are visible from space yet globally rare. They are as physically fragile as they are biologically diverse. This case note explores the law's difficulties in defining boundaries of a braided river, hence delineating where earthworks can and cannot take place. Following from a prosecution of earthworks within a riverbed, the case explored the definition of braided rivers by questioning whether the defendant's development was within the decidedly amorphous riverbed. It is no wonder the law struggles to decide where the land stops and the river begins, because science describes braided rivers as complex flows of water and sediment — simultaneously land and water. Yet Canterbury Regional Council v Dewhirst Land Company all but excludes “various scientific explanations” from the decisions, stating the question is one of law. As such, this case note explores the intersections and gulfs between law and science and land and water. It concludes that braided rivers require a legislative definition at the national level that embraces dynamism, complexity, and room to move. Above all, to fulfil regional and national goals of protecting natural character of unique landscapes, the legislative definition must recognise that braided rivers are land and water both at once.

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1. INTRODUCTION

This case note and commentary explores the amorphous nature of intersections and liminal zones between land and water, law and science, and abstraction versus the physicalised facts-on-the-ground. The lens for this intersectional study is the braided river, in particular the *Canterbury Regional Council v Dewhirst Land Company* litigation of 2018–20 (*Dewhirst*).

Braided rivers are integral to Aotearoa New Zealand landscapes, especially, but not uniquely, in Waitaha Canterbury. Braided rivers epitomise complexity and dynamism; yet they are fragile and sensitive to changes to flow, sediment supply, floodplain area, flood protection works, and encroaching vegetation. They are especially vulnerable to agricultural intensification and encroachment. The Canterbury Regional Council (ECan) reports that nearly 15,000 hectares of undeveloped or forested land alongside braided rivers have been developed into intensive agriculture since 1990.¹

The case note begins by briefly describing the natural science of braided rivers. It next discusses the *Dewhirst* litigation, its background, and its evolution through the District, High, and Appeal courts. It considers the various interpretations given to legal terms of art, such as “bank” and “bed”, and observes the dissonance that exists between law and science that is especially impactful for braided rivers. It concludes with a call for national legislation and policy that protects these globally rare and vulnerable spaces.

As *Dewhirst* reveals, legal frameworks governing braided rivers are inadequate and often incoherent. Derived from juristic understandings of “river” that hail from another time and place, the law struggles with the “thing-ness” of braided rivers, reliant on legal principles that may define, but do not accurately describe, them. Braided rivers are unique flows of both water and sediment. They are spaces where understandings of what constitutes land and water or bed and banks are complex, ever-changing, and inherently intertwined.

2. NATURAL SCIENCE OF BRAIDED RIVERS

Just as leopards are known for spots, braided rivers are known for dynamism. They move across, occupy, shape, and reshape large areas of New Zealand’s landscape, especially on the South Island. They are characterised by multiple shifting channels known as braids, wide floodplains and rapidly shifting braids,

¹ Environment Canterbury *Land use change on the margins of lowland Canterbury braided rivers, 1990–2012* (2015) (Report Number R15/49); Environment Canterbury *Land use change on the margins of lowland Canterbury braided rivers, 2012–2019* (2021) (Report Number R21/05).

bars, and islands.² Braids change course, shape, and extent with changes in sediment, hydrology, land use, vegetation, climate, and/or surrounding infrastructure.³ They move side to side, bifurcate then coalesce, and form islands or bars mid-stream.⁴

Active braids are often surrounded by currently dry land incised by previously active channels or floodplains (see Figure 1).⁵ These now abandoned braids are not always visible without remote sensing technology such as LiDAR, that can reveal that the past wet state is a reasonably predictable future state for a particular place.

