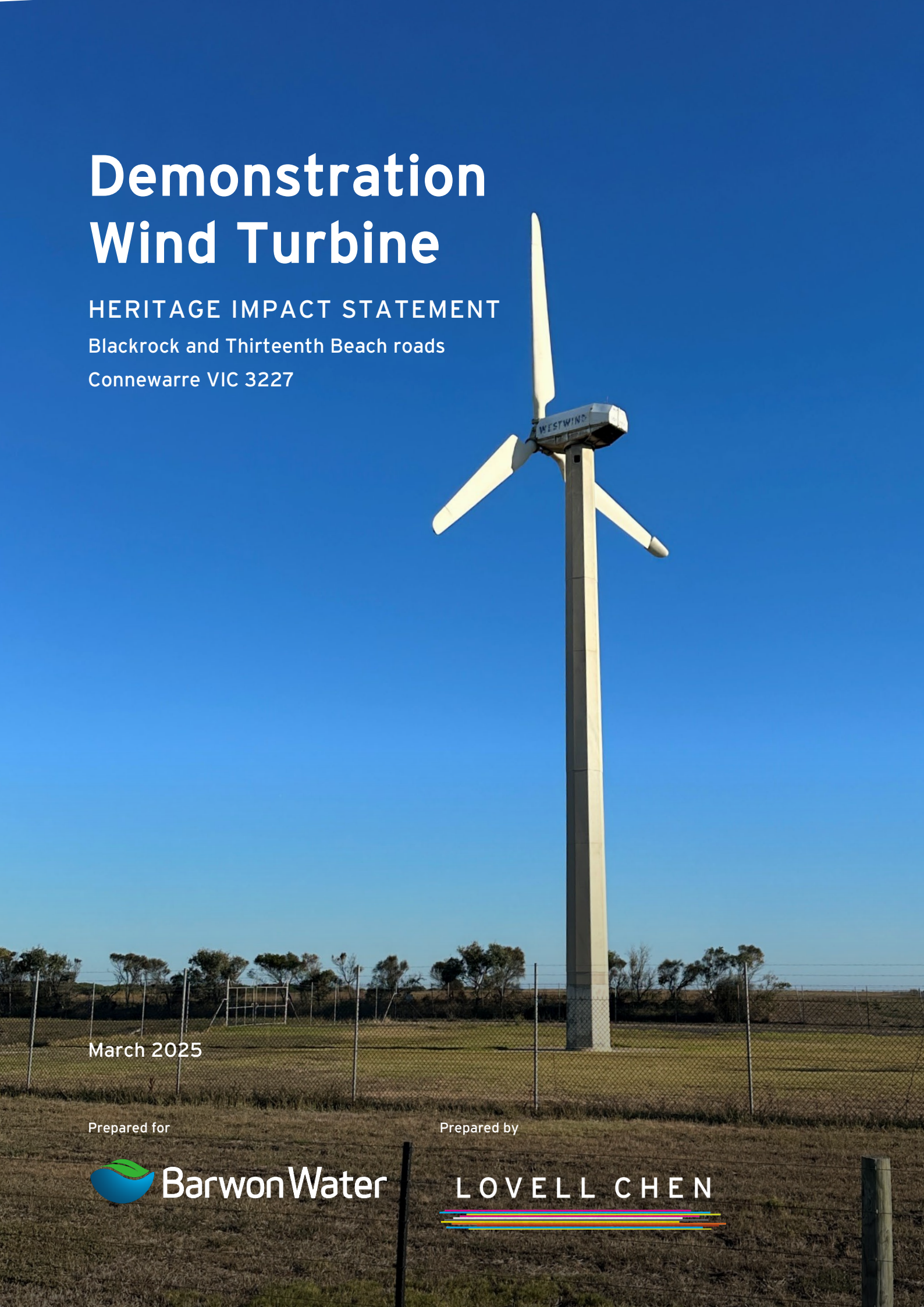
Demonstration Wind Turbine

HERITAGE IMPACT STATEMENT

Blackrock and Thirteenth Beach roads

Connewarre VIC 3227



March 2025

Prepared for

Barwon Water

Prepared by

LOVELL CHEN

ACKNOWLEDGEMENT OF COUNTRY

The wind turbine that is the subject of this report is located on the lands of the Wadawurrung people, who are, and have always been the custodians of this land. We acknowledge their stories and connection to land, water and culture which is embedded in Country. We pay our respects to their Elders past and present.

