Independent Safety and Risk Review

Proposed METRONET on Swan River Ferry Terminal Locations Matilda Bay and Nedlands Jetty (JoJo's)

Prepared for
Safety on Swan

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STATEMENT OF INDEPENDENCE

This report presents the independent professional opinion of the author based on the information available at the date of the review.

The review was undertaken independently to provide a comparative assessment of the proposed METRONET on Swan River ferry terminal locations at Matilda Bay and Nedlands Jetty (JoJo's). The opinions expressed are those of the author and have been formed solely on the evidence reviewed and the author's professional judgement.

This report is intended to inform strategic decision-making regarding the comparative suitability of the proposed terminal locations and should be read in its entirety. The assessment methodology, supporting evidence and detailed comparative risk assessment are contained within the body of this report and its annexures.

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PURPOSE

This independent review assessed the safety, operational and system-level risks associated with the proposed METRONET on Swan River Ferry terminal at Matilda Bay and compared these with the alternative terminal location at Nedlands Jetty (JoJo's).

The assessment considered whether the preferred terminal location represents the lowest-risk reasonably practicable option for achieving the project's transport objectives.

The review draws upon project documentation, technical studies, stakeholder consultation, operational experience, site inspections, activity registers, public and club survey findings, incident history, spatial analysis and an independent systems-based risk assessment.

SCOPE AND DEPTH OF ANALYSIS

This independent review is based on one of the most comprehensive assessments undertaken of the proposed METRONET on Swan River Ferry terminal locations. The review extends beyond a conventional desktop assessment and draws upon a substantial body of government planning, environmental, engineering and regulatory documentation together with independent technical reviews, legislation, stakeholder submissions, operational records, Freedom of Information material and original field observations. More than 100 individual documents and evidence sources were analysed throughout the review.

The assessment also incorporated independent week-long drone and ground observations, waterway activity surveys, club activity registers, incident histories, spatial analysis and consultation with affected water user organisations. Evidence was systematically cross-referenced to identify consistency, conflicting assumptions and evidence gaps, ensuring the findings were informed by multiple independent sources rather than any single document or stakeholder perspective.

The complete list of documents, reports, datasets and evidence considered during this review is provided in Annex B – Document Register.

ASSESSMENT METHODOLOGY

This review is not intended to be a traditional operational risk assessment that assigns likelihood and consequence ratings or evaluates the effectiveness of detailed control measures.

Rather, it is an independent comparative risk review undertaken during the planning and decision-making phase of the project. Its purpose is to identify, analyse and compare the inherent system-level risks associated with the proposed terminal locations before a final site selection is made.

The review draws upon the extensive body of work already undertaken by government agencies, independent experts, stakeholder organisations and other sources. Existing hazards, interaction pathways and operational issues identified through this evidence have been analysed using a systems-based approach to understand how the characteristics of each location influence the overall risk profile.

As the project has not reached the detailed design and operational planning stage, many engineering, operational and administrative controls have not yet been finalised. Accordingly, this review does not attempt to assess the effectiveness of controls that are

yet to be designed or implemented, nor does it assign residual risk ratings based on assumptions about future control measures.

Instead, the assessment focuses on identifying the inherent risks arising from the operating environment, the interaction between ferry operations and existing waterway users, and the structural characteristics of each location. This provides decision-makers with an evidence-based comparison of the relative risk exposure associated with each option.

It is anticipated that, once a preferred terminal location is confirmed, this review will provide the foundation for a comprehensive project risk assessment undertaken by the responsible government agencies and project stakeholders. That subsequent assessment should evaluate detailed engineering, operational, environmental and emergency management controls, assign likelihood and consequence ratings, and determine residual risk in accordance with the project's adopted risk management framework.

EXECUTIVE SUMMARY

The evidence indicates that the principal safety issues associated with the proposed Matilda Bay terminal are not isolated navigation hazards capable of being resolved through additional operational controls.

Rather, they arise from a structural incompatibility between a scheduled ferry service and one of Western Australia's most intensively used recreational waterways.

Matilda Bay functions as a complex, multi-use recreational environment rather than simply a navigation corridor. It accommodates rowing, sailing, dragon boating, disability sailing, accessible fishing, paddling, swimming, power boating, school activities and informal public recreation throughout the day. Many of these activities rely upon the sheltered conditions unique to the bay and cannot reasonably relocate elsewhere.

The increased risk does not arise from the ferry itself, but from introducing a frequent, time-constrained vessel movement into a waterway already characterised by high user density, intersecting travel paths, varying levels of competency and a significant population of vulnerable and informal users.

The consequence is a reduction in the existing safety margins available to all users, increasing reliance on individual judgement, communication and behavioural compliance to avoid conflict.

Where a system increasingly relies on human judgement and behavioural compliance to compensate for hazards created by design, the opportunity for control failure increases. Should those controls fail, the potential exists for serious injury or fatality involving vulnerable waterway users, together with consequential legal, governance and reputational implications for decision-makers and responsible agencies.

This review identifies that the decision is not between two equivalent sites with manageable differences. It is between introducing a scheduled ferry service into a complex, high-density recreational environment, or locating that same service within a materially lower-density and lower-conflict operating system. The difference in risk profile is structural, not marginal.

Why this matters

The comparative assessment is not based on whether ferry services are inherently safe or unsafe. Rather, it considers the suitability of each location to accommodate a scheduled ferry service within its existing operating environment.

The evidence consistently indicates that the relative risk profile is primarily determined by the characteristics of the location and its existing patterns of use, rather than by the ferry operation itself.

KEY CONCLUSIONS

1. The principal risks at Matilda Bay are structural rather than operational.

The dominant risks arise from the location itself, including:
- constrained geometry
- high user density
- concentration of vulnerable users
- multiple conflicting traffic movements
- dependence on sheltered water
- frequent manoeuvring adjacent to the terminal.

These characteristics cannot be materially altered through procedures, education or signage.

2. Matilda Bay already operates close to its practical operating capacity.

The bay supports:
- more than 4,000 organised club members
- ten water sport organisations
- disability and adaptive recreation programs
- large numbers of informal recreational users
- peak periods involving between 100 and 200 vessels and watercraft simultaneously.

The proposed ferry introduces an additional high-frequency transport movement into an already complex operating environment.

3. Existing safety at Matilda Bay relies upon flexibility.

Current safety is achieved through:
- local knowledge
- adaptive behaviour
- informal coordination
- temporal separation
- geographic separation.

Regular ferry movements progressively reduce these existing safety margins, increasing interaction opportunities and placing greater reliance on human judgement, coordination and behavioural compliance to maintain safety.

4. Many identified risks at Matilda Bay cannot be eliminated through operational controls.

The review found numerous hazards where proposed controls rely primarily upon:
- awareness
- supervision
- navigation rules
- behavioural compliance
- operator judgement.

These are predominantly administrative and operational controls rather than controls that eliminate or substantially reduce exposure at its source.

The review therefore concludes that the Matilda Bay proposal creates location-dependent risks and primarily seeks to manage them through administrative and operational controls, rather than avoiding their creation through safety-in-design.

5. Nedlands Jetty (JoJo's) represents the lower-risk system.

The alternative location operates within a fundamentally different environment. It:

- functions as an open-water transit corridor
- has substantially lower user density
- contains significantly fewer vulnerable users
- provides greater manoeuvring space
- allows natural separation between ferry operations and recreational activity
- enables a greater proportion of risk reduction through location selection rather than behavioural controls.

Residual risks remain but appear capable of being managed using conventional engineering and operational measures.

Overall Opinion

This review did not identify evidence demonstrating that the proposed Matilda Bay location represents the lowest-risk reasonably practicable option available to achieve the project's transport objectives.

The evidence indicates that the Matilda Bay proposal introduces location-dependent risks and structural incompatibilities. As a consequence, it transfers significant residual risk to recreational users, sporting organisations, volunteers, the ferry skipper themself and the wider community rather that avoided through safety-in-design.

By comparison, the Nedlands Jetty (JoJo's) option removes many of these exposure pathways through location selection and presents a materially lower overall risk profile while remaining capable of delivering the intended transport outcomes.

RECOMMENDATIONS

Before irreversible construction proceeds, a comparative reassessment of the Matilda Bay and Nedlands Jetty (JoJo's) options should be undertaken using a contemporary systems-based safety framework that considers:

- structural compatibility between ferry operations and existing waterway use
- vulnerable user exposure
- system-wide interaction effects
- safety-in-design principles
- operational resilience
- long-term community and environmental outcomes.

Based on the evidence reviewed, the Nedlands Jetty (JoJo's) option warrants further consideration as the lower-risk system configuration capable of achieving the project's transport objectives.

Given the significance and permanence of the proposed investment, a reassessment would ensure that the decision is founded on robust and current evidence.

Figure 1 – Two Locations – Two Fundamentally Different Operating Environments

Although separated by only a few hundred metres, the proposed Matilda Bay and Nedlands Jetty (JoJo's) terminal locations operate within fundamentally different waterway environments.

Matilda Bay functions as a sheltered, high-use recreational waterway supporting organised sport, disability and adaptive recreation, education programs and substantial informal community use, including children, novice participants and people with disability. The proposed terminal would introduce a scheduled ferry service into this existing activity environment, increasing the frequency of interactions between ferry operations and a diverse range of vulnerable waterway users.

By comparison, the JoJo's site is located within a broader open-water corridor characterised by substantially lower recreational activity, fewer vulnerable users and greater available manoeuvring space. This environment provides greater opportunity to achieve risk reduction through natural separation, engineering and operational controls.

The principal difference between the two locations is not simply the proposed ferry infrastructure, but the operating environment into which that infrastructure is introduced.