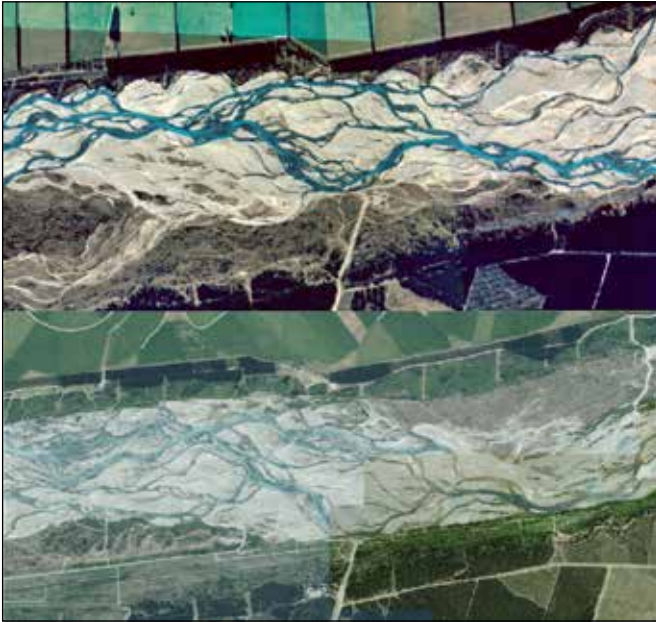


Figure 1: Waimakariri Regional Park late 1990s (top) and 20 years later (bottom).

Source: Canterbury Maps Historic Map Image Layer.

- 2 Peter Ashmore “Morphology and Dynamics of Braided Rivers” (2013) 9(17) *Treat Geomorph* 289 at 289–312; Hervé Piégay, Desmond Walling, Norbert Landon, Qiping He, Fred Liébault and Robert Petiot “Contemporary changes in sediment yield in an alpine mountain basin due to afforestation” (2004) 55 *Catena* 183 at 183–212; and Jasper Candel, Maarten Kleinhans, Bart Makaske and Jakob Wallinga “Predicting river channel pattern based on stream power, bed material and bank strength” (2020) 45 *Prog Phys Geog: Earth & Enviro* 253 at 253–278.
- 3 GM Kondolf, Hervé Piégay and Norbert Landon “Channel response to increased and decreased bedload supply from land use change: Contrasts between two catchments” (2002) 45 *Geomorph* 35 at 35–51.
- 4 Ashmore, above n 2, at 289–312.
- 5 At 289–312.

In order to form, abandon, and re-form braids across wide “braidplains”, braided rivers require both large amounts of sediment coursing through their channels⁶ and “room to move”⁷. The space and sediment requirements make braided rivers globally rare, and most often found in mountainous regions.⁸ Other drivers of channel migration and dynamism include scale, slope, and catchment area, as well as hydrological and climate influences.⁹ At least 163 rivers in New Zealand have braided reaches, the largest and most iconic being in Canterbury.¹⁰

Braided rivers are complex flows of sediment and water. Like Schrödinger’s cat, they are neither land nor water, but both at once. They are complex systems that encompass interactions between biology,¹¹ hydrology, and geology.¹²