This report was prepared on the lands of the Wurundjeri people. We acknowledge the stories, traditions and cultures of all Aboriginal and Torres Strait Islander people, and that this report makes reference to a post-contact history that is only a small part of the ongoing story.

Quality Assurance Register

The following register documents the development and issue of this report prepared by Lovell Chen Pty Ltd in accordance with our certified quality management system.

Project no.	Issue no.	Description	Issue date	Approval
2025077	A	Draft Heritage Impact Statement	11 March 2025	KG
2025077	B	Final Heritage Impact Statement	28 March 2025	KG

Referencing

Historical sources and reference material used in the preparation of this report are acknowledged and referenced as endnotes or footnotes and/or in figure captions. Reasonable effort has been made to identify and acknowledge material from the relevant copyright owners.

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Cover image: View of the turbine from the north

Source: Lovell Chen, 2025

TABLE OF CONTENTS

LIST OF FIGURES

1.0 Introduction

This Heritage Impact Statement (HIS) has been prepared on behalf of Barwon Water and addresses a proposal to dismantle a wind turbine located near the intersection of Blackrock Road and Thirteenth Beach Road in Connewarre, west of Barwon Heads.

The turbine – also known as the Demonstration wind turbine - is subject to an Interim Protection Order (IPO) pursuant to s. 143(1) of the *Heritage Act 2017* and currently is included in the Victorian Heritage Register (VHR) as a registered object under s. 25 of the Act. It is also the subject of a recommendation under s. 37 of the Heritage Act, to included in the VHR as a registered place (PROV H2462).

The dismantling is proposed in response to a structural assessment of the turbine which has identified a high risk of failure due to significant corrosion and component cracking. The turbine is considered a risk to public safety.

The HIS describes the proposed works, sets out the reasons the works are required, and provides an assessment and response to relevant matters at s. 101(2) and 101(3) of the Heritage Act. It also proposes potential permit conditions for the Executive Director's consideration.

A pre-application meeting was held with Heritage Victoria officers on 27 February 2025.

1.1 Background

The wind turbine at Connewarre was installed in 1987 as a pilot or demonstration project jointly developed by the Victorian Solar Energy Council and State Electricity Commission (SEC) and was built by Westwind of Kelmscott, Western Australia, in conjunction with Venco of Newtown, Victoria. The installation of the wind turbine at Connewarre followed the establishment of Australia's first wind farm at Esperance in Western Australia earlier the same year, which also employed Westwind turbines. The turbine at Connewarre comprised a 60kW capacity generator connected to three 8m long blades via a 1:21.9 ratio gearbox supported by a 22m steel monopole. It is said to have cost around $200,000 to erect and was connected to the state electricity grid. [1] Following the disaggregation and privatisation of the SEC in the 1990s, the turbine was acquired by Alternative Technology Association of Melbourne, a non-profit community group, which undertook maintenance / recommissioning works to the turbine and recommenced electricity generation supplying to the grid.[2] The turbine subsequently was sold to an individual member of the Alternative Technology Association, and in c. 2003, it was sold again, to Barwon Water. Soon after Barwon Water's acquisition of the turbine, it was restored to service and remained in operation until c. 2012.