Figure 2 – Weekly Operational Activity Profile – Existing Waterway Use

Quiet | Low | Moderate | High | Peak / critical

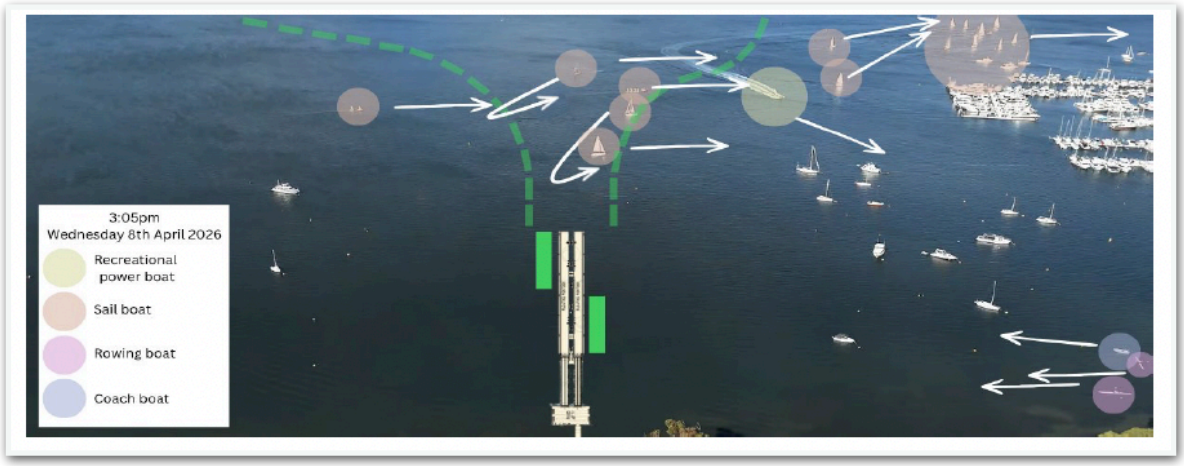
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Pre-dawn 05:00–08:00	**Rowing squads**	**Rowing squads**	**Rowing squads**	**Rowing squads**	**Rowing squads**	**Rowing + Hale School + crabbing tinnies**	Quiet
Morning 08:00–12:00	Recreational traffic building	Recreational traffic building	Club programs + recreational	Recreational traffic building	Recreational traffic building	Dragon boat + junior sailing + Sailability + busy boat ramp	Junior sailing training + recreational + Learn-to-row
Midday 11:00–14:00	Quietest period of the week	Quietest period of the week	Sailability session + pre-race fleet building from 13:00	Sailability session + quietest period	Recreational use	Pre-race assembly — all three clubs	Recreational + sailing building
Afternoon 14:00–17:00	Rowing training from 16:00. UWABC + Shenton College. Junior + novice squads.	Rowing training from 16:00. UWABC + Shenton College. Junior + novice squads.	**RPYC keelboat racing — 40 to 60 vessels. Pre-start manoeuvres 45 min. Finish 16:00–17:00. Rowing training from 16:00.**	Rowing training from 16:00. UWABC + Shenton College. Junior + novice squads.	Recreational peak + twilight prep + Shenton College rowing 14:00–16:00	**100 to 200 vessels — RPYC, PDSC and MBSC racing simultaneously. Absolute peak ~15:00.**	Winter series racing + recreational
Evening 17:00–20:00	**Rowing training continues to 20:00. Pre-dusk, dusk + night. Junior + novice squads.**	**Dragon boat + rowing training continues to 20:00. Pre-dusk, dusk + night.**	**Post-race wind-down + rowing training continues to 20:00. Pre-dusk, dusk + night.**	**Dragon boat + rowing training continues to 20:00. Pre-dusk, dusk + night.**	Twilight sailing fleet + Rottnest ferry movements + degrading visibility	Post-race wind-down	Quiet

Intensity reflects concurrent vessel density and safety risk across the whole bay. Summer season (Oct–May) intensifies all cells. Public holidays and school holidays push all weekend cells one level higher. Rowing training Mon–Thu 16:00–20:00 — back-to-back 2-hour sessions with junior and novice squads operating in pre-dusk, dusk, and night-time conditions. Peak/critical rating reflects the combination of vulnerable user groups, degrading visibility, and absence of collision avoidance capacity.

Matilda Bay experiences organised and informal activity throughout the week, with predictable peak periods extending from pre-dawn through to evening. Rather than isolated periods of use, the bay supports a continually changing operating environment involving organised sport, recreation, education programs and community use.

These patterns demonstrate that the proposed ferry service would be introduced into an already active system rather than an intermittently used waterway.

Figure 3 – Concurrent Vessel Movements During Wednesday Afternoon Peak



Drone observations illustrating simultaneous movements of sailing vessels, rowing craft, coach boats and recreational power vessels within the proposed terminal area. The observed activity demonstrates intersecting travel paths and limited spatial separation immediately adjacent to the proposed ferry location.

Comparative Strategic Risk Assessment

This section presents the principal strategic risk themes identified through the comparative assessment of the proposed Matilda Bay and Nedlands Jetty (JoJo's) ferry terminal locations.

The themes summarise the key system-level risks and provide a comparative overview of the two locations. The supporting detailed risk assessment for each theme is provided in Annex A – Comparative Risk Register.

Strategic Risk Theme	Comparative Assessment	Supporting Detailed Risk References
1. Collision between ferry and vulnerable water users	Matilda Bay introduces recurring interaction between scheduled ferry operations and a diverse population of vulnerable, inexperienced and informal water users. JoJo's primarily interacts with experienced recreational users operating within a more open-water environment.	MB 1, 8, 20, 25, 32, 36, 54 · NJ 1, 5, 8
2. Secondary collisions and interaction between water users	Ferry movements have the potential to propagate conflict between multiple users through avoidance manoeuvres, congestion and displacement of existing activities. The potential is substantially greater within the confined operating environment of Matilda Bay.	MB 2, 9, 21, 26, 33, 39, 40 · NJ 2, 6, 9, 10
3. Collision with fixed infrastructure	Introduction of terminal infrastructure increases interaction with fixed structures, particularly where manoeuvring occurs adjacent to recreational activity areas.	MB 3, 10, 22, 27, 65 · NJ 10, 14
4. Ferry wash, wake and loss of sheltered operating conditions	Many existing recreational activities rely upon sheltered water and are sensitive to wash and altered hydrodynamic conditions. These effects are substantially more pronounced within Matilda Bay than at JoJo's.	MB 4, 11, 12, 23, 24, 28, 29, 34, 55, 59, 60, 62 · NJ 3
5. Human performance and reliance on behavioural controls	Safe operation at Matilda Bay relies heavily on judgement, communication, behavioural compliance and continual adaptation by a diverse user population. JoJo's allows greater reliance on separation and conventional maritime navigation.	MB 6, 14, 31, 35, 45, 46, 51, 74 · NJ 4, 7
6. Waterway congestion and operational complexity	The interaction of multiple activities, constrained geometry and scheduled ferry operations creates a materially more complex operating system at Matilda Bay.	MB 17, 18, 38, 41, 42, 43, 73, 75, 76, 78 · NJ 9, 10
7. Community, sporting and organisational impacts	Ferry operations may affect the ongoing viability of clubs, organised recreation, disability programmes, volunteer participation and community access. These impacts are concentrated at Matilda Bay due to the existing intensity of use.	MB 7, 15, 19, 49, 53, 57, 58, 63, 68, 70

8. Environmental and physical impacts	Potential impacts include shoreline processes, seagrass, wildlife, water quality, terminal infrastructure and physical modification of the foreshore. Environmental issues remain at JoJo's but are of a different character and generally associated with engineering design.	MB 56, 59, 60, 61, 62, 64, 71 · NJ 11, 12, 15
9. Public access and amenity	The proposed terminal changes how the foreshore functions through altered access, visibility, parking and movement of pedestrians and recreational users. These impacts are substantially greater at Matilda Bay.	MB 47, 65, 66, 67
10. Governance, evidence and decision-making	The review identified a number of matters relating to the completeness of the evidence base, planning assumptions and comparative assessment that may influence the overall understanding of risk.	MB 37, 44, 48, 50, 69, 72, 77 · NJ 13
11. Operational resilience and service delivery	Scheduled ferry operations introduce timetable pressures, network constraints and operational dependencies that interact with existing recreational use. These pressures are materially greater within the Matilda Bay operating environment.	MB 43, 73, 74, 75, 76, 77 · NJ 9, 10, 11
12. Overall system compatibility	The evidence indicates the fundamental distinction between the two options is not the ferry itself but the operating environment into which it is introduced. Matilda Bay presents a structurally incompatible multi-user recreational environment, whereas JoJo's provides greater opportunity to achieve risk reduction through separation, engineering and operational controls.	Supported collectively by all detailed risk references.

Annex A - Comparative Risk Register

This section presents the detailed comparative risk assessment supporting the findings and conclusions contained within this review. Risks have been assessed using a systems-based approach, considering existing operating conditions, interaction pathways, user vulnerability, and the effectiveness of proposed controls.

Matilda Bay Ferry Option

ROWING BOATS

1. Collision between ferry and rowing shell.

The proposed ferry route and terminal are located within an established rowing training, launch and return area used by multiple rowing clubs, creating recurring interaction between ferries and rowing boats. Rowing shells are low-profile craft that sit just above the waterline and can be difficult to detect from the helm of a larger ferry; rowing boats are susceptible to entering areas of restricted visibility or blind spots around a ferry. The ferry's size, geometry and positioning of crew can create blind spots directly ahead and to the sides, meaning visual detection of rowers cannot be assumed at all times.

Rower's training lines run immediately adjacent to, and may cross, the proposed ferry route. Rowers face backwards and may inadvertently steer into the ferry path, particularly during low-light conditions or where multiple crews are training together or whilst completing high-intensity training where rower's attention is also focused on crew performance and travelling faster, reducing time available to confirm course, particularly in coxless boats.

Rowing activity also occurs during pre-dawn, night-time, low-light and glare conditions, further reducing visibility risk for both rowers and ferry operators. To avoid slower moving power boats, ferries may steer into rowing lanes not aware if rowers will be there.

Collision risk near the terminal with the proposed ferry approach is close to the rowing clubs' water access points and training area. During approach, departure, reversing and berthing, ferry skippers are subject to increased cognitive load while operating in a confined area with nearby rowing crews. Multiple rowing crews can also launch and return simultaneously, creating congestion close to the terminal area.

Matilda Bay's constrained geometry, congestion areas, diversity of watercraft and variable wind and water conditions make the ability to establish separation protocols around terminals, similar to those used on the Brisbane River, impractical to replicate.

Documented incidents of rowers in the water from wash, including incidents of a ferry inbound and rowing squad unable to stop or reverse. These are not hypothetical risk scenarios. They are described first-hand events in the same waterway involving the same vessel type as the proposed service. They establish that the hazard class, has already materialised locally. The majority of incidents have not been captured in the government's incident data registries.

2. **Rowing shell collides with another watercraft or fixed structures due to ferry activity.**

Limited ability to create effective separation. Matilda Bay and the surrounding navigable waterway is constrained in geometry, congestion, diverse watercraft and environmental conditions that limit the ability to establish and maintain effective separation between ferry operations and rowing activities.

Compression of rowing training lanes to accommodate a ferry route, increases proximity and interaction between rowing crews travelling in different directions and with existing fixed river markers, including unlit markers buoys. The ferry does not need to collide with a rowing boat directly for ferry activity to contribute to an increased collision environment.