- 6 Murray Hicks, Edwin Baynes, Richard Measures, Guglielmo Stecca, Jon Tunnicliffe and Heide Friedrich “Morphodynamic research challenges for braided river environments: Lessons from the iconic case of New Zealand” (2020) 46 *Earth Surf Proc & Land* 188 at 188–204; Ashmore, above n 2, at 289–312.
- 7 Charlie Mitchell and Alden Williams “The Rewilding Project: The movement to revive our zombie rivers” *The Press* (online edition, Christchurch, 25 June 2021) <interactives.stuff.co.nz/2021/06/rewilding-project-nz-braided-rivers/>.
- 8 Ashmore, above n 2, at 289–312.
- 9 Barbara Belletti, Sophie Dufour and Hervé Piégay “What is the Relative Effect of Space and Time to Explain the Braided River Width and Island Patterns at a Regional Scale?” (2013) 31 *River Resch & Apps* 1 at 1–15; and Nicola Surian, Massimo Rinaldi and Luisa Pellegrini “Channel adjustments in northern and central Italy over the last 200 years: Management and Restoration of Fluvial Systems with Broad Historical Changes and Human Impacts” (2009) 451 *Geol Soc America Special Papers* 83 at 83–95.
- 10 GH Wilson *National distribution of braided rivers and the extent of vegetation colonization* (Landcare Research, Report Number LC0001/068, 2001).
- 11 AB Murray and Chris Paola “Modelling the effect of vegetation on channel pattern in bedload rivers” (2003) 28(2) *Earth Surf Proc Land* 131 at 131–143.
- 12 Luca Zanoni, Angela Gurnell, Nick Drake and Nicola Surian “Island dynamics in a braided river from analysis of historical maps and air photographs” (2008) 24 *River Resch & Apps* 141 at 1141–1159; M Church and D Jones *Channel Bars in Gravel-bed Streams* (Wiley, Chichester, 1992) at 291–338; Yves-François Le Lay, Hervé Piégay and Anne Rivière-Honegger “Perception of braided river landscapes: Implications for public participation and sustainable management” (2013) 119 *J Environ Mgmt* 1 at 1–12; Hervé Piégay, Gordon Grant, Futoshi Nakamura and Noel Trustrum “Braided river management: from assessment of river behaviour to improved sustainable development” in Sambrook Smith (ed) *Braided Rivers: Process, Deposits, Ecology, and Management* (Blackwell Publishers, Malden (MA), 2006) 257 at 257–270; Joseph Merz, Gregory Pasternack and Joseph Wheaton “Sediment budget for salmonid habitat rehabilitation in a regulated river” (2006) 76 *Geomorph* 207 at 207–228; AB Murray, Michiel Knaapen, Michal Tal and Matthew Kirwan “Biomorphodynamics: Physical-biological feedbacks that shape landscapes” (2008) 44 *Water Resources Research*; Kondolf, Piégay and Landon, above n 3; Gerald Nanson and AD Knighton “Anabranching rivers: Their cause, character and classification” (1996) 21 *Earth Surf Proc & Land* 217 at 217–

Notably absent from scientists' lists¹³ of factors influencing braided rivers is the law. The rest of this case note starts to fill that gap.

3. THE CASE

The complexity of braided rivers has attracted legal attention of late via several prosecutions for works within braided riverbeds, banks, and floodplains. Table 1 shows Canterbury prosecutions since 2010. This case note examines the last of these, *Dewhirst*, in which the Canterbury Regional Council prosecuted breaches of the Resource Management Act 1991 (RMA) s 13 that restricts riverbed use, and s 14 that restricts water diversion and vegetation clearance. The statutory interpretation of the "bed" of a river was critical to the outcome of the litigation.

3.1 Case Background

Before 2016, the defendant, Mr Dewhirst, farmed land adjoining the Selwyn River including the left bank upstream of Highfield Road, Selwyn.¹⁴ In 2016, Dewhirst bought another block of land on the right bank, and began works to improve undeveloped land for farming. The work included infilling old braid channels that the defendant believed were outside the riverbed. Upon discussion with contractors and council planners, it was concluded that the following consents, under the following sections of the RMA,¹⁵ would be required before beginning work:¹⁶

- Section 13 — Land Use Consent — including, but not limited to, gravel extraction, river protection works, vegetation planting and removal.
- Section 14 — Water Consent — to divert surface water.
- Section 15 — Water Consent — to discharge.

Subsequently, Dewhirst applied for consent to extract gravel only, explaining that they would not need the additional consents because they were no longer proceeding with the original plans.¹⁷ In May 2016, ECan granted

239; and Karen Gran and Chris Paola "Riparian vegetation controls on braided stream dynamics" (2001) 37 *Water Res Rsch* 3275 at 3275–3283.

13 Richard Williams, James Brasington and Murray Hicks "Numerical Modelling of Braided River Morphodynamics: Review and Future Challenges" (2016) 10 *Geog Compass* 102 at 102–127.

14 *CRC v Dewhirst* [2019] NZCA 486 [*CRC v Dewhirst* (CA)] at [3].

15 Resource Management Act 1991, ss 13–15.

16 *CRC v Dewhirst* (CA), above n 14, at [3]–[4].