In 2024 Barwon Water announced its intention to decommission and dismantle the turbine, which has reached the end of its operational life and has significant condition issues that are considered to pose a risk to public safety. Barwon Water recognises the interest in the turbine as one of the first wind turbines in southern Australia and as a local landmark and in its planning for the dismantling in 2024, actively engaged with local groups and community to consider how best to mark its significance.[3] Based on this feedback, Barwon Water advised of plans to construct an

1 Marcus Wong, 'Coming second: Victoria's first wind farm', Waking up in Geelong, 24 October 2011, accessed via https://wongm.com/2011/10/breamlea-wind-turbine/#comments, 7 March 2025

2 Michael Gunter, Breamlea Operations Group, Alternative Technology Association Inc, 'Developments with the 60W Westwind Generator at Breamlea, Victoria', 25 August 1995, paper submitted to the Wind Energy Workshop 1995, Monash University, accessed via https://www.suburbia.com.au/~mickgg/breamlea/workshop.txt 7 March 2025

3 https://www.yoursay.barwonwater.vic.gov.au/black-rock-wind-turbine, accessed 7 March 2025

on-ground monument on the site, using the existing concrete slab and incorporating the wind turbine head and blades.[4]

In mid-February, Barwon Water commissioned a structural assessment of the turbine, which was undertaken by ACNL Engineers. This involved a visual inspection at height of the turbine and its nacelle (the nacelle being the cover housing at the top of the monopole that houses all the generating componentry). This was undertaken on 17 February 2025.

Following the inspection and assessment and on the same day (17 February), the structural engineer advised Barwon Water that the nacelle and upper section of the structure are unsafe and present a hazard, and recommended that the blades, nacelle and tower (monopole) be dismantled in a safe manner without delay for further investigation.

On 18 February 2025, the Heritage Council of Victoria wrote to Barwon Water and advised that an IPO had been made, based on the Heritage Council's view - based on material provided by the IPO requestor - that there is a prima facie case for inclusion in the VHR and that there is an immediate or imminent threat to the object.

As a consequence of the making of the IPO, the object (the turbine) is taken to be included in the VHR and the provisions of the Heritage Act in relation to works and the requirement for permits under Part 5 apply.

On 17 March 2025, the Executive Director, Heritage Victoria, advised Barwon Water of his recommendation to the Heritage Council of Victoria, to include the demonstration Wind Turbine in the VHR (PROV H2462) and this recommendation was published by the Heritage Council on 21 March 2025. The recommendation differs from the IPO, in that it recommends inclusion in the VHR as a registered place (rather than a registered object), with a defined area of land and three structures identified, the wind turbine, the wind monitoring tower and the monitoring hut. The recommendation is explained in more detail at section 2.0 below.

1.2 Scope of the permit application

This application seeks permit approval for urgent dismantling works to the turbine based on structural engineering advice and the risk posed to public safety.

The proposed dismantling works would be undertaken in a safe and controlled manner, in which the main components of the turbine would be detached and brought to ground. The structure would be recorded by way of an archival quality photographic record to Heritage Victoria's technical specifications.

Following dismantling, it is proposed that the components of the turbine would be stored for a period of time to allow for the development of an appropriate response to the heritage significance of the structure. This staged approach would allow for proper consideration of the outcome of the registration process under Part 3 of the Heritage Act, which is unknown at this time. In this way, the ultimate conservation/heritage response would be a second stage of work, required by way of a condition on permit and subject to further review and approval by the Executive Director at the appropriate time.

1.3 Application documentation

The following documents are submitted as part of the application:

- Black Rock Turbine, structural assessment by ACNL Engineers Pty Ltd, prepared for Perry Demolition dated March 2025
- Work Method Statement for the Deconstruction of Wind Turbine (dismantling methodology) prepared by Perry Demolition, March 2025

4 https://www.yoursay.barwonwater.vic.gov.au/black-rock-wind-turbine/wind-turbine-be-dismantled-february-2025, accessed 7 March 2025

- Proposed storage location - marked up aerial photographs provided by Barwon Water showing storage location within Barwon Water's Black Rock Water Reclamation Plant, 405 Blackrock Road, Connewarre, located on the west side of Blackrock Road a short distance from the subject site.

