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Memorandum

To: Burnt Hill Storage Limited

Date: 4 September 2026

From: Donald Gardner, Marsh Limited ("Marsh")

Subject: Burnt Hill Storage Limited ("BHSL") – Public Liability Limit Calculation

BHSL has appointed Marsh to provide insurance broking services in relation to the construction of water storage ponds at Wrights Road, Burnt Hill, North Canterbury ("Project"). BHSL has been granted a number of resource consents by Environment Canterbury and Waimakariri District Council for the purposes of the Project. Relevantly for the purpose of Marsh's insurance broking services, CRC263186 (condition 82) and RC255077 (condition 66) contain specific conditions that require BHSL to obtain general and public liability insurance that provides a sufficient sum insured to indemnify BHSL, as consent holder, in respect of all sums which BHSL becomes legally liable to pay by way of compensation to third parties, consequent upon:

1. Loss of or destruction or physical damage to any tangible property including resulting loss of use; or
2. Loss of use of any tangible property not otherwise physically lost or damaged or destroyed.

By way of explanation, public liability insurance is a type of insurance that protects BHSL against third-party accidents. It is designed to protect BHSL in this instance if third-party property is damaged.

General liability insurance is a broad public liability insurance type that covers physical damage to property or personal injury to others.

The consent conditions require BHSL to provide a certificate from an Insurance Expert to Environment Canterbury and Waimakariri District Council certifying that the recommended Public Liability sum insured has been determined in accordance with condition 84a of CRC263186 and condition 68a of RC255077, respectively.

I am the Insurance Expert for the purposes of these consent conditions and provide this certification to BHSL as at 04 September 2026 in respect of the stages:

- During construction prior to the commencement of commissioning the dam (i.e. the start of the dam being filled); and
- During the commissioning of the dam until practical completion of the dam construction.

An overview of how the extent of required cover has been determined is set out in this memorandum.

This memorandum is provided to BHSL in accordance with the Terms of Engagement applying between Marsh and BHSL, and BHSL's instructions to Marsh, and is subject to the disclaimers set out below. Any other persons reading this memorandum do so on the basis that they irrevocably agree to these disclaimers.

Approach to determining the appropriate sum insured

Both condition 84a of CRC263186 and condition 68a of RC255077 set out the matters that the Insurance Expert must assess and advise on. These are not repeated here but have been considered in my assessment. In determining the appropriate sum, the consent conditions also provide for the use of standard insurance assessment methodologies.

The specific methodology that has been used here, is set out below but in short involved an assessment of properties that could potentially be affected by a dam break, roads that could potentially be affected by a dam break and livestock and crops that could potentially be affected by a dam break.

In respect of condition 84b of CRC263186 and condition 68b of RC255077, the timing of reviews suggested in the conditions is appropriate (i.e., at the end of the construction period and at three yearly intervals thereafter). That is why, for the purposes of this Memorandum, only the stages of construction prior to the commencement of commissioning of the dam and the during the commissioning of the dam until practical completion of the dam construction are addressed.

During construction prior to commissioning of the dam

Prior to the commencement of the dam being filled and commissioning occurring, the potential exposure for liability to third parties is limited by the distance between the works site and the adjacent third-party properties. Considering the location and nature of nearby third-party property and the nature of public liability claims arising from construction projects generally, a limit of **$20m** is appropriate for the activities undertaken during civil construction projects of this nature.

During commissioning of the dam

The commissioning of the dam introduces the potential for water to escape from the works and potentially affect third party property. In most cases the escape of water will result in temporary inundation of the adjacent land, however structures and their contents can suffer from water damage, and stock animals and crops can be affected. Impact on roading is expected to be low due to the relatively low speeds of the water (0.47 m/s to 1.46 m/s), however some potholing and scour may arise.