17 At [5].

Date	Defendant	River	Offence	Outcome
2011–2013	Derrick	Waiau	Unauthorised flood protection works	\$19,000 fine \$77,000 demanded to remediate works
2011–2013	Erralyn Farms & Erroll Begg	Rakaia	Breaching and damage to flood protection works	Erralyn: \$12,000 fine Begg: \$32,000 fine \$24,000 investigative costs
2015–2016	Pavletich and Station Peak Dairy Ltd	Waitaki	13 hectares unauthorised vegetation clearance, and 39 hectares unauthorised burning	\$41,000 AEJ* costs \$21,000 fencing costs \$18,000 native planting costs
2017	Rutherford	Waiau	70 hectares unauthorised vegetation clearance	\$34,000 fine
2018–2020	Dewhirst Ltd	Selwyn	Unauthorised vegetation clearance, bund construction, and river diversion	\$11,500 fine to owner \$11,500 fine to company

Table 1: Summary of recent riverbed prosecutions in Canterbury.

Source: Environment Canterbury presentation by Richard Purdon, 2019.

*Alternative Environmental Justice.

Case	Arguments	Decision	Outcome
[2018] NZDC 5412 and 7650	District Court judge agreed with definition of “fullest flow ... without overtopping its banks” as per previous cases.	Five charges — guilty plea but disputed riverbed definition.	Appealed
[2018] NZHC 3338	High Court judge claims District Court judge applied the incorrect legal test. High Court preferred “bank to bank” test from <i>Kingdon v Hutt River Board</i> (1905) as “extent of river only extends from bank to bank during rainy season flows”.	Concluded that “fullest flows” are the river’s fullest usual flow over a reasonable period of years of river activity cycles, and not including floodwaters that would flow onto the margins and floodplain adjacent to the river.	Appealed
[2019] NZCA 486	Upheld High Court decision. Court of Appeal stated neither “bank” nor “fullest flow” is defined in RMA.	A riverbed needed to be separate from the margin of a floodplain fringing a river.	District Court to reassess
[2020] NZDC 16469	Riverbed too difficult to define to determine actions reckless.	Dewhurst ordered to pay for remediation, and fined \$40,000 less 25% for prompt guilty pleas and 10% for “genuine remorse”.	

Table 2: Summary of events and decisions for *Dewhurst v Canterbury Regional Council*.

the gravel extraction consent, and work began. In late 2016, an anonymous pollution hotline report led to an investigation that observed vegetation clearance in the riverbed, including the removal of 75 poplar poles planted to provide flood and erosion control. Further investigations found gravel extraction had exceeded consented parameters; and unauthorised construction of a gravel bund had diverted Selwyn River flow. The Council laid the following charges under the RMA:

- (a) Excavating or otherwise disturbing the bed of the Selwyn River without express authority in breach of s 13(1)(b);
- (b) Erecting a gravel bund in the bed of the Selwyn River without express authority, in breach of s 13(1)(a);
- (c) Excavating the bed of the Selwyn River in breach of resource consent conditions (as to volume), in breach of s 13(1)(b);
- (d) Damaging, destroying, or removing flood control vegetation in the bed of the Selwyn River, in breach of a regional rule and of s 13(2); and
- (e) Diverting water from the Selwyn River in breach of s 14(2)(a).¹⁸

Dewhirst pleaded guilty but challenged the Council's summary of facts.¹⁹ The dispute hinged on the interpretation of "bed" to find culpability that the defendant was guilty of "works within the bed of a river". The RMA s 2(1) defines a bed as:

- (a) in relation to any river—
 - (i) for the purposes of esplanade reserves, esplanade strips, and subdivision, the space of land which the waters of the river cover at its annual fullest flow without overtopping its banks;
 - (ii) in all other cases, the space of land which the waters of the river cover at its fullest flow without overtopping its banks;²⁰

This dispute was appealed numerous times given its implications (see Table 2). Central to all appeals was the interpretation of riverbed, as affected by the construction of the bund and the consequent diversions of water.

3.2 Interpretation

Dewhirst raised more questions than it answered, highlighting the ambiguity of the legal "protections" afforded braided rivers. Much of the case revolved

¹⁸ Resource Management Act, s 2(1).

¹⁹ *CRC v Dewhirst* (CA), above n 14, at [6].