3. **Rowing shell collides with terminal structure.**

Terminal intersects foreshore areas used for training. This creates a fixed-structure hazard for rowers.

4. **Rowing shell capsize or swamping from ferry wash and loss of sheltered water.**

Rowing programs depend on sheltered water and rely on calm no wash water conditions. Scheduled ferry operations introduce regular vessel movements into periods currently used by rowers to avoid powered-vessel traffic and wash.

As rowing boats are low-profile, even low-speed ferry wash from low wake ferries makes rowing crafts unstable. Wash from the ferry is present long after the ferry has passed. Frequency of ferry movements and presence of limestone retaining wall along Mounts Bay Road reflects the wash making it cumulative and multi-directional, reducing the rower's ability to orient the rowing boat to manage impact.

Crews row adjacent to ferry route with wash experienced the full route length in Matilda Bay and between Matilda Bay to Narrows Bridge. The larger and stronger wash experienced during ferry speed changes further increases the likelihood of capsize or swamping.

In low-light conditions rowers are unable to see the oncoming wash of a ferry, limiting their ability to respond, stop rowing and position the rowing boat prior to being hit by the wash.

Inexperienced rowers are particularly susceptible, lacking the required skills to maintain stability. The ferry route runs through novice training areas inside the Bay, in front of the rowing clubs and to the North where capsizing is already frequent in calm water.

Capsize consequences are significant. Rowers are secured by foot stretchers and self-rescue requires releasing the feet while in the water. This can be physically and cognitively demanding, particularly for inexperienced, junior or senior rowers. Rowers are unable to wear PPE due to the limitations for physical exercise. Cold-weather training increases hypothermia risk, and capsized rowers may be difficult to see from an approaching vessel, especially in low-light or dark conditions.

Swamping and capsize also creates rescue and recovery issues and exposure time in the water. A rowing boat filled with water cannot be rowed and requires external towing for assistance. A rower who cannot self-recover from a capsize needs to wait for external assistance.

5. Rowing shell and launch infrastructure damaged by ferry activity.

Ferry activity may contribute to damage to rowing boats during wash-affected launch and return. Rowing shells require precise alignment when approaching the ramp, and wash may disrupt this approach, increasing the likelihood of ramp strikes and equipment damage.

Large wash can damage a rowing boat with documented incidents of boats damaged from wash experienced in the same waterway .

Ferry wash impacts rowing boat ramp and club infrastructure, with ongoing structural maintenance costs of a heritage listed building.

Additional wash in the area, increases the amount of water lapping over the rowing boat club ramp, that causes slippery algae growth and increased slip or trip hazards for rowers and damage to equipment. Algae growth on the ramp requires ongoing and frequent slip hazard reduction.

Wash experienced more frequently or larger than natural wind-waves can contribute to erosion. Foreshore erosion creates a tripping hazard for rowers when launching off the beach.

6. Rowing shell fails to give way and reliance on human judgement as primary control.

Safe operation relies on rowers and ferry operators consistently detecting, interpreting and responding to one another within a complex and dynamic environment. Rowers face backwards, have limited manoeuvrability and slow reaction times. Inexperienced rowers lack adequate skills or judgement to reliably assess ferry speed and available crossing time. Young rowers have underdeveloped frontal cortex decision-making and inconsistent risk perception under time pressure. High ferry frequency reduces safe crossing windows and increases the likelihood of rowers crossing the ferry path when margins are inadequate.

Changes in ferry speed or faster vessel speeds makes it more challenging for rowing crews to determine time available to cross the ferry path. In many cases, crews may need to navigate crossing points without direct instruction from a coach or safety boat due to limits in volunteer and coaching capacity not in parity with the number of rowing crews on the water.

7. Rowing club unable to attract new members.

Frequent ferry movements, wash and increased perceived risk reduces the suitability of Matilda Bay as a sheltered rowing training environment, particularly for learn-to-row, school rowing and novice programs.

Loss of sheltered training areas used during adverse weather conditions reduces the number of times club members can row. If training opportunities are reduced or safety concerns increase, the rowing club may become less attractive to new members, school programs and parents and deter enrolment, irrespective of whether a serious incident occurs.

SAILING AND YACHT CLUBS

8. Collision between ferry and sailing vessel.

The proposed ferry route directly intersects established sailing corridors for multiple sailing clubs, including Royal Perth Yacht Club (RPYC) , Mounts Bay Sailing Club (MBSC) and Perth Dinghy and Sailing Club (PDSC) race start and preparation areas and junior training zones. Ferry routes result in multiple intersections through racing courses registered with Yachting WA. Because these competitive courses are set around wind conditions and rely on fixed racing infrastructure and geographic marks, they cannot be dynamically adjusted to accommodate ferry transit lanes.

Matilda Bay has 60+ boats on the water simultaneously before and during racing, often two deep across the bay. During competitive events, race congestion during pre-start manoeuvres routinely lasts up to 45 minutes, creating a dense barrier of vessels. Furthermore, during race starts, when a sailing boat must take sudden avoiding action, it is physically constrained by a surrounding fleet of 40 to 60 other vessels.

Racing fleets use multiple courses simultaneously within the Matilda Bay area, meaning sailors may be approaching different turning marks from multiple directions at the same time. Observing the movement of one fleet does not enable a ferry master to predict the path of the next, as successive fleets may be racing entirely different courses with different marks, turning locations and paths and direction of travel. This creates a dynamic operating environment in which the intended direction of travel of approaching sailing vessels is not readily apparent, making it difficult for ferry operators to reliably anticipate sailing vessel movements and maintain safe separation.

If standard COLREGs apply, the varied direction of travel and speed of multiple sailors means interactions and crossings remain dynamic and ambiguous, with no clarity of who is the overtaking vessel, who is the stand-on vessel and who must maintain course and speed.

Sailors have restricted visibility when looking under sails, limited manoeuvrability when tacking, rely on wind and are limited in their ability to accelerate out of the ferry's path. The ferry has long stopping distances.

Sailing crafts require time and space to turn or stop to avoid collision; they must tack through the wind, an operational manoeuvre requiring significant time and clear water space. Consequently, the physical ability to repeatedly give way does not exist. Even when restricted to a speed of 8 knots, a ferry will close the distance on a slower-moving, capsized, or stationary craft faster than evasive action can be executed, presenting an unmanageable risk of catastrophic hull collision. The collision avoidance logic that works between vessels of similar type breaks down when incompatible craft share the same space.

Faster ferry speeds compress decision-making time of sailors to avoid ferry collision, increasing likelihood of error. Traffic separation not possible as ferry routes through racing courses.

Evening and dusk racing is regular, low-light conditions impacting skipper and sailor visibility.

Learn-to-sail and junior programmes operate in the Matilda Bay area using relying on the sheltered and shallow area in front and adjacent to the terminal, including within the mooring area.

Moths, skiff, International 14s are fast, with low manoeuvrability and operate at variable speed when racing.

The Brewery Mark is a principal turning mark and is also a key reaching mark for skiffs and keelboats approaching at high speed from Melville Water. After rounding the mark, fleets return towards Matilda Bay, creating high-speed sailing traffic intersecting the proposed bi-directional ferry route.

The ferry route significantly constrains the available area for establishing safe start lines and there is insufficient space to relocate start lines to avoid interaction with ferry operations. Even if a start line were moved, the ferry route would still be located on one or both sides of the racing area, requiring competitors to cross or sail immediately adjacent to the ferry route. As a result, conflicts between racing fleets and ferry operations would remain unavoidable.

Incidents documented in the survey including a near fatality of child in a capsized dinghy in Matilda Bay who was nearly run over by a commercial ferry, with lasting psychological impact preventing them from sailing for over a decade. Multiple first- hand events in the same waterway involving the same vessel type as the proposed service. They establish that the hazard class, ferry collision with sailing craft in Matilda Bay, has already materialised locally. The majority of incidents have not been captured in the government's incident data registries.

9. Sailing vessel collides with another craft due to ferry activity.

High density of craft in confined space means sailors giving way to the ferry have no room to do so without conflicting with adjacent vessels. Increased collision risk with other sailing vessels at start lines as ferry route reduces available space at race start and preparation areas. Wash causes drift and loss of steerage of sailing boat, pushing boats into collision with nearby craft.

Surrounding navigable waterway is constrained in geometry with diverse watercraft. The introduction of a regular ferry service is likely to alter behaviour of other recreational vessels to avoid ferry movements increasing interaction potential with sailing vessels. The ferry does not need to collide with a sailing boat directly for ferry activity to contribute to an increased collision environment.

10. Sailing vessel collides with terminal structure.

Junior sailors use the area in front and around the terminal. Capsizing already frequently occurs in front of the terminal area. Drifting capsized craft or craft displaced by wash and unable to manoeuvre strike the terminal. Matilda Bay's constrained geometry and sailing courses and training areas determined by wind conditions make the ability to establish separation protocols around terminals, similar to those used on the Brisbane River, impractical to replicate.

11. Sailing vessel capsize from ferry wash.

Small dinghies are particularly susceptible. Wash from ferry in confined water creates conditions beyond the ability of less experienced sailors to manage. The existing 8-knot speed limit reflects that larger powered vessels at certain speed generate disproportionate wash in shallower waters.

12. Sailing vessel swamped by ferry wash.

Inexperienced and junior sailors lack the skills to position their craft to manage wash. Wash can swamp or capsize smaller craft and inexperienced sailors.

13. Sailing vessel damaged by ferry activity.

Collision with the ferry, terminal, other craft. Racing, turning and learn-to-sail close to terminal and ferry route. Ferry route close to marina with ferry wake causing damage of moored vessels and sails striking nearby moored boats.

14. Sailing vessel fails to give way to ferry.

Unpowered sailing craft have very limited ability to manoeuvre in confined water to avoid a collision course. Junior and novice sailors, the high proportion of the Matilda Bay sailing population, have not developed the navigation skills or situational awareness to manage give-way obligations under pressure. COLREGs compliance cannot be relied upon as a control for this population.

15. Sailing clubs unable to attract new members.

Matilda Bay hosts learn-to-sail, junior sailing, and state, national, and international regattas. Ferry operations will prevent or curtail these programmes. Perceived safety risk will deter new membership independent of actual incident data.

16. Damage to marina.

Increased wash frequency and volume from regular ferry operations will progressively damage moored boats, marina berths and moorings already subject to wash damage from existing traffic.

17. Race start congestion becomes unmanageable.

The RPYC start area, immediately outside the marina through to the outer dolphin, is already the highest-congestion point in the bay during scheduled racing. Club members document near misses at the start line as already occurring under current conditions, as frequent as a weekly occurrence. Known incidents recorded in this corridor with ferries.