2.0 Statement of recommendation from the Executive Director, Heritage Victoria

As noted above, following an assessment of cultural significance, the Executive Director, Heritage Victoria, has recommended to the Heritage Council of Victoria that the place be included in the VHR as a registered place.

The Executive Director's Statement of recommendation is currently available and open for submissions for a 60-day period on the Heritage Council's website:

https://assets.heritagecouncil.vic.gov.au/assets/Demonstration-Wind-Turbine-ED-recommendation-Include.pdf

The Heritage Council will make its determination on the recommendation in due course.

The recommended extent of registration is part of Lot 1 on Title Plan 600592 to the extent of an 80m square from the corner of the title boundary, as hatched on Diagram 2462 in part of the Statement of recommendation (**Figure 1**).

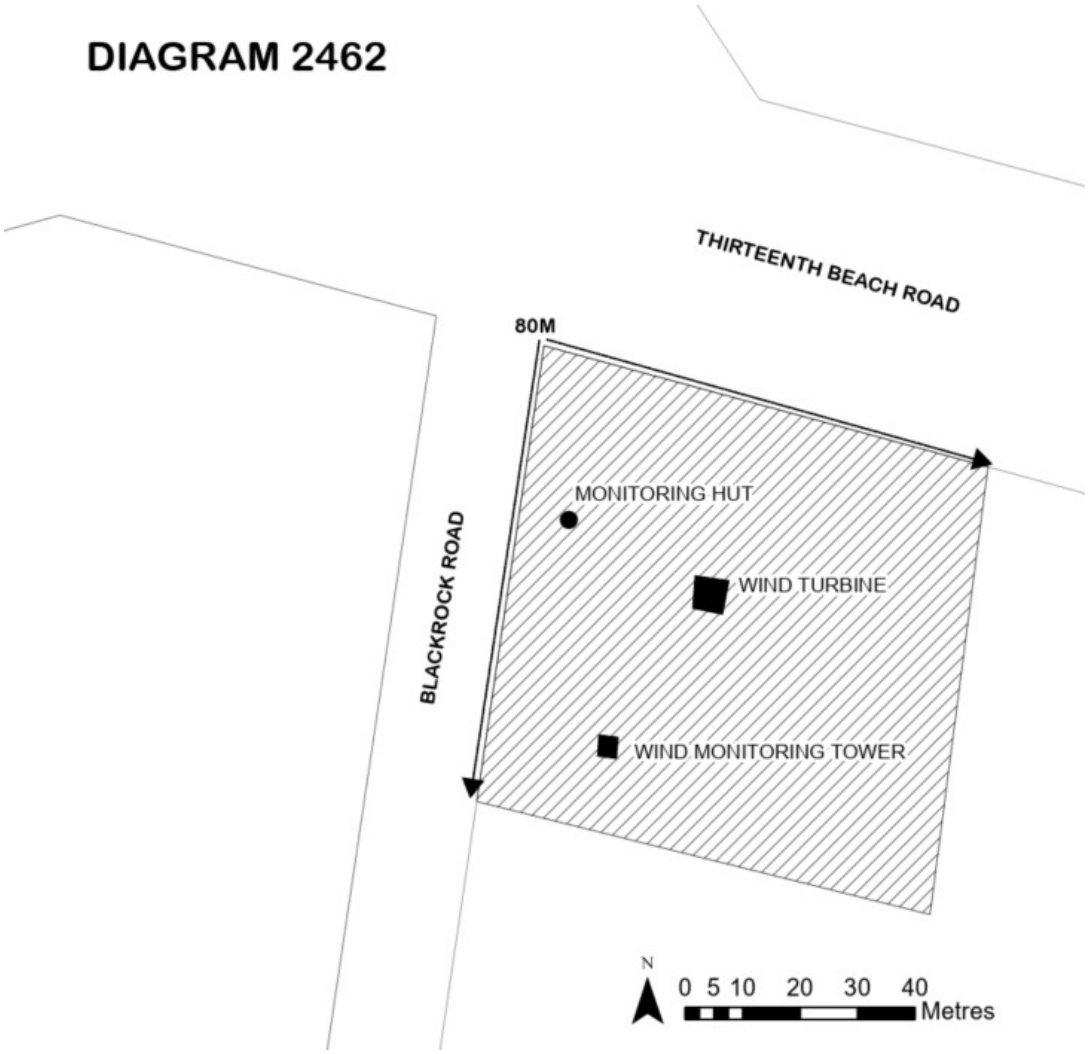

Figure 1 Diagram 2462
Source: Executive Director's Statement of recommendation

The Executive Director has assessed the place as of state-level cultural heritage significance against three of the assessment criteria:

- Criterion A: Importance to the course, or pattern, of Victoria's cultural history
- Criterion B: Possession of uncommon, rare or endangered aspects of Victoria's cultural history
- Criterion F: Importance in demonstrating a high degree of creative or technical achievement at a particular period.

The statement of significance in the recommendation is as follows:

> **What is significant?**
>
> The Demonstration Wind Turbine is located on the land of the Wadawurrung People.
>
> The Demonstration Wind Turbine is an electrical wind turbine located close to the coastline at Connewarre. Built in Western Australia, it was erected in 1987 by the State Electricity Commission of Victoria (SECV) and Victorian Solar Energy Council (VSEC) to test the viability of wind as a source of power for the state electricity grid. Significant features include the wind turbine itself, the accompanying wind monitoring tower and monitoring hut.
>
> **How is it significant?**
>
> The Demonstration Wind Turbine is of historical and technical significance to the State of Victoria. It satisfies the following criterion for inclusion in the Victorian Heritage Register:
>
> Criterion A
>
> Importance to the course, or pattern, of Victoria's cultural history.
>
> Criterion B
>
> Possession of uncommon, rare or endangered aspects of Victoria's cultural history.
>
> Criterion F
>
> Importance in demonstrating a high degree of creative or technical achievement at a particular period.
>
> **Why is it significant?**
>
> The Demonstration Wind Turbine is historically significant for its association with the development of renewable energy in the late twentieth century in Victoria. It was established as a collaborative project between the SECV and VSEC to demonstrate the potential of wind energy to feed power to the state electricity grid. The site retains several features that enable its function and operation to be well understood. It is emblematic of the Victorian Government's emerging commitment to renewable energy in the 1980s, and growing public concerns about the long-term viability of electricity derived from fossil fuels. It was an important precursor of Victoria's wind power industry, which by the early 2000s had evolved into large-scale wind farms. [Criterion A]
>
> The Demonstration Wind Turbine is significant as a rare surviving example of a place that can demonstrate the growing interest in renewable energy sources in the latter decades of the twentieth century. It is also a rare surviving example of a wind turbine from the 1980s in a state and national context. It is uncommon in that it remains in place and retains the wind monitoring tower and monitoring hut in addition to the wind turbine. [Criterion B]

> The Demonstration Wind Turbine is technically significant as an important experiment in the viability of wind powered electricity in Victoria. It was the first wind turbine in Victoria to be successfully connected to the state electricity grid. The erection and successful operation of the turbine is acknowledged as an important early step in the evolution of wind power in Victoria. It applied emerging technologies to the issue of Victoria's reliance on fossil fuels. Despite being established as a demonstration project, the turbine continued to feed electricity into the grid until 2012 and has been widely acknowledged for the longevity of its operation. [Criterion F].

The Statement of recommendation also includes a recommendation for works and activities that should be exempt from the requirement for a permit. These are very limited in scope relating to repair, maintenance and replacement of fences and gates and installation of security features at the site. These would be in addition to Heritage Victoria's General Exemptions, which apply to all registered places.

3.0 Proposed works

3.1 Existing conditions

The turbine is located on land at the south-east corner of Blackrock and Thirteenth Beach roads in Connewarre.

The site is secured by high fencing. It accommodates the turbine itself, a wind monitoring tower and a monitoring hut. All are visible from the road frontages, as seen in. Refer to Figure 1-Figure 3.