²⁰ Not related to annual fullest flow.

around works within the bed or banks of a river, and restrictions on taking, using, or diverting water in RMA ss 13²¹ and 14(2)(a).²² As such, “works within the bed of a river” is central to understanding whether the works are in breach of the Act. In order to define the extent of the breach, the bed of the river needs to be defined using well-established principles of statutory interpretation, starting with the ordinary or natural meaning of the word, and then shifting to similar definitions in cognate legislation or analogous case law.

In the District Court, Hassan J issued two decisions.²³ The first affirmed that the council officers initially had advised that the northern part of the land was within flood control vegetation lines as contained within the Council’s Flood Protection and Drainage Bylaw 2013,²⁴ and was therefore considered as “bed” according to the Canterbury Land and Water Regional Plan (LWRP).²⁵ But Hassan J was equivocal on whether ECan was correct in its advice.²⁶

The Canterbury Regional Policy Statement (CRPS) also speaks to damming, diversion, and abstraction of rivers.²⁷ However, the CRPS has limited application to braided rivers for three reasons: (1) cl 7.3.2 excludes dammed or

21 Resource Management Act 1991, s 13 restricts use of the beds of lakes and rivers as follows:

- (1) No person may, in relation to the bed of any lake or river,—
 - (a) use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed; or
 - (b) excavate, drill, tunnel, or otherwise disturb the bed; or
 - (c) introduce or plant any plant or any part of any plant (whether exotic or indigenous) in, on, or under the bed; or
 - (d) deposit any substance in, on, or under the bed; or
 - (e) reclaim or drain the bed—

unless expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent.

22 Resource Management Act, s 14(2)(a) states: “No person may take, use, dam, or divert any ... water other than open coastal water” unless “allowed by subsection (3)”.

23 The two decisions are published as: (1) *CRC v Dewhirst* [2018] NZDC 5412; and (2) *CRC v Dewhirst* [2018] NZDC 7650. The High Court case revolved more around definitional questions in the second decision, NZDC 7650, than issues from NZDC 5412: *CRC v Dewhirst* [2018] NZHC 3338 [*CRC v Dewhirst* (HC)].

24 *CRC v Dewhirst* [2018] NZDC 5412 at [3].

25 The Regional Plan is different, but related, to the Regional Policy Statement. For an explanation of the roles and differences between the two see Environment Foundation “Regional Policy Statements” (20 August 2012) Environment Guide <www.environmentguide.org.nz/rma/planning-documents-and-processes/regional-policy-statements>.

26 *CRC v Dewhirst*, above n 24, at [171].

27 Canterbury Regional Policy Statement 2013, at cl 7.3.2.

modified braided river stretches;²⁸ (2) nowhere does the CRPS define braided rivers, beds, or banks; and (3) instead it defines braided river “main stems” as “that stem of the river which flows to the sea and applies from the source of that stem to the sea but excludes any tributary”.²⁹ This lack of definitional clarity and limited precedent meant the CRPS was sidelined in *Dewhirst*.

Instead, the phrase “fullest flow” proved the most difficult to construe. The Court had to understand “fullest flow” to gauge the location of the banks, and, from that, determine the extent of the bed.

At the High Court, Gendall J noted the RMA’s definition of “bed”, observing that Parliament never intended to suggest that floodwaters, nor flows uniquely from major storms, fell within the definition of a river. Gendall J then proceeded to conclude that a river’s “fullest flow” must be something less than the point at which it floods.³⁰

Accordingly, the District Court initially echoed the RMA³¹ in describing the river “bed” as the “space of land which the waters of the river cover at its usual or non-flood fullest flow without overtopping its banks”.³² The High Court and Court of Appeal then found this definition inadequate because it failed to solve the problem at hand by focusing more on the area covered by fullest flow than on the location of the river’s banks.³³ Therefore, it was noted that the banks, while not defined in the RMA, will be important in geographically differentiating the river from its floodplains.³⁴ The Court of Appeal did draw a fine line between flood and fullest flow, whereby the latter must be smaller than the former.³⁵ Such an interpretative fine line applies better to single-channel rivers, because it relies on the presence of clear banks and excludes the presence of multiple channels, floodplains, and margins.