Shallow-water bathymetry to the north funnels all deeper draft vessels into a narrow chokepoint. This is a fixed geometric constraint; adding regular, high-frequency ferries creates an unmanageable traffic overlap. Introducing a ferry traversing this space at regular intervals during racing periods converts a managed congestion risk into an unmanageable one.

Sailing vessels on the start line are restricted in their ability to materially alter course or stop and must continue to tack pre-start. A ferry path close or through a sailing race start increases occurrence of sailing boats manoeuvring near a ferry.

Because COLREGs legally require the ferry to give way to sailing craft, a ferry operating during race days will face constant, legally mandated delays.

18. Night and low-light operations substantially increase collision risk.

Evening and dusk sailing is scheduled weekly at Matilda Bay. Background light clutter from the city makes spotting small craft extremely difficult at night. A ferry operating during evening peak hours faces materially elevated collision risk with sailing craft that are difficult to see and difficult to track.

19. Ferry introduction ends organised junior and disability sailing programmes and national and international sailing events.

Experienced club members state they do not believe junior sailing, Sailability WA programmes, or blind sailing could continue in the bay with regular ferry operations. This is framed as cessation, not inconvenience. Perth Dinghy Sailing Club's and Sailability WA's ongoing viability is specifically cited as at risk. This represents the complete loss of organised water sport access for several hundred children and participants with disabilities.

Sailability WA at Matilda Bay is recognised as one of the leading high performance programmes in the country for para-athletes. The programme provides pathways for competitive crewing and international representation. It's success relies on safe use of world class training environment that combines shelter, yet technically demanding courses and adjacent support infrastructure. Regular ferry movements through this area alters the ongoing suitability of the area to train world-class para-athletes.

Matilda Bay is used regularly for large state, national and international sailing events, including world disabled sailing events. Events are multi-day with a significant increase in volume of boats on the water. Rules of racing are strict and require racing vessels not to be impeded by external boats. Increased risk management and cost curtails ability of clubs to host large sailing races. To host events, ferries would need to cease running over multiple days causing operation disruptions.

DRAGON BOATS

20. Collision between ferry and dragon boat.

Dragon boats train within the sheltered waters of Matilda Bay and intersect or run adjacent to the proposed ferry route. Dragon boats rely on protection from the wind provided by the bay and cannot relocate to more exposed areas. Consequently, regular ferry operations would create recurring interaction between ferry movements and dragon boat training activities. Spatial constraints and multiple routes limit the ability to establish effective separation measures similar to those used in other waterways.

Dragon boats are very slow and difficult to manoeuvre or take evasive action. Crew is mostly senior, breast cancer survivors and supporters, dragon boat skipper is an 80 year old. Dragon boats are slow to manoeuvre, and the senior demographics of participants limit fast evasive action. Dragon boats train at dusk and night-time when there is sun glare, compounding visibility risk of the skipper and dragon boats. Ferry approach, departure, turning and reversing manoeuvres occur in proximity to areas used for dragon boat training. This creates recurring interaction within terminal approach and ferry manoeuvring areas, increasing reliance on participant awareness.

21. Dragon boat collides with another watercraft or fixed structure, or moorings due to ferry activity.

Dragon boats have limited manoeuvrability and vulnerable-user characteristics. Boats are very susceptible to wash and loose steerage. Dragon boats remain in the sheltered bay area meaning every training session the dragon boat will run in close proximity to the ferry route and cross the terminal where ferries will be manoeuvring and reversing. Drifting dragon boats affected by wash collide with each other and with another watercraft increases likelihood of collision with other moored boats and collisions with fixed river markers and buoys present in the compressed training area.

22. Dragon Boat collides with terminal structure.

Terminal intersects foreshore area used for training.

23. Dragon boat capsize from ferry wash.

Ferry movements generate wash that persists within the bay and will be experienced repeatedly during training sessions. Even low wash has an impact on dragon boats. The confined geometry of Matilda Bay contributes to complex wash conditions experienced every approach and departure along the full route length and in the bay. Wash from ferry is present long after the ferry has passed. Frequency of ferry movements means wash will be present multiple times during each training session.

Dragon boats are particularly susceptible to wash. Dragon boats row adjacent to ferry route. Crew have low strength and no ability to self-recover following a capsize event. Rely on swimming to shore. No external safety boat out during training sessions. Participants in the water are difficult to detect, particularly during low-light conditions.

24. Dragon boat swamped by ferry wash.

Larger wash can swamp dragon boats. Dragon boaters are unable to wear PPE due to the limitations for physical exercise. In low-light conditions dragon boaters are unable to see the oncoming ferry wash, and unable to respond prior to being hit by wash. In the event of capsize or swamping, dragon boat crews have limited ability to self-recover. Training occurs during dusk or low-light conditions and without dedicated safety vessels. Consequently, any incident may result in prolonged exposure of participants within an active navigation environment and risk of hypothermia.

DISABLED SAILING (SAILABILITY WA)

25. Collision between ferry and disabled sailing vessel.

Ferry operations intersect established disability sailing activities. Scheduled ferry operations introduce regular vessel movements into periods currently used by Sailability to avoid risk and interaction with powered-vessel traffic. Unlike many Sailability programs, the geometry and shelter of the Matilda Bay program, allows the program to support a broader range of participants with physical, sensory, neurological and intellectual disabilities, offering a predictable and low-complexity operating environment.

The sheltered geometry has allowed Sailability at Matilda Bay to support both recreational and competitive disability sailing. Depending on individual capabilities, participants may sail independently without a support person on board. Consequently, the program's operating model is particularly dependent on maintaining sheltered conditions and minimising interactions with high- frequency ferry movements. The program is designed around enabling participants to independently control their own vessel, rather than relying on direct intervention from support persons or safety boats.

Sailing vessels with disabled participants operate at relatively low speeds and are dependent on wind conditions for manoeuvring. Participants may have reduced physical mobility, slower response times, reduced situational awareness, hearing or sight impairments or other limitations that affect their ability to identify, interpret and respond to approaching vessel traffic. Blind sailors rely on sound markers for guidance; any ferry audible signal is not effective as a communication mechanism for this group.

The most sheltered waters of Matilda Bay are relied upon for disability sailing activities because they provide a controlled environment for participants with varying abilities. The proposed ferry route and terminal operations would bisect the area used for disability training and introduce regular, multi-route vessel movements and manoeuvring around the terminal into this activity area.

Current safety arrangements rely heavily on sheltered conditions, low traffic volumes and temporal separation from high-intensity vessel movements, the introduction of the ferry dismantles the core safety buffer of the waterway. Consequently, the interaction between scheduled ferry operations and disability sailing activities represents a structural compatibility issue arising from the characteristics of the users, vessels and location rather than individual participant behaviour and creates un-mitigable liability risk that directly threatens the ongoing viability of inclusive community programs for people with a disability in Matilda Bay.

26. Disabled sailing vessel collides with another craft due to ferry activity.

Slow speed and limited manoeuvrability mean disabled sailors cannot respond to congestion and displacement caused by ferry movements in surrounding traffic.

27. Disabled sailing vessel collides with terminal.

Beginner-level participants with limited watercraft control navigating in close proximity to a large, fixed structure in disturbed water. The most sheltered area of the Bay is where the terminal is and where sailors with a disability use.

28. Disabled sailing vessel swamping or capsize from wash.

Participants cannot position their craft to manage ferry wash. Drowning risk on capsize is elevated due to physical limitations affecting self-rescue capability. This population carries the highest drowning risk on capsize as participants have reduced ability to recover from a capsize. PPE is already in place as standard.

29. Disabled sailing vessel swamped by ferry wash.

Reliant on external assistance with no effective controls available to the disabled sailor.

30. Disabled sailing vessel damaged by ferry activity.

Craft damage resulting from congested or wash-affected conditions with no available controls to protect vessel integrity.

31. Disabled sailing vessel fails to give way to ferry.

Reliance on participant compliance as a primary collision avoidance control is structurally unreliable given the characteristics of the user group and the operating environment. Many disabled sailing participants may have reduced ability to consistently identify, interpret and respond to vessel interactions within the timeframes assumed by conventional navigation rules. Consequently, safety becomes heavily dependent on ferry operators recognising and accommodating vulnerable waterway users.

The ferry service would introduce frequent vessel movements into a sheltered activity area specifically relied upon by vulnerable users whose participation depends on low traffic complexity, predictable conditions and reduced exposure to high-consequence vessel interactions. Reliance on collision avoidance control carried out by the ferry skipper does not constitute a sufficiently robust primary safety control within a complex shared waterway operating environment.

DISABLED FISHING (FISHABILITY WA)

32. Collision between ferry and Fishability vessel.

The Fishability route between the Royal Perth Yacht Club pens and fishing areas requires vessels to transit through or adjacent to the proposed ferry terminal approach area.

Fishability participants may have physical disabilities and elevated vulnerability in the event of capsize, collision or emergency evacuation. Catastrophic consequence if collision occurs. Passengers have physical disabilities with elevated drowning risk on capsize.

The introduction of a scheduled ferry service would create recurring interaction between ferry movements and Fishability activities. Existing safety arrangements rely substantially on sheltered water and temporal separation from periods of higher vessel traffic, a control that becomes less effective with regular ferry operations.

Consequently, the interaction between scheduled ferry operations and Fishability activities represents a structural compatibility issue arising from the characteristics of the users, vessels and operating environment rather than individual participant behaviour.

33. Fishability vessel collides with another craft due to ferry activity.

Congestion and interaction risk increases with associated with ferry operations. Fishability vessels operate at relatively low speed and have limited ability to rapidly alter course or undertake evasive manoeuvres, as operators must prioritise the safety, stability and support needs of disabled participants on board.

Consequently, avoidance capabilities are materially different from those assumed for recreational vessels. Ferry movements may contribute to changes in traffic patterns, displacement of other watercraft and increased congestion around terminal approach areas. This may increase the likelihood of interaction between Fishability vessels, recreational craft, support vessels and fixed infrastructure.

34. Fishability vessel capsize from ferry wash.

Fishability vessels are susceptible to wake from powered craft. Repeated ferry arrivals and departures will expose Fishability vessels to recurring wash events, including reflected wash from the retaining wall along Mounts Bay Road.

The consequence of capsize is greater for some participants due to physical disabilities, reduced mobility and inability for self-rescue. Accordingly, recovery from an incident may be more complex than for the general boating population with participants at elevated drowning risk on capsize.