Using the 2021 data the four dam break scenarios modelled generate the following potential exposures, with the Eastern Embankment breach scenario resulting in the highest exposure identified:

Totals	North	South	East	West
Property	37,722,150	38,731,250	42,055,950	732,000
Roading	4,075,500	5,375,250	5,415,000	700,500
Totals	**41,797,650**	**44,106,500**	**47,470,950**	**1,432,500**

Using the 2026 data the four dam break scenarios modelled generate the following potential exposures:

Totals	North	South	East	West
Property	57,857,625	22,699,450	54,614,075	3,546,250
Roading	4,075,500	5,375,250	5,415,000	700,500
Totals	**61,933,125**	**28,074,700**	**60,029,075**	**4,246,750**

The Northern Embankment breach scenario now generates the highest potential exposure.

This modelling does not make any allowance for loss or damage to crops and livestock; an analysis of has been undertaken by Stuart Ford of The Agribusiness Group was commissioned by BHSL, which advises an exposure of $32.75m.

Adding the crops and livestock exposure to the Northern Embankment breach scenario gives a modelled exposure of:

Totals	North
Property	57,857,625
Roading	4,075,500
Crops & livestock	32,750,000
Totals	**94,683,125**

This now exceeds the original $50m policy limit, and to comply with the resource consent requirements the public liability policy limit will need to be increased, or an excess layer policy placed.

While a total limit of $95m would currently meet the resource consent obligation, I recommend increasing the limit to **$125m**, as the exposure values will increase over time, and a $100m limit would have minimal headroom for un-modelled losses. Unmodelled losses are detailed at the end of this memorandum.

Methodology

The calculation of the policy limit was undertaken using the following process:

Property

- The properties that could potentially be affected by a dam break were identified in the dam break analysis used to prepare the emergency evacuation plan.[1]
- The Damwatch memo from November 2021 summarised the potential damage ratios that could be expected to occur to properties based on the expected level of inundation. In the memo these ratios were categorised into 5 Damage States (from no or insignificant damage to collapse of structures).

[1] The evacuation plan uses the output of the following documents:

- Waimakariri Irrigation Scheme Storage Ponds – Potential Impact Classification (Damwatch Services Ltd Report E1125 – Issue 3, Dated September 2012)
- Proposed WIL Storage Pond – Dam Break Flood Hazard Update – dated 15 September 2016 (Damwatch Engineering Ltd, 2016))

- For evaluation purposes a corresponding percentage of value was assigned to each Damage State based on the general performance of property claims from weather events.
- The corresponding percentages for each Damage State expected from the four scenarios modelled (breaches occurring in each of the four sides of the storage pond) were applied to the information listed in the WDC property dataset (the "WrightsRoadPonds_PropertyInformation" spreadsheets).
- The expected value was summed for each of the four scenarios.

Roads

- The roads that could potentially be affected by a dam break were identified from the scenario maps included in the draft emergency evacuation plan, and the road lengths in the low, medium, and high risk zones were measured using Google Earth.
- The flow speeds for the four scenarios were derived from the time and distance information in the same maps.
- A percentage probability of potholes and scour per 100m was applied to the identified roads and the results summed for each of the four scenarios.
- The roading lengths used have been taken from an examination of the maps in Appendix 1 of the EEP, and comparison with Google Maps. Due to the scale of the Appendix 1 maps and their image quality there is the potential that some roads have not been correctly identified or included in the measurements. I am however comfortable that any variations in the length of public roads will be immaterial to overall cover/included within the extent of cover proposed.

Livestock and Crops

- The modelling undertaken by Stuart Ford of The Agribusiness Group does not differentiate between the four dam break scenarios, so the value was added to the highest modelled scenario for damage to property and roads (the North scenario).

Documents used:

Emergency Evacuation Plan (EEP) [2020-06-15_DRAFT_Evacuation_Plan_v7.2 (1).pdf]

- Appendix 1: Modelled Storage Pond Failure Scenarios (North, South, East, West)
- Appendix 2: Wrights Storage Ponds Evacuation and Targeted warning areas – identifies roads in inundation area

2021-11-12_Wrights Road Storage_Property Information Memo.pdf

- Table 1 - Summary of relationship between damage ratio and damage states from NIWA (2010)