As the courts considered the definition of river “bed”, their focus seemed to narrow in on presence versus absence of water. The Court of Appeal referred to an 1868 text that described the bed as “the space between the banks occupied by the river at its fullest flow”.³⁶ Thus the Court of Appeal quietly transformed “bed” to “extent of water coverage at fullest flow”, thereby limiting the definition to the presence or absence of water at a given time.

Of the three courts that considered *Dewhirst*, none specified a method to determine fullest flow, though they considered several. The High Court

28 At cl 7.3.2.

29 At cl 7.3.2 and 243.

30 *CRC v Dewhirst* (HC), above n 23, at [28].

31 Resource Management Act, s 2(1).

32 *CRC v Dewhirst* [2018] NZDC 7650 at [4].

33 *CRC v Dewhirst* (CA), above n 14, at [39].

34 *CRC v Dewhirst* (HC), above n 23, at [69].

35 *CRC v Dewhirst* (CA), above n 14, at [77].

36 At [45], quoting Louis Houck *A Treatise on the Law of Navigable Rivers* (Little, Brown & Co, Boston, 1868).

considered identifying the banks of a braided river at “fullest flow” by using a flood event test. This flood event test would locate banks at the extent of a flood of a set category (eg 1-in-20-year flood). But ultimately the High Court held that a 1-in-20-year or 1-in-50-year flood event test could result in roads, buildings, and indeed entire towns being located within the “bed” of a river.³⁷ This could retrospectively implicate landowners for breaching the RMA, when their properties lay within the newly defined bed area.

This interpretation of bed implies floods are abnormal or unusual in the braided river environment. By contrast, floods are to braided rivers as droughts are to deserts — a description not an event. In assuming rivers are controllable and controlled, this interpretation risks placing responsibility for infrastructure damage on the taxpayer. The Court of Appeal agreed with and added little to the High Court’s discussion of fullest flow.³⁸ In sum, courts found a clear definition of “fullest flow” or location of “banks” elusive, given the physical realities of multiple channels, bars, islands, and banks within braided rivers, and given the explicit exclusion of science from legal determinations.

Thus, *Dewhirst* creates a system of winners and losers when rivers move or respond to a flood event. Some landowners might lose land; whereas others might find the active channel of the river has moved, providing them with new land. It relies on taxpayer compensation for flood damages to adjacent landowners, and has no regard for the natural movement and flood response of the river or its fragile ecosystem.

4. DISCUSSION

Dewhirst highlights the discrepancy between science and law. Science describes processes and characterises patterns of braided rivers as complex systems that comprise both land and water. The law is constrained by definitions of “land” and “water” that braided rivers defy.

Throughout *Dewhirst*, the courts went through multiple, ad hoc analyses and interpretations, while neither confirming nor developing any robust legal tests for similar braided river cases in the future. Its outcome effectively benchmarks what constitutes an acceptable level of accountability and liability for works in and around braided riverbeds and banks. It also highlights the lack of definitional clarity of braided rivers within statutes such as the RMA, and local policies like the LWRP. Such lack of clarity yields statutes and regulations “obscure enough to please all parties, vague enough to be unenforceable, and

37 *CRC v Dewhirst* (HC), above n 23, at [33]–[34].

38 At [74], [77], [84], [90], [94], [100]–[104].

so ill-defined that failures to implement the policy will be difficult to detect and impossible to litigate”.³⁹

4.1 Liability and Damages

Key to any determination of liability is assessing the extent of the breach. After the Court of Appeal remanded *Dewhirst*, the District Court said ambiguity in definitions of riverbed made it very difficult to assess recklessness in environmental damage. Indeed the Court said it was only “the inherently complex LWRP rules on riverbed activity” that stood in the way of a finding of recklessness.⁴⁰

The ambiguity and circular logic of the law’s repeated attempts to define riverbed reduces enforceability of rules about works within riverbeds and delivers adverse outcomes for braided rivers. *Dewhirst* signals that where the law is unclear, culpability is difficult to determine, and rules about environmental harm to riverbeds and banks become nearly impossible to enforce.