35. Fishability vessel fails to give way to ferry.

The route between the pens and fishing locations requires Fishability vessels to transit across or adjacent to ferry approach areas and ferry routes. Support crew are primarily focused on participant wellbeing, vessel management and fishing activities. The introduction of regular ferry movements would require ongoing monitoring of vessel traffic, wash and navigation interactions, increasing cognitive load and reliance on human performance as a primary safety control. Safety therefore becomes increasingly dependent on human performance rather than hazard elimination or separation.

RECREATIONAL USERS, GENERAL PUBLIC (SWIMMERS, SUP, KAYAK)

36. Collision between ferry and recreational public user.

The Matilda Bay foreshore is extensively used by families, tourists, school groups, swimmers, paddleboarders, and kayakers, many of whom paddle along the foreshore, between moorings, along the RPYC marina and to the Blue Boat Shed. These public users are in close proximity to the multi-berth terminal and directly cross the ferry path. The foreshore and mooring area is the most accessible and sheltered area of Matilda Bay and is extensively used by this group.

The terminal intersects with the key area occupied by recreational, informal paddle crafts. This population has no navigation knowledge, no skippers' ticket, and no understanding of COLREGs. Restricting foreshore access is the only fully effective control but would remove public access to the Swan River at this location entirely, which is not a viable option.

37. Informal and unscheduled water users at Matilda Bay and were largely absent from the government's exposure consideration and risk assessment.

Informal and unscheduled water users are the majority exposure population at Matilda Bay and were largely unaccounted for in the government's risk assessment.

Public survey data identifies 275 respondents (51%) who personally swim, paddle, or supervise children in the water outside any club or scheduled programme. They visit regularly, carry no navigation training, are not reachable through club-based education. They do not appear in the aquatic events calendar, Strava or records of peak agencies or stakeholders that underpinned the government's exposure assessment, meaning the population at risk was materially undercounted from the outset.

Survey evidence showed the scale of informal water use at Matilda Bay, who they are, how often they come, what they observe, how safe they currently feel and how they expect that to change.

38. Collision between jet ski and ferry: Described in club survey as a specific hazard category.

Described as unpredictable and non-compliant with rules. Rule based exclusions are not reliably enforced in the bay under current conditions.

Jet skis enter the water from the Matilda Bay public boat ramp and travel to the jet ski area at Como beach crossing the ferry terminal and ferry paths at very high speed. ColRegs give-way requires the ferry to give way to traffic exiting the public boat ramp.

Distance from boat ramp to terminal and ferry manoeuvring and reversing within the terminal corridor creates high-speed, high-powered crossing in front of terminal where line-of-sight of ferry skipper can be blocked by another berth ferry, a ferry manoeuvring in front of the terminal or adjacent moored boats, making reliance on ColRegs unreliable and unenforceable.

Known ignoring of rules. Illegal activity sited during the observation period, including observation of jet ski freestyling in Matilda Bay. High-speed, sharp turns, wash jumping, donuts, and operating in swimming areas not designated for powered crafts. Multiple club survey respondents described jet ski operators as showing no awareness of others on the water. Illegal behaviour goes unenforced.

39. Collision between power boat and ferry: multi-directional vessel convergence

Matilda Bay functions as a convergence point where vessels begin, end and transition between journeys rather than a through-route. Recreational powerboats access the bay from multiple origins including the public boat ramp, yacht club marinas, moorings and adjacent river channels. As a result, vessel movements occur simultaneously in multiple directions with no dominant traffic flow, predictable travel axis or established separation between inbound and outbound traffic.

Unlike a river channel where vessels generally travel in predictable directions and speeds, vessels within Matilda Bay accelerate, decelerate, circle, launch, retrieve, prepare equipment, wait, manoeuvre and change direction in close proximity to one another. The proposed ferry terminal and ferry approach is located within this activity node. Consequently, ferry operations would occur within an environment characterised by omnidirectional vessel movements, variable recreation vessel speeds, high manoeuvring activity, multiple vessel origins and destinations, frequent course alterations, simultaneous interaction with other water users.

Congestion and high frequency observed in the Bay. 80 power boat movements per hour, with week-long observation period recording 15 power boat movements within a 5-minute period, suggesting power boat movements could be as high as 180-plus per hour during peak periods.

The resulting collision risk is therefore driven by the geometry and function of the bay rather than the actions of any individual operator.

However, survey responses and incident reports indicate ongoing concerns regarding speed-limit compliance, situational awareness and right-of-way understanding amongst some recreational powerboat users. If compliance and enforcement challenges already exist under current conditions, introduction of a high-frequency ferry service increases reliance on behavioural controls rather than eliminating risk through design.

40. Interaction density and conflict propagation causes collision with other craft.

While a ferry interacting with one rowing shell or one sail boat is a single risk, peak periods feature multiple sailing fleets, rowing squads, casual users and powered vessels out simultaneously. When a ferry enters this environment, all these groups alter course at the same moment, giving way to the larger vessel. A powered boat turns to avoid the ferry, which forces it into the path of a junior sailing dinghy which is already tacking to avoid the ferry or a rower who has stopped to balance the boat from the wash. The ferry acts as a "hazard multiplier," creating a credible path of secondary near-miss and collision hazards between other recreational users who are trying to stay out of the way of the ferry.

Collision avoidance becomes a system-level interaction problem rather than a simple two-vessel navigation issue.

The ferry is a schedule-driven vessel that requires a predictable approach and departure corridor and the proposed operating environment relies heavily on all users understanding right-of-way obligations, maintaining situational awareness, complying with speed restrictions, accurately interpreting ferry intentions, accurately interpreting the skill and manoeuvrability of other users.

The terminal is within an active activity node and convergence point rather than a dedicated navigation zone with observations of unpredictable power boat speed and intentions. Powerboats were observed travelling north, south, east, west and northwest at the same time and were observed operating, including circling and changing

direction in front of and adjacent to the terminal area, representing omnidirectional traffic rather than an organised navigation channel directly within the proposed ferry corridor rather than merely crossing it occasionally. This is fundamentally different from a river channel where most traffic travels in similar ways and lines.

Powerboats operating alongside other water users simultaneously where any avoidance action taken by a powerboat to avoid a ferry may place it into the path of another user. Collision avoidance becomes a systems issue rather than a vessel issue.

Right of way ignorance, cited by club survey respondents as a persistent problem that power boats have low situational awareness or awareness of limitations of other vessels on the water. Water police are rarely observed. Club survey respondent noted power boat operators exceeding safe speed nearly every week.

The ferry would traverse through a waterway where other vessels are in transitional, manoeuvre-intensive states. Cognitive load is high, focusing on preparation and not focused on external traffic. Unpredictable speed as boats accelerates and decelerate in proximity to the terminal. Unpredictable paths taken from the public boat ramp, remaining moorings and yacht club marina as various orientations - jet ski area, Narrows Bridge, existing ferry channel, Fremantle paths.

Recent requests to the Department regarding unsafe operations of power boats responded with “The Department of Transport and Major Infrastructure is the responsible agency for monitoring marine compliance in Western Australia and take acts of non-compliance seriously. We are currently experiencing a high volume of Marine Incident Reports and Non-Compliance Reports and processing of your report may be somewhat delayed” indicating DTMI is currently experiencing difficulties and delays in monitoring and enforcing compliance under current resourcing.

41. Collision between e-foils

eFoils and hydroboards are wind-independent, they need calm, sheltered water which means they use Matilda Bay, not the exposed waters at Pelican Point. They operate in any weather, their movements are unpredictable and can travel at high speed. Observations of eFoils weaving through moorings where sight lines are blocked, and are largely invisible from a ferry helm.

This activity is concentrated in Matilda Bay at all times of the day as an informal activity. The popularity of the technology has resulted in an experienced increase in this activity in Matilda Bay.

Users operate across varying skill levels, including beginners learning. Matilda Bay has become a preferred location for emerging watercraft technologies including kitefoils, wingfoils, hydrofoils and eFoils and a popular learning area. The sheltered conditions of Matilda Bay make the area particularly attractive to these users who rely on power rather than wind.

Observations were recorded of efoils active in the mooring area and within the bay, concentrating activity within the same water space proposed for ferry manoeuvring, approach and departure. As a result, the interaction risk arises from the coexistence of a scheduled ferry service with a growing population of informal, highly manoeuvrable and often unpredictable water users occupying the same constrained environment.

Efoils also have the ability to travel at relatively high speeds while undertaking frequent manoeuvres and changes of direction, reducing the ability to predict direction of travel. eFoils have very low visual profiles and are difficult to detect from the helm of a larger vessel, particularly when riders are in the water.

The risk is therefore not primarily one of individual operator behaviour but of introducing a fixed-route, frequency ferry service into a waterway increasingly used by diverse recreational craft that do not operate within a formal traffic management framework.

42. Collision between windsurfer / kitesurfer: Two distinct risk profiles, traditional windsurfers and kitesurfers, when resting their sails or kites lie in the water making them hard to see.

Kite lines may create hazards extending beyond the visible position of the user. With potential for lines to tangle with passing ferry. When resting sails or kites lie in the water making them hard to see. The most vulnerable point of interaction with windsurfers and kitesurfers is the ferry approach corridor into Matilda Bay.

Observational data from the week-long drone programme (8–14 April 2026) documents windsurfers rigging and preparing to launch from the Matilda Bay beach at 09:31 on a weekday morning. Multiple rigs are visible on the shore and at the water's edge. The bay geometry, protected wind run, foreshore acceleration, sufficient run length for manoeuvring, is the structural reason windsurfers utilise Matilda Bay.

The risk is not only from windsurfers in open water: the launch and rigging zone, where craft are stationary or slow-moving and operators are focused on equipment rather than vessel traffic, is directly within the proposed ferry approach corridor. This is the point of greatest vulnerability and it is not addressed in the current register entry for windsurfer collision.

43. Operational reliability and congestion-related delays

COLREGs require powered vessels to give way to sailing craft. During any active sailing period, which overlaps with peak ferry operating hours, the ferry cannot legally proceed through Matilda Bay without the sailing fleet clearing first. This is structurally irresolvable regardless of timetabling. The combined volume of rowing, sailing, recreational, and event traffic means delays will be frequent and unpredictable.

The position of the ferry terminal with the public boat ramp legally requires the ferry to give way to powered boats entering the water from the boat ramp. During peak powered recreation use the volume of power boat traffic means delays are inevitable and will be unpredictable.

44. Conflict and increased regulatory workload arising from competing use of shared water space

Introduction of a scheduled ferry service into a highly utilised recreational waterway may increase complaints, disputes, near-miss reporting, compliance investigations and requests for regulatory intervention. Management of competing user expectations may require ongoing government oversight, stakeholder engagement and enforcement activity.