WrightsRoadPonds_PropertyInformation_2021-11-12.xlsx

- Schedule of properties in hazard zone

WrightsRoadPonds_PropertyInformation_2026-05-14.xlsx

- Updated Schedule of properties in hazard zone

Landuse Codes.xlsx

- Schedule mapping LandUseCode descriptions from 2021 data to LandUseCodeDesc numbers in 2026 data

Burnt Hill Storage Assessment Livestock Loss.docx

WrightsRoadPonds_PropertyInformation_2026-05-14 - stock and crop assessment.xlsx

- Assessment of livestock and crop loss exposures by The Agribusiness Group

Businesses

The following business locations have been identified via Google Maps as being within the hazard area:

- Rural Fencing (may be closed) 130 Worlingham Road, West Eyreton 7476
- Chauffer New Zealand (vehicle fleet) 89 Worlingham Road, Rangiora 7476
- Oxford Speedway (website not available) 1149 Carleton Road, Oxford 7495
- Bees 2 Honey (small beekeeping company – queen rearing, hives for honey collection and pollination) 605 Poyntzs Road, Eyrewell Forest 7476
- Hewton Electrical (heat pumps, electrical services, mini digger hire) 663 Poyntzs Road, Rangiora, Eyrewell Forest 7476
- Angus Robertson Mechanical (design and manufacture of rollforming and coil processing machinery.) 160 Pesters Road, Eyrewell, Rangiora 7476
- Bester’s Outdoor Living (sheds, playhouses, kennels) 131 Pesters Road, West Eyreton 7476
- JAMR Japanese and American Mechanical Repairs (temporarily closed) 111 Pesters Road, Eyrewell Forest 7476
- Limitless Fencing (fencing contractor) 604 Downs Road, Rangiora 7400
- Dentrese Kennels (2008) – dog kennels 1889 South Eyre Road, Eyrewell Forest 7476
- SWEEP NZ (chimney sweep) 184 Isaac Road, Eyrewell Forest 7476
- Ngai Tahu Farming Dairy Hub 169 Horrell Road, Eyrewell Forest 7476
- Benzie Free Range Eggs 605 Poyntzs Road
- Smartweld Limited (fabrication design & planning, high-precision laser cutting, door spring technology) 1431 South Eyre Road, Swannanoa, Rangiora 7476
- Canterbury Landscape Supplies (landscaping materials – decorative stones, mulch, bark, potting mixes) 505 Diversion Road, Swannanoa 7476
- Cathy Dee Photographer 539 Main Race Road
- Coach2Go (horse riding coaching) 622 Poyntzs Road
- Canterbury Saffron Limited – saffron growers 729 Poyntzs Road, RD6, Rangiora 7476

- Canterbury Country NZ (candle store) 741 Poyntzs Road Eyrewell Forest, Christchurch 7476
- Roses at Cust (rose growers) 224 Main Race Road West Eyreton, 224 Main Race Road, Eyrewell Forest 7476

The properties in red do not appear in the WDC provided "WrightsRoadPonds_PropertyInformation" spreadsheets, so have not been included in the analysis.

Assumptions

The following assumptions have been made in the analysis of the potential losses.

For the Property analysis using the "WrightsRoadPonds_PropertyInformation" spreadsheet data:

- Locations with Property Use Code "Lifestyle – Vacant" do not have a dwelling.
- The "ImprovValu" column is a proxy for the indemnity value of buildings, fences, pavements, etc. for a property.
- The Damage State advised in the spreadsheet is a proxy for the extent of damage to improvements for the location. A higher damage factor has been allowed for residential properties as rural property values are assumed to include fences etc. that are less likely to be damaged by inundation.
- The Business Value column represents an allowance for domestic / business contents / turnover interruption following a flood ($25,000 allowed for domestic contents for single site dwellings and $50,000 allowed for multi-site dwellings).
- An allowance of $25,000 for contents has been made for single unit locations identified by the Property Use Codes "Residential -Single Unit (other than Bach)" / 91 and "Lifestyle-Single unit" / 21.
- Locations with the Property Use Code "Lifestyle-Multi unit" / 20 and "Residential – Multi Unit" / 92 are assumed to have 2 dwellings and an allowance of $50,000 is made for contents.
- The Business Value column includes an allowance for businesses identified by Google Maps based on the expected sensitivity of potential equipment likely to be located on site after preliminary review of the businesses' website, if any.