4.2 The Gulf between Science and Law: Science Describes While the Law Defines

When questioned about determining the extent of a riverbed, the High Court gives little to no consideration to physical science’s understanding of the form and function of braided river systems. The High Court instead states “the answer lies in the proper application of the law, rather than in various scientific explanations”.⁴¹

This highlights that legal tests often rely on doctrine more than physical context. In *Dewhirst*, that context is the dynamism of braided rivers. Indeed, throughout the litigation, different courts contradicted their position on the role of science. The Court of Appeal⁴² referred to *Whitby Coastal Estates Ltd v Porirua City Council* where “annual fullest flow” was held to be equivalent to a river’s mean annual flood. The *Whitby* test requires calculating flow rates and rainfall within the catchment — unrelated to the position of the banks.⁴³ This test clearly identifies the need for hydrological input to best (and legally)

39 Susan Walker, Ann Brower, Bruce Clarkson, William Lee, Shona Myers, William Shaw and RTT Stephens “Halting indigenous biodiversity decline: ambiguity, equity, and outcomes in RMA assessment of significance” (2008) 32(2) NZJECOL 225 at 226.

40 *CRC v Dewhirst* [2020] NZDC 16469 at [51].

41 *CRC v Dewhirst* (HC), above n 23, at [17].

42 *CRC v Dewhirst* (CA), above n 14, at [84].

43 *Whitby Coastal Estates Ltd v Porirua City Council* [2008] NZEnvC W61/2008 at 48.

interpret the extent of the breach. Likewise, the Court of Appeal observes that to ascertain the location of a bed of a river, a given case will require “consideration of all relevant geographical, meteorological and hydrological features ... as well as [event data] which produce a flood where water overflows the banks and spreads to surrounding areas”.⁴⁴

By contrast, none of the *Dewhirst* decisions includes scientific information regarding the Selwyn River; nor do they refer to any Canterbury river, nor a braided river elsewhere. The courts’ interpretation and understanding relied on a theoretical or doctrinal understanding of a river and its bed. There was no consideration of the river as a physical entity with unique inputs, physical geography, ecology, and history.

4.3 *Dewhirst*’s Shortfalls

Throughout *Dewhirst*, the science of braided rivers is marginalised at best, or explicitly excluded at worst. Instead, the decisions rely on an anthropogenic understanding and control over a river environment without regard to rivers as a series of natural and dynamic processes. This dissonance between the law’s conceptual understanding of a river and science’s physical understandings is a constant theme throughout *Dewhirst*. The Court of Appeal states that the “bed of a river is a natural object to be determined not by abstract rules, but by the distinctive appearances they present”, yet states that man-made stopbanks can be considered the “banks” of a river.⁴⁵ Herein lies a key issue of interpretation and its effects. If a bed is a natural feature, but the banks can be man-made (indeed even outside of the path of a river), then over time the riverbed will be constrained to the path between the stopbanks. Therefore, the bed is no longer natural as it cannot migrate across the plain as would be expected of a braided river. In constraining the bed within the banks, we physically limit the river to an abstract legal concept; and the river loses its braided character.

Moreover, the RMA defines neither braided rivers nor braidplains. Therefore, braided rivers are constrained by the *Dewhirst* decision, such that braided landscapes are defined by the space occupied by water during the fullest flow without overtopping the banks. This definition neither describes the dynamic nature of braided rivers and plains, nor takes into account the complex hydrological features connecting active river channels and the extensive braidplains. The definition constricts braided rivers into an observable event. The Court of Appeal stated, in reference to natural hazard mitigation, “there is nothing to prevent the Council from controlling the use of land (which includes

44 *CRC v Dewhirst* (CA), above n 14, at [51].

45 At [51(i)] and [65]–[66].

the flood plain)”.⁴⁶ This suggests floodplains are “land”, neither riverbed nor part of the riverine environment.

Deep uncertainties in where land finishes and the river begins arise from both the Court’s repeated attempts to define a river by the presence or absence of water, and the vagaries of determining “fullest flow”. These uncertainties will likely produce inconsistent and inadequate river and land management systems.