The system relies on sustained behavioural compliance, education and enforcement to manage an underlying incompatibility between a scheduled transport service and existing recreational waterway use. The introduction of a scheduled ferry service into a heavily utilised recreational waterway creates the potential for ongoing conflict between ferry operators required to maintain service reliability and recreational users seeking to continue existing activities within the bay.

Ferry operations introduce timetable pressures and performance expectations, while recreational users may experience repeated disruption, reduced access to water space and increased operational constraints. These competing objectives create conditions where frustration, impatience and risk-taking behaviours may emerge amongst both ferry operators and other waterway users.

While some conflict may be reduced through education and stakeholder engagement with organised clubs, a significant proportion of waterway users are casual, visiting or unstructured users who cannot be effectively reached through club-based programmes. Consequently, the effectiveness of behavioural controls is inherently limited.

The risk is compounded where safe operation relies on ongoing compliance monitoring, enforcement and dispute resolution. If regulatory agencies have limited capacity to actively monitor, investigate and respond to waterway conflicts, users may increasingly rely on informal negotiation, ad hoc avoidance behaviours and self-management. This can result in inconsistent expectations, degraded compliance and progressive erosion of safety margins over time.

45. Skipper task overload at berthing.

The most demanding vessel-handling task for the ferries occurs at the same location and at the same location where interaction with other waterway users is greatest, particularly vulnerable users. During approach, departure and berthing manoeuvres, ferry skippers must simultaneously manage vessel positioning, speed control, environmental conditions, terminal clearances, nearby ferries, moored vessels and surrounding waterway users within a confined operating area.

The proposed four-berth nose-to-tail arrangement increases manoeuvring complexity compared with conventional side-on berthing arrangements. Depending on berth occupancy, ferry operators may be required to manoeuvre around berthed ferries and other vessels while operating in proximity to recreational users and areas of concentrated waterway activity. Moored vessels, terminal infrastructure and other ferries may also restrict sightlines and reduce the available time for hazard detection and response.

Environmental conditions such as easterly winds may further increase workload and reduce manoeuvring margins during berthing operations.

The risk arises not from individual operator performance, but from the concentration of multiple operational demands simultaneously rather than from individual operator performance. Consequently, collision risk is influenced not only by skipper competence but by the interaction of terminal design, berth configuration, waterway congestion, waterway use types, visibility constraints and competing attentional demands during the most complex phase of ferry operation.

46. Inadequacy of COLREGs reliance as a primary control for a largely untrained user population at Matilda Bay.

COLREGs establish legal navigation obligations and right-of-way rules but do not guarantee user awareness, understanding or compliance. The Matilda Bay user population includes children, novice participants, tourists, people with disabilities, casual recreational users, swimmers, paddlers and other waterway users who may have little or no formal navigation training and cannot reasonably be assumed to possess detailed knowledge of maritime rules.

Many users are not skippers, do not hold skipper qualifications and participate in activities where navigation rule awareness is not their primary focus. The effectiveness of COLREGs therefore depends on a level of awareness, judgement, situational understanding and decision-making capability that may not be consistently present across the full user population.

As a result, reliance on COLREG compliance as a primary risk control may overestimate the ability of vulnerable, inexperienced or informal users to reliably detect, interpret and respond to ferry movements. This is particularly relevant in an environment characterised by high user diversity, varying competency levels, congestion, low-profile craft and overlapping recreational activities.

The safety of the system depends on behavioural compliance by a large and diverse population for whom compliance cannot be assumed or consistently verified. Consequently, controls that rely primarily on user behaviour, awareness and rule adherence provide low assurance.

47. Children crossing ferry lanes to access water.

The terminal site selection means ferry routes will cross in front of club houses and marinas.

The terminal location sets a ferry route that creates an interaction between club members and ferries that is unavoidable. Sailors and rowers, including disabled sailors and junior rowers and sailors operating from existing club facilities will need to regularly cross the ferry approach and departure corridor to access training and sailing areas. Unlike incidental interactions, these crossings become a routine and foreseeable consequence of the terminal location and ferry route alignment.

Many of the affected users are children, novices and disabled participants undertaking learn-to-sail or learn-to-row programs. The risk arises from a system design that requires vulnerable users to repeatedly interact with a scheduled ferry operation as part of normal participation.

If ferries routinely yield, slow down, stop, deviate, and wait for crossings, then the timetable reliability and service frequency risks disruption. Managing this interaction through skipper operations can work reasonably well for one child in one dinghy. The challenge is multiple dinghies, rowers, paddlers, swimmers, powerboats and sailing fleets operating simultaneously where the skipper is not avoiding a single user but managing a dynamic system of users.

The risk cannot be eliminated through education, signage or navigation rules because the crossing requirement for vulnerable groups remains inherent to the operating arrangement.

48. Ferry and rowing collision precedent unreflected in risk baseline.

Multiple documented collisions on the Brisbane River between City Cat ferries and rowing shells, including incidents in 2005, 2008, 2012, and 2015 involving schoolchildren, demonstrate that this hazard class materialises in managed waterways with trained skippers and established codes of conduct. Brisbane River Code of Conduct developed as a result of these severe high risk collisions.

The rules established on the Brisbane River could not be replicated in Matilda Bay as ferry routes would bisect the sheltered water used by others and right of way rules around ferry terminals would either end recreational use of the Bay or create

unmanageable ferry service delays. The presence of a berth ferry always on charge and the multi berth terminal also makes it difficult for other water users to know when and which ferry will be leaving.

These incidents were excluded from the government's risk assessment. The Matilda Bay operating environment, a shallower and more confined bay with, more users and variety of water users and a more vulnerable user population, presents conditions at least as hazardous as the Brisbane River prior to its Code of Conduct being introduced.

49. Loss of Matilda Bay is irreplaceable as the only sheltered training environment on the Swan River.

Matilda Bay is the only location on the Swan River that provides shelter from the prevailing south-westerly sea breeze and offers suitable conditions for junior sailing, disability sailing, learn-to-row, and novice paddling. There is no alternative venue that replicates these conditions. The assumption that affected users could relocate reflects a fundamental misunderstanding of why this water space is used. The loss of the protected environment to ferry operations is permanent and cannot be mitigated by moving activities elsewhere.

50. Existing near-miss frequency establishes a non-zero risk baseline that ferry operations would substantially elevate that was unreflected in risk baseline.

Club members document existing near misses including power boats speeding through sailing fleets, capsizes in the path of powered craft, wash overturning paddleboarders and children learning to surf, and vessels almost struck at the boat ramp. These are occurring under the current low-powered-vessel regime with no scheduled ferry operations. The introduction of regular high-frequency ferry movements materially elevates a baseline that is already active.

51. Unpredictable behaviour of juniors and novices in proximity to large vessels is structurally unmanageable.

The system relies on predictable behaviour from water users, including novice and junior users. Club members with direct experience describe the inherent difficulty of managing risk when the junior and novice population does not behave predictably under pressure. Even very experienced sailors and rowers have been involved in collisions, wash impact events or near misses. The speed and manoeuvrability differential between a ferry and a human-powered or wind-powered craft means there is almost no margin for error when an inexperienced or young person on the water makes an unexpected movement.

52. Interaction with fishing and recreational equipment, including crab pot nets, in the bay create additional hazard in the ferry route.

Recreational crabbers routinely lay nets across the bay as standard practice. These activities introduce floated and submerged obstacles that may intersect ferry routes. Crab pot nets have the potential to ferry foul propulsion systems, or interfere with vessel manoeuvring, or routes. Ferry introduction can alter the behaviour or location of crab nets contributing to secondary collision or entanglement risks to other water users. Management of recreational crabbing activity is already challenging within the bay, cited already as a risk to existing users. Management of crab pots is already an unmanaged issue in the bay.

53. SUP Central WA — organised SUP instruction and hire operation identified as likely to close.

SUP Central WA operates organised stand-up paddleboard instruction and hire from the Matilda Bay foreshore. Multiple background documents identify this organisation as specifically at risk of closure. The owner has since confirmed they have closed the hire business at Matilda Bay. This represents a loss of an organised program that provided education to school groups and supported visitors to Matilda Bay.

The register captures recreational SUP users as an individual exposure group but does not identify the organised instruction and hire operation as a distinct institutional casualty. The closure of an organised SUP programme removes a safety layer — supervised instruction with trained operators present — and replaces organised water use with informal, unsupervised use, increasing risk to inexperienced paddlers.

SWIMMING

54. Swimmer collision with ferry.

Matilda Bay is extensively used for swimming because of its sheltered waters, accessible foreshore and calm conditions. The area attracts families, children, recreational swimmers and organised swimming activities, including events such as Swim Thru Perth. and the Greek Orthodox Swim for the Cross to name just a few.

Swimming activity is not limited to organised events. Reports from rowers indicate that open-water informal swimmers are encountered during early morning training sessions, while observations undertaken during the assessment period identified a large informal water-based activity (baptism) occurring within the proposed terminal area. There are known community organised events, not reflected in the official aquatic calendar but who use the area including the annual Greek Orthodox Epiphany “swim for the cross” celebrations. Therefore, the extent and frequency of informal swimming activity is not presently well characterised.

Anecdotal accounts suggest that informal night-time swimming may also occur, including following student social events. Such users may be more vulnerable due to low-light conditions, reduced situational awareness, impaired judgement or intoxication and the absence of formal supervision.

Swimmers are low-profile water users and can be difficult to detect from the helm of a larger vessel, particularly in low-light conditions, glare or where swimmers are dispersed rather than concentrated within a managed event area. Any person entering the water following a capsize or other incident also becomes a vulnerable swimmer.

Consequently, the introduction of scheduled ferry operations creates interaction between vessel movements and swimming activities within the bay. The significance of this interaction is influenced by the extent of informal swimming activity, which has not been comprehensively characterised. Open-water swimming already carries a participation barrier and ferry risk perception compounds it materially.

55. Wash and wake impact on swimming areas.

Ferry-generated wash will alter conditions experienced by swimmers, particularly within shallow foreshore areas used by children and inexperienced swimmers. While wash may not present a significant hazard to competent swimmers, changes in water movement

may affect comfort, confidence and perceived safety, particularly for younger children, families and novice users.

The sheltered nature of Matilda Bay is a key reason swimming activities occur in this location. That shelter is currently experienced at Matilda Bay as Pelican Point shields the foreshore of the bay from south-westerly sea breezes and the existing boats on swing moorings and sea grass act as wave absorption to easterly sea breezes reaching the foreshore. Any material change to those conditions affects the suitability of the area for recreational swimming.

58. Pile driving during ferry terminal construction activity degrades water quality sufficiently to render the water quality unsafe for swimming and impact on water quality during ferry operations.