The assumptions for roading repairs are:

- Roads are expected to be generally resilient given low water speeds (>1.5 m/s) but some possible scour / potholing could occur.
- The low, medium, and high risk zones in Appendix 1 of the EEP are a proxy for the extent of damage to the roads.
- The relatively low water flow speeds mean that there is a low probability per 100m of damage occurring.

The roading repair costs and probabilities assumed are:

Item	Cost / unit	High Risk	Low Risk
Pothole rectification per 100m	$15,000	5.00%	2.50%
scour remediation per 100m	$75,000	5.00%	2.50%

The Damage Factors used in the analysis are:

Damage State	Damage Factor (Residential)	Damage Factor (Farming)	Comment
DS0	0%	0%	Insignificant
DS1	25%	10%	Light—Non-structural damage, or minor non-structural damage
DS2	50%	25%	Moderate—Reparable structural damage
DS3	100%	50%	Severe—Irreparable structural damage
DS4	100%	75%	Collapse—Structural integrity fails

Matters not specifically modelled

The following exposures have not been modelled/included in the assessment, but BHSL's public liability policy is expected to respond to their legal liability relating to these exposures:

- damage to power lines, phone lines, fibre optic cables, and the consequences of such damage (assumed to be minimal due to lines being either buried or on poles above potential inundation)
- damage to stop banks, bunds, existing ponds (Assumed to be designed to cope with expected inundation levels)
- damage to bridge structures (Assumed to be designed to cope with expected inundation levels)
- damage to motor vehicles (assumed to be used in evacuation and insufficient information available to model extent of damage to vehicles not evacuated)
- Any changes in underlying values not advised to BHSL or occurring between evaluation cycles
- Commercial activities that cannot be identified from publicly available data
- Losses that cannot be identified due to limitations in source data or constraints on modelling
- Clean-up and temporary accommodation costs
- Damage to WDC assets other than roading
- Any changes in underlying values not advised to BHSL or occurring between evaluation cycles

The modelling also does not include damage and liability to which a public liability insurance policy would not respond.

Although these have not been specifically quantified for the assessment, I consider the additional insurance cover recommended sufficient.

Disclaimers

- As set out above, this memorandum is provided to BHSL in accordance with the Terms of Engagement applying between Marsh and BHSL, and BHSL's instructions to Marsh. Any other persons reading this memorandum do so on the basis that they irrevocably agree that:

- Marsh owes them no duties whatsoever (whether in contract, tort or otherwise) in relation to the statements made in the memorandum, and Marsh is not assuming any duty to advise them or consider their circumstances or position.
- They may place no reliance on it for any purpose whatsoever and will instead rely on their own independent enquiries and advice.
- Marsh has no obligation to provide any additional information or update the memorandum.
- Marsh expresses no view and assumes no liability with respect to the solvency, or future ability to pay claims, of any of the insurers which have provided or may provide insurances.
- Without prejudice to the above, any rights or claims alleged are subject to the Terms of Engagement applying between Marsh and BHSL, and they and this memorandum shall be governed by and interpreted in accordance with the laws of New Zealand and the Courts of New Zealand shall have exclusive jurisdiction in relation to any claim, dispute or difference concerning any matter arising from it.

• This assessment is not intended to identify all Third Party Liability hazards and associated loss scenarios that may exist; nor is it intended to be an exhaustive review of all possible eventualities.

• Quantification of Third Party Liabilities, by their complex nature, can be very subjective. Gaps and uncertainties will exist due to the variability in completeness, accuracy and currency of data and analyses referenced in this review. While Third Party Liability loss estimates presented in the review will be generally representative of the type and extent of loss scenarios that could cause large Third Party Liability losses, the values derived and presented must be treated as indicative only.

• We have relied on the information provided to us, including professional advice and the documents identified, in considering the physical risks and likely liabilities resulting from them. Marsh takes no responsibility for any errors made in or resulting from the information provided to us.