The turbine is mounted on a concrete slab footing. It comprises the following:

- Steel tower accommodating a ladder, control panels and electrical cabinets
- Nacelle (housing encasing the main shaft, gearbox, brake and generator) mounted to the top of the tower on a slewing ring
- Three fibreglass blades connected to the shaft within the nacelle by a rotating hub.

Figure 2 View to the site from the corner of Blackrock and Thirteenth Beach roads looking south-east, with the turbine, operations cabinet and wind monitoring mast (left to right) all visible
Source: Lovell Chen, 2025

Figure 3 Another view of the turbine, from Blackrock Road looking east
Source: Lovell Chen, 2025

Figure 4 View from the north from Thirteenth Beach Road
Source: Lovell Chen, 2025

3.2 Proposed works

It is proposed to safely dismantle the turbine and store the components.

No works are proposed to the wind monitoring mast or the operations cabinet, which would remain in place within the original compound, which is secured by high cyclone wire fencing with barbed wire top.

3.2.1 Dismantling methodology

The dismantling works would be undertaken in accordance with the methodology prepared by Perry Demolition.

It involves the following steps:

- Top of the turbine to be accessed via a boom lift and blades to be immobilised to allow for safe conditions for dismantling (step 6)
- Crane takes the weight of each blade as these are separated from the hub and then lowered to ground (placed on timber gluts) (step7)
- Crane takes the weight of the nacelle and the hub, these are to be separated from the tower in one piece by oxy cutting the section of the tower below the slewing ring and then lowered to the ground (step 8)
- Main tower shaft to be unbolted from the concrete base and slowly brought to ground using two cranes
- Underground pits/pipes to be sealed off using expanding foam (step 9).

Care has been taken in developing the methodology to ensure that the separation of the component parts of the turbine is undertaken in a manner that limits damage as far as possible:

- The tower can be unbolted from the base
- The top of the tower would be cut in an area (below the slewing ring) that is extensively corroded
- The tower is to be brought to ground as a single structure and not cut
- Any internal elements would remain within the shaft; there is no intention to strip these out
- The blades would be separated by unbolting the connection using an impact gun and oxy cut only if bolts are seized.

Note that the underground cable connections from the tower to the monitoring hut and/or wind monitoring tower have previously been removed / severed and there will be no requirement to cut or remove cabling as part of the works.

Note also that access to the interior of the tower is prohibited.

3.2.2 Storage

The following arrangements have been made for the storage of the turbine:

Component	Storage arrangements
Blades x 3	To be stored at Barwon Water's Black Rock Water Reclamation Plant
Nacelle and rotating hub	To be stored at Barwon Water's Black Rock Water Reclamation Plant
Main tower shaft	To be stored on site.

The tower shaft is proposed to be stored on site due to difficulties in transporting the component in one section (22m long). These include the current configuration of fence and gates as well as the presence of power lines. The current site is enclosed by security fencing.

The other components are to be relocated to Barwon Water's Water Reclamation Plant, which is a secured site.

It is noted that all components of the turbine are currently exposed to the weather and it is not necessary for weather protection to be provided in this instance. There is no intention to expose the interior of the nacelle, for example, as this is to be removed with the rotory hub in a single component.

3.2.3 Recording

Prior to commencement of works, the turbine is to be recorded externally by way of an archival quality photographic record prepared to Heritage Victoria's technical standards, using both land based and drone photography, including contextual views of the structure on its site (including recording its relationship with the wind monitoring mast and operations cabinet) and longer views from the surrounding roads and area generally. The photographic record has been commissioned by Barwon Water and the photography has been completed. Additional photographs are available in the structural engineering report and some internal views taken by the demolition contractor will also be retained as a record.

3.2.4 Future conservation

As a future stage of work, a proposal for the conservation of the turbine would be developed.

It is anticipated this would include the retention (repair and conservation) of some fabric (extent unknown) as well as some active interpretation.