Silt curtains help contain disturbed sediment but do not filter dissolved nutrients that may impact water quality in the area during construction. Loss of sea grass within the terminal construction footprint lowers the ability of the remaining sea grass to reoxygenate the water and repeated ferry movements can mobilise riverbed sediments that creates turbidity that can suffocate remaining sea grass, further lowering water quality levels.

Based on the available geotechnical, vessel design and vessel propulsion system and hydrodynamic information, there is a risk that routine ferry operations may result in ongoing sediment disturbance and turbidity generation within the low-energy basin of Matilda Bay.

SLR and underwater acoustics mapping confirms that construction impact piling noise of up to 45 piles are expected to be well above ambient levels. It is projected to be highly audible over 1km away due to over-water noise propagation, disrupting surrounding academic, institutional, wedding and hospitality businesses during construction.

56. Pontification regardless of any collision or incident.

Swimmers, families and children avoid the area due to the perceived unsafe environment created by the ferry.

57. Increased event costs threatening viability Australia's oldest Open Water Race Swim-Thru-Perth.

Additional water safety resources required to manage ferry interaction are a recurring cost.

ENVIRONMENTAL AND PHYSICAL

58. Wake and wash impact on the Matilda Bay shoreline and seagrass.

Matilda Bay's shallow bathymetry alters wave hydrodynamics. When a 24-meter vessel accelerates or decelerates in shallow water, it triggers a solitary wave of translation (a shallow-water surge). This specific type of wave does not dissipate like deep-water wake; it maintains its height and energy until it hits the shore, This increases the potential for shoreline erosion and hazardous conditions for low-freeboard craft operating close to the foreshore.

The bay has already eroded 5 to 10 metres since 1953, with limestone block walls installed along approximately 80% of the adjacent shoreline. The terminal site sits where the bank is unprotected.

Historical hardening of the foreshore, along with subsequent erosion, has resulted in a reduction of the functional beach width available for recreation.

Sustained ferry wake may amplify wave energy along the foreshore, accelerating erosion of the remaining natural bank, threatening trees, wall integrity, and beach areas. Existing erosion trends indicate that this section of shoreline is particularly sensitive to changes in wave climate.

Matilda Bay is characterised by a gently sloping sandy subtidal terrace extending approximately 30 metres from the shoreline. This terrace functions as an active sediment exchange zone, attenuating wave energy while providing nursery habitat for juvenile fish, crustaceans and benthic invertebrates. Artificial wake generated outside the natural wind-wave regime has the potential to increase sediment resuspension and offshore transport, reducing the capacity of the terrace to naturally replenish beach sediments. Repeated disturbance may progressively alter terrace morphology, accelerate foreshore recession and affect ecological communities dependent on stable sandy substrates.

Construction of the terminal would also remove approximately 34 swing moorings and around 0.37 hectares of seagrass, reducing existing wave attenuation within the bay while introducing a substantial fixed structure into an already dynamic sediment transport system. Such structures can interrupt longshore sediment transport, promoting localised erosion and scarp formation adjacent to the abutment. Historical aerial imagery demonstrates that shoreline response to similar structures has previously occurred within Matilda Bay, reflecting the bay's sensitivity to changes in sediment transport direction and prevailing wind conditions.

If continued shoreline recession causes the terminal abutment to progressively protrude further into the river, local erosion adjacent to the structure is likely to increase, requiring engineered stabilisation measures such as revetments or retaining walls. While such measures may reduce erosion, they would also further modify the natural foreshore by reducing direct access to the water and diminishing the recreational and landscape values that distinguish Matilda Bay as a sheltered public foreshore.

59. Wake study withheld and wash impacts unverified.

Matilda Bay is a low-energy setting, with its east-facing orientation providing shelter from prevailing south to southwest sea breezes as well as severe southwest to northerly winds typical of winter storms. Additionally, its position within a broad basin and away from a deep relict river channel determine that riverine and tidal flows are limited, with nearshore currents mainly wind driven. The greatest exposure at the proposed terminal site occurs during easterly winds, which can act across fetch distances of approximately 2.0 km. Wave impacts are largely determined by the combined effects of wind exposure across available fetch distances, shoreline orientation, and local morphology. Wash and wake impact was excluded from the government's risk assessment scope. The actual wash profile of the proposed vessel design in shallow, confined water had not been modelled against the specific conditions of Matilda Bay or its impact on water users who rely on the shelter of the Bay's geometry prior to decision on terminal site. A wake study is still being completed, meaning operational decisions about speed, route, and approach angles are being made without this evidence base and prior to disclosure with impacted stakeholders. The EPA non-assessment decision was based on only a "low-wash" design assumption. This represents a severe vulnerability under the Environmental Protection Act 1986.

60. Line-of-Sight Blockage from Multi-Vessel Terminal Docking:

The four-berth configuration creates a physical "wall" on the water. When multiple 25m ferries are berthed simultaneously, they completely block the line of sight between the shore and the river channel. A low profile craft such as a paddle board, rowing crew or swimmer cannot see an inbound ferry rounding the corner until they emerge from behind a berthed vessel, and a professional skipper cannot see the other river users until they emerge from behind a berthed vessel, creating an "blind intersection" collision hazard.

61. Ferry wash impact on wildlife, particularly small juvenile fish, crabs, and crustaceans, nesting swans and dolphins.

High-thrust propulsion systems (directional thrusters or quad-screws) required to manoeuvre a 24m vessel in tight berth space and at times against easterly wind conditions will cause benthic substrate scouring (tearing up the riverbed). This continuous underwater thrust during berthing will silt up the riverbed floor and cause sediment disturbance that can block sunlight required for healthy sea grass, impact water quality for swimming and fishing and result in costly maintenance dredging.

Black swans feed on juvenile fish in sea grass and nest along the Matilda Bay foreshore and dolphins regularly come close to the foreshore to feed in the seagrass beds. Swan cygnets are specifically vulnerable to being waterlogged by ferry wash. Sea walling makes it impossible for wildlife to feed in the water and nest on the foreshore. The loss of wildlife also reduces the natural attraction of the area to visitors.

62. Volunteer collapse at clubs.

Club's public liability exposure increases. River rules require every person on the water to respond to avoid collision, when the users present are young and inexperienced, this ability to respond to avoid a collision is not present, placing additional onus and responsibility on volunteer coaches and safety personnel who are not able to carry out the avoiding manoeuvre themselves, are trying to instruct inexperienced users who do not reliably respond.

If an incident occurs during a supervised session, the question of whether the coach took reasonable precautions becomes legally significant. The material increase in liability risk of club volunteers can decrease the number of volunteers willing to still volunteer at clubs, further increasing the risk of vulnerable water users on the water without sufficient supervision available.

The safety of Matilda Bay relies heavily on volunteer safety officers and senior coaches who possess decades of localised maritime knowledge. As these senior volunteers walk away from the clubs, it triggers an institutional safety culture collapse. The junior programs left behind will be run by less experienced personnel, drastically elevating the baseline risk for every child on the water. Risk of programs ending as club insurers determine risk is unacceptable or uninsurable liability and clubs unable to ensure their legal safety responsibilities can be met.

63. Loss of passive acoustic warning cues

Modern electric ferries operate with significantly reduced engine noise compared with conventional powered vessels. Rowers, night sailors, swimmers and other water users operating in darkness or low visibility often rely partly on auditory cues, including engine noise, to detect approaching powered craft. A quiet electric ferry reduces this warning cue. This is particularly relevant for rowers because they face backwards and may have limited visual awareness of an approaching vessel or blind sailors who solely rely on

audible cues. In low-light conditions, the combination of reduced visual detection and reduced acoustic warning may further reduce available reaction time.

FORESHORE ACCESS AND PUBLIC SAFETY

64. Ferry terminal physically bisects the bay, removing continuous foreshore access.

The 140-metre jetty structure divides the bay into two parts. Activities that currently occur continuously along the full length of the foreshore, including walking, crabbing, paddling, and swimming, would be interrupted or terminated at the terminal structure. This is a structural change to how the public uses the space that cannot be mitigated through operational controls. Paddlers who predominately use the foreshore and mooring area would require users to divert around the terminal. Many of these paddlers are informal and inexperienced users making it challenging to establish minimum distance rules that will be readily adhered to or understood. The water space makes it impossible to establish physical barriers to avoid close quarter activity of paddle craft near the terminal.

65. Supervised visibility of children lost due to terminal obstruction.

The jetty structure and associated infrastructure blocks sightlines from the foreshore across sections of the bay. Parents and carers supervising children swimming, paddling, or playing along the foreshore will lose line of sight across sections of the water. This is not currently a risk at Matilda Bay because there are no large structures interrupting the visual field.

The loss of supervisory sightlines is a safety degradation that applies across the entire visiting public population, not just organised water users.

The physical characteristic of the Matilda Bay beach makes it the safest family swimming beach on the river. The geometry of the bay makes the accessibility to the water with users congregating in the sheltered water section. Its gradual gradient is the same characteristic that makes it most vulnerable to ferry wash.

An engineering mitigation that protects the beach from wash destroys the gradient that makes it safe for children. This is not a trade-off that can be optimised.

66. Loss of 99 car parking bays materially reduces access for vulnerable foreshore users.

Elderly visitors, people with disabilities, parents with young children, and people carrying picnic and water equipment cannot reasonably access Matilda Bay without proximate parking. The loss of 99 bays would reduce convenient access to the foreshore for people with limited mobility or visitors transporting recreational equipment.

This group includes those who currently provide informal supervisory presence over children in and near the water. Any reduction in passive public presence reduces the level of informal observation that currently contributes to general safety and incident detection.

67. Public perception of safety change will reduce foreshore attendance and supervisory presence.

Survey responses indicated that 91% of respondents identified young children as regular users of Matilda Bay and that 88% of respondents expressing a view believed the ferry would make the bay less safe or much less safe.

If those perceptions influence visitation, reduced family attendance could decrease the level of passive surveillance currently provided by regular foreshore users and reduces the number of people available to respond to an incident.

Informal recreational users are not part of structured communication networks and may have limited awareness of ferry schedules, operational procedures or preferred crossing behaviour. This places greater reliance on the physical design of the terminal and ferry operations to maintain safe interaction with the broader public.

GOVERNANCE AND PROCESS

68. Risk assessment process integrity.

The available documentation indicates that the Government's risk assessment was developed from the 'ferry perspective' only.

The material reviewed provides limited evidence of a system assessment of informal and formal recreational water use, behavioural characteristics of casual users, or the interaction of vulnerable users, including children, novice paddlers and people with disability, with scheduled ferry operations at Matilda Bay.