Dewhirst must now be followed by Environment Canterbury. It limits local authorities’ power to prosecute infringements unless they pertain to the precedent set by the *Dewhirst* ruling. This places pressure on Canterbury District Courts to consider strict local policies, while managing the permissive interpretation resulting from the case. Figure 2 shows the disparity between the RMA’s definition of riverbed, and science’s characterisations of current, recent, and historic braidplain using remote sensing technologies.

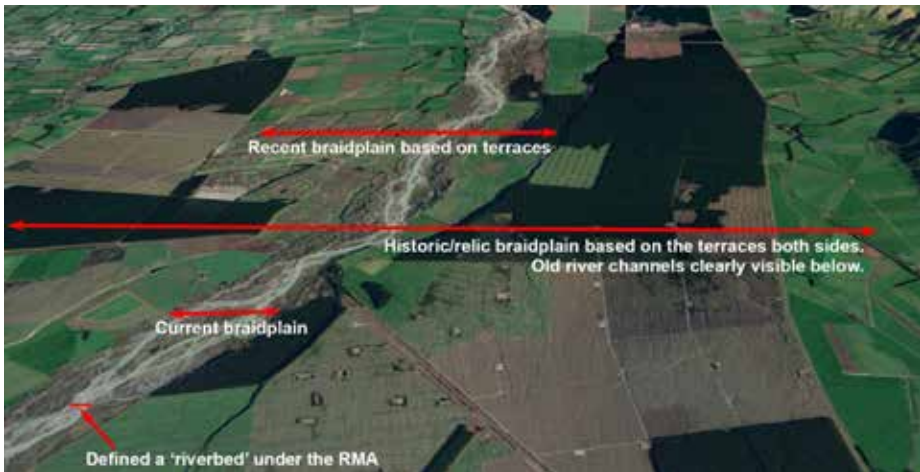


Figure 2: Braidplain and riverbed delineation according to records and legislation.

Source: Braided Rivers New Zealand “Braidplains: habitat loss” (nd).⁴⁷

Finally, the Canterbury LWRP includes a suite of objectives to protect biodiversity, with an explicit aim of minimising riverbed encroachment.⁴⁸ However, CRPS cl 13 rules cannot be relied on to achieve LWRP’s objectives for braided rivers. This is because what was originally thought of as “riverbed” and protected by the LWRP is now “land” covered by RMA s 9. *Dewhirst*’s narrowed redefinition of braided riverbeds redirects responsibility to smaller

⁴⁶ *CRC v Dewhirst* (CA), above n 14, at [72].

⁴⁷ “Braidplains: habitat loss” (nd) Braided Rivers New Zealand <braidedrivers.org/braidplains>.

⁴⁸ Canterbury Land and Water Plan 2018, cl 4.85(a).

councils and territorial authorities to manage areas of land where braided river values remain. However, territorial authorities have limited power or rules in place to adequately protect braided river values from extensive development.

This creates a feedback loop where the banks of braided rivers fall within a grey zone, ill-defined, and difficult to prosecute. Vegetation clearance is also more likely to be permitted because braided riverbanks are considered land, rather than river. Hence the banks will no longer be protected by the LWRP, but instead be governed through s 9 rules rendered more permissive by *Dewhirst*.

5. CONCLUSION

Currently, New Zealand possesses a legal system unable to achieve its purpose of protecting the character of braided rivers. Court decisions alternatively marginalise or explicitly exclude scientific understandings of the physical processes of braided rivers, instead favouring a very narrow definition of riverbed as the area that is wet at fullest flow. This renders much of Canterbury's environmental policies to protect spaces and ecologies within braidplains all but unenforceable, meaning ECan is all but powerless to stop earthworks within the riverbed. In transforming much of what physical scientists would consider riverbed or braidplain into "land", *Dewhirst* has fundamentally altered authority over the complex and dynamic interactions between land and water that shape New Zealand landscapes.

Braided rivers require a legislative definition at the national level that embraces dynamism, complexity, and room to move. Above all, the legislative definition must recognise that braided rivers are land and water, both at once.