While taking into consideration previous feedback from Barwon Water's community engagement, critically, the proposal would be developed in light of the outcome of the registrations process under the Heritage Act. In the event the turbine is included in the VHR, the determination of the Heritage Council in relation to significance would be of particular importance in developing the final proposal for its conservation.

This future proposal would be subject to a condition on permit, and would be developed in consultation with Heritage Victoria and to the satisfaction of the Executive Director.

3.3 Reason for the works and options considered

The works are proposed in response to structural engineering advice that the structure is unsafe and poses an unacceptable risk to public safety:

In summary (note references to the relevant sections in the structural engineering report by ACNL Engineers Pty Ltd):

- There is significant loss of section to the outside of the main tower shell directly below the underside of the nacelle housing. The extent of loss is such that the nacelle structure should be considered unsafe and the potential collapse would pose an immediate risk to personnel in the vicinity (section 5.5)
- A potential weld crack was also identified at the top of the tower – subject to further investigation this may also suggest the nacelle is in danger of collapse (5.6)
- The lower sections of the nacelle housing have significant corrosion internally and externally to the rear support gusset plates and the OH&S risk is deemed to be high until a more extensive inspection can be safely carried out (5.8).
- The blade to rotor connection nuts are corroding and failure of several bolts could result in a collapse of the blade and the OH & S risk is deemed to be high until a more extensive inspection can be safely carried out (5.10).

Additionally, there is general pitting corrosion to the main tower panels; albeit this is not considered to be significant at this stage, and the yaw gearing ring requires assessment.

No alternatives have been considered. The works are urgently required for reasons of public safety, rather than as a matter of choice.

Note that the turbine is located in proximity to a main road, and Thirteenth Beach Road also connects (opposite and to the west of the subject site) to a designated cycle path.

It is not possible to remediate the condition issues identified in situ. The structural engineering report explicitly comments on the risks to safety of attempting repairs or further detailed assessment while working at height (refer to Recommendations at section 6.0). The report concludes that the wind turbine in its current condition is deemed to be a risk and the safest way to eliminate or reduce this risk is by dismantling of degraded elements.

By way of context, it is relevant to note that while there are variations, it is generally accepted that wind turbines have a lifespan of 20-30 years.

The proposed dismantling works would not prescribe or preclude any future conservation outcome for the turbine as may be developed under a heritage permit and in response to the Heritage Council's future determinations in respect to the turbine's potential heritage significance.

4.0 Assessment

4.1 Assessment of heritage impacts and mitigation measures

In determining a permit application, the Executive Director is required to consider the following:

Section 101(2)(a)

(a) the extent to which the application, if approved, would affect the cultural heritage significance of the registered place or registered object

The matter of the cultural heritage significance of the turbine and related elements and the site itself has yet to be determined by the Heritage Council. The Executive Director's Statement of recommendation included a statement of significance (reproduced above at section 2.0), but this assessment is subject to the registration processes under the Heritage Act.

The following comments are provided on the heritage impacts of the proposal.

- From a physical fabric perspective, the works clearly would reduce the intactness of the structure and there inevitably would be some loss of fabric in the process.
- Conversely, the dismantling of the structure and detachment of its component parts is likely to be protective of these physical elements, whereas an unmanaged failure of any part of the structure (were that to occur) would likely lead to more significant damage to the relevant components.
- It is proposed that a permit condition be included requiring the development and implementation of a strategy for the conservation of the turbine. Refer to section 3.3 below.

As related to the potential significance values referenced in the Executive Director's Statement of recommendation, the following brief responses are provided (noting the identified values are accepted on face value for the purpose).

Significance aspect (ED's Statement of recommendation)	Comment
Historical significance (Criterion A)	The historical associations themselves would be unaffected. The ability to understand the function and

Significance aspect (ED's Statement of recommendation)	Comment
	operation of the site would be diminished while the turbine is in a dismantled state/stored off site.
Historical significance (rarity) (Criterion B)	The rarity of the turbine as a 1980s turbine would not change, albeit the turbine would be a dismantled state/stored off site.
Technical significance (Criterion C)	The technical significance as expressed in the statement of significance relates to the history of the turbine and the longevity of its operations. As for Criterion A, the historical associations themselves would be unaffected.

The dismantling would mean the removal of a local landmark and point of reference in the landscape. This is not an aspect that is referenced in the Executive Director's Statement of recommendation. If appropriate, it would be expected that a response to this aspect could be addressed in the future conservation/interpretation proposal.

In summary, the dismantling and partial removal of the turbine as the main element on the site would have an impact on the potential heritage values identified. As noted above, however, the dismantling is not being undertaken as a matter of choice, rather, it is required to address safety concerns.

Additionally, it noted that specific findings in relation to significance would not result in a different response to the safety risk posed by the turbine in its current condition. Any option for conservation of all or part of the turbine would require safe dismantlement.

4.2 Other relevant matters

In addition to the consideration of impacts on cultural heritage significance (referenced at section 101(2)(a) of the Heritage Act), section 101(2) requires the Executive Director to consider a number of other matters.

Of these, brief comment is provided below on matters relating to *reasonable or economic use* and the *statutory duties of a public authority*.

Consideration under section 101(2)	Comment
(b) the extent to which the application, if refused, would affect the reasonable or economic use of the registered place or registered object	The concept of reasonable use can be interpreted to extend to ensuring safety in operations. The works are required to address an identified risk to public safety and to ensure that Barwon Water is complying with its obligations under the *Occupational Health and Safety Act 2004* (Vic)
(d) if the applicant is a public authority, the extent to which the application, if refused, would unreasonably detrimentally affect the ability of the public authority to perform a statutory duty specified in the application	Barwon Water is established as a Water Corporation under the *Water Act 1989*, and is defined as a Regional Urban Water Authority and a Regulated Water Industry under the *Water Industry Act 1994*. In the course of its normal operations, Barwon Water constructs and operates a variety of infrastructure. As the owner of this infrastructure, Barwon Water assumes the responsibility for its safe operation. In this case, the

Consideration under section 101(2)	Comment
	application is for works to manage an immediate issue associated with safety.
(f) any matters relating to the protection and conservation of the registered place or registered object that the Executive Director considers relevant.	The Executive Director may consider it relevant to note that the dismantling works will reduce the risk to the components of the turbine as compared with the risks associated with an unmanaged failure of any part of the structure (were this to occur).

4.3 Proposed permit conditions

As noted earlier, prior to the making of the IPO, Barwon Water had intended to develop an on-ground monument as a marker at the site to recognise and interpret the history of the turbine.

Having regard for the present circumstances, it is proposed that this process would be delayed to allow for proper consideration of the heritage significance of the turbine through the registration processes under the Heritage Act. It would be premature to confirm the response at this time.

Accordingly, the following permit condition is proposed for the Executive Director's consideration:

> Within two years a strategy for the conservation and interpretation of the turbine is required to be developed and implemented to the satisfaction of the Executive Director, Heritage Victoria.

Additionally, it would be expected that a standard permit condition would be provided, requiring the preparation of archival quality recording.

It is recommended that a minor changes condition be included to allow the Executive Director to review and endorse revisions to the details of dismantling methodology or storage arrangements if circumstances require it.

5.0 Conclusion

The proposed dismantling works are required to address the risk to public safety posed by the current condition of the turbine and to ensure that Barwon Water is complying with its obligations under the *Occupational Health and Safety Act 2004* (Vic). The works are to be undertaken in a manner that seeks to minimise damage to the structure as well as appropriately considering issues of workplace safety.

While the cultural heritage significance of the turbine is yet to be resolved through the relevant processes under the Heritage Act, such a finding and the details of its potential significance would not result in a different response to the safety risk posed by the turbine in its current condition.

The proposed dismantling methodology and retention and storage of the component parts would address the current public safety risk and prevent the potential catastrophic loss of the turbine in the event of a structural failure, and allow for the proper consideration of a future conservation response in consultation with and to the satisfaction of the Executive Director, Heritage Victoria.

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