Where responsibility for collision avoidance is allocated to other water users, this assumes an understanding of navigational rules and expected vessel behaviour that does not exist across the broader recreational population.

69. Community evidence overwhelmingly identifies JoJo's as the safer location.

84% of public survey respondents who expressed a preference identify JoJo's as easier to manage safely. Only 4% prefer Matilda Bay. No water user group, no club survey respondent group, and no public survey respondent group has produced a finding that Matilda Bay is the safer option.

The totality of community and operational evidence points consistently in one direction, and that direction is irreconcilable with the government's stated risk rationale for selecting Matilda Bay.

70. Mooring removal displaces 30+ boats with no confirmed relocation.

The proposed terminal requires removal of approximately 30 swing moorings within Matilda Bay, with no confirmed relocation site. These moorings represent private recreational assets. Their removal removes a natural wash buffer the moored vessels currently provide across the bay.

71. Road safety risk for pedestrians crossing Hackett Drive.

The proposed terminal introduces additional pedestrian movements across Hackett Drive, identified by survey respondents as a major and busy arterial road with no traffic

lights at the points where ferry passengers, UWA students, and the public would need to cross to access the terminal or connect to bus services.

The documents reviewed include the addition of a raised path across Hackett Drive, the risk to pedestrians in this area continues to be identified as a concern by those familiar with the area.

72. Increased bus and road traffic on Hackett Drive during peak ferry periods.

Project documents identify additional bus movements along Hackett Drive required to support the ferry service, with potential for traffic congestion in the area and conflicts with cyclists who already use the corridor.

Whilst a new pedestrian / cycling path has been identified within the project plans, the road is heavily used by large bunch cyclists who travel at speed and tend to remain on the road rather than follow a pedestrian / cycling path.

The traffic impact statement is in the project documents but the safety interaction between increased bus movements, cyclists, and pedestrians at this specific bottleneck does not appear to be captured as an operational risk, with interactions between large bunch cyclists, ferry drop offs and ferry passenger pedestrian flows to all coincide at peak periods.

ALL WATER USERS, SYSTEM LEVEL

73. No viable operating window avoids a high or critical conflict period.

Analysis of the conflict heat map across the proposed operating hours of 06:00 to 00:30 identifies no time window that avoids a high or critical conflict cell across the weekly schedule.

Late evening cells from 20:00 on weekdays are the closest to manageable, but these involve a silent electric vessel in darkness on a waterway where rowing crews and night sailing events occur.

The only cells approaching low conflict are isolated to Monday, Thursday, and Sunday late evenings, outside any viable peak demand window.

There is no configuration of a viable ferry timetable that avoids the critical conflict periods identified in the survey data.

74. PTA ferry service contract creates a structural incentive to prioritise schedule over safety.

The Public Transport Authority contracts ferry service providers under incentivised scheduling agreements. Compliance standards drawn from the existing Transperth contract structure include: no early departures permitted; no more than 4 minutes late; 98% compliance target across all trips; continuous auditing of 100% of trips; and escalating damages for non-compliance with contract renewal implications.

In a constrained mixed-use recreational waterway, ferry operators do not control congestion, the speed and behaviour of unpowered water users, weather conditions, or recreational boating unpredictability.

The combination of strict punctuality metrics, continuous auditing, and escalating financial consequences creates structural pressure toward: higher transit speeds; tighter manoeuvring margins; reduced willingness to yield; and operational resistance to ad hoc slowdowns caused by river users.

The contractual framework itself becomes a risk driver that is structurally incompatible with the adaptive, situational decision-making that safe navigation in this environment requires.

75. Multi-factor risk interaction, simultaneous alignment of speed differential, congestion, low visibility, and vulnerable users produces a qualitatively different risk profile.

Individual risk factors at Matilda Bay are manageable in isolation: a congested waterway with low-speed unpowered vessels is manageable; a low-visibility situation with few vessels in a wide navigation channel is manageable; speed differences in open water are manageable.

The problem is that Matilda Bay at peak periods combines all of these factors simultaneously, in a confined space, with the most vulnerable user groups present.

The most dangerous situations described in the survey are not single-factor events. They occur when speed difference, congestion, low visibility, and a vulnerable user align simultaneously, a junior dinghy capsizing in a congested start area during afternoon racing, with power boats transiting at above-limit speed, in conditions where the capsized vessel is at water level and hard to see.

This is a system design problem, not a traffic management challenge.

A ferry master operating a fixed-route scheduled service would be required to navigate through a waterway with 100 to 200 vessels of incompatible types, operating under different rule sets, with varying manoeuvrability, including capsized vessels at water level, rowers facing backward, juniors in dinghies attending to their sailing rather than their surroundings, and disability sailing participants with limited ability to respond.

This cannot be resolved by operator skill or training.

76. Narrows channel as a structural convergence bottleneck on the ferry route.

All vessel traffic using the Narrows corridor is funnelled through a narrow deep-water passage due to shallow water to the east, causing rowing shells, ferries, and recreational powerboats to converge in a constrained passage with no viable alternative routing. This high-congestion chokepoint is rated High in the survey observational analysis.

The proposed ferry route traverses this corridor at regular intervals, adding a scheduled high-frequency vessel to an already constrained space where multiple vessel types with incompatible performance characteristics converge without separation. This is a structural geometric constraint.

77. Vessel design and terminal configuration lock in operating speed, procurement decision is a safety decision.

A technically detailed submission from a former ferry vessel tenderer identifies that the operating speed of the proposed service is driven primarily by the need to make up time lost turning the vessel at each terminal end, estimated at approximately two minutes per turn.

If a double-ended vessel design is adopted, the requirement for the reversing and turning manoeuvre is removed from the terminal design, operating speed can reduce materially, and with it the risk profile. At 9.5 knots on a JoJo's to Canning Bridge route, the same submitter finds interaction with existing users would be minimal.

The vessel procurement and timetable design decisions are therefore as consequential to the safety outcome as the terminal location itself.

This connection between terminal design, vessel design, and operating speed has not been fully captured in the government's system design and risk assessment, and decisions about terminal and vessel design are proceeding without this risk linkage, to the required speeds that the ferry will therefore need to achieve to maintain schedule, being made explicit.

78. Crabbing season adds an uncoordinated and unpredictable vessel use layer at peak congestion zones.

The crabbing season, December to April, adds a distinct, uncoordinated use layer to the Knot Spit to Poplar to Crawley buoy triangle, which is already rated High congestion as a zone used simultaneously by multiple sailing classes with converging fleets at buoy roundings.

Recreational crabbers operate tinnies and small powered craft; their movements are mostly unpredictable within this corridor. The ferry register notes crab pot nets as a propulsion fouling hazard (R44) but does not capture crabbers as a distinct vessel type adding collision and congestion risk at a congestion chokepoint that the ferry route traverses.

JoJo's / Nedlands Jetty Ferry Option

SAILING AND YACHT CLUBS

1. Collision between ferry and sailing vessel.

Some sailing course markers are close to the JoJo's location. Catastrophic consequence given the speed differential between the ferry and unpowered sailing craft. Residual risk is reducible to medium through course marker relocation allowing separation, and reduced ferry speed during sailing activities. Good communication between ferry operators and sailing clubs is the primary control pathway.

2. Sailing vessel collides with another craft due to ferry activity.

Some sailing course markers are close to the JoJo's location. Open water geometry and lower traffic density than Matilda Bay provide more room to manage displacement effects from ferry movements.

3. Sailing vessel capsize from ferry wash.

Sailing racing in proximity to the terminal mean some sailing activity occurs close to the ferry approach. COLREGs, altered path to avoid capsized vessel and reduced ferry speed during sailing activities is an effective and achievable control in open water, unlike in a confined bay. Experience levels of sailors racing in this corridor is higher so the likelihood of sail boat capsize is less than in Matilda Bay.

4. Sailing vessel fails to give way to ferry.

Sailing course markers on approach to the JoJo's location create interaction between sailing craft and the ferry route. Residual risk reducible to medium through marker relocation that allows traffic separation, and speed reduction during sailing events.

WINDSURFING AND KITE-BOARDING

5. Windsurfer collision with ferry.

Windsurfers operate predominantly in Melville Water West. The Pelican Point site is used for launching with the majority of windsurfers remaining in the shallow water in this area that is unsuitable for the ferry, remaining separated from the ferry approach path.

Some windsurfers could occasionally cross the ferry transit route when travelling between Pelican Point and Melville Waters. A collision with a ferry would have potentially major consequences, however, the likelihood is considered unlikely because the experienced windsurfers who may venture in deeper water and cross the ferry route are generally experienced and accustomed to crossing navigational channels in open water, where there is far more open water to avoid conflict.

These windsurfers are highly manoeuvrable and have good visibility from an elevated field of view compared with paddlers or rowers who sit lower to the water.

A designated channel within the Pelican Point area which largely already exists marked by yellow buoys around the Marine Park boundary would reduce residual interaction risk.

6. Windsurfer collides with another craft due to ferry activity.

The introduction of regular ferry transits may concentrate recreational users into narrower areas, particularly during higher wind conditions. While the ferry may not directly collide with a windsurfer, its presence may indirectly increase the likelihood of collisions between windsurfers and other recreational craft as users alter course to avoid ferry movements.

Windsurfers are present in strong wind conditions when many calm users are absent, including lower presence of recreational power traffic. The open water of Melville Water East provides windsurfers with substantial freedom to manoeuvre, alter course and avoid other users reducing the likelihood of this risk occurrence.

7. Windsurfer fails to give way to ferry.

Windsurfers may intentionally approach or ride ferry wash in open water and may delay altering course while interacting with ferry movements. The likelihood is considered possible because some windsurfers deliberately operate in proximity to vessel wash. This risk is manageable by the predictability of the ferry route through open water, where windsurfers interacting with wash are positioned behind a ferry travelling in a forward direction.

The high manoeuvrability of windsurfers, combined with the skill level of windsurfers who choose to interact with vessel wash, provides opportunities to safely avoid conflict where there is sufficient open water for course alteration and recovery if needed.

8. Kite-boarder interaction with ferry route.

Kite-boarders predominantly launch from Pelican Point and generally launch and operate within the shallow waters of Pelican Point, although some users venture into the adjacent open water where the proposed ferry route is located. Kite-boarders are capable of travelling at high speed and may cross the ferry route. In addition to collision risk, kite lines present a potential entanglement hazard if a kite passes in close proximity to a vessel.

The consequence of a collision or entanglement would be major; however, the likelihood is considered unlikely, reflecting differing evidence regarding the frequency of interaction. Exposure time is low because most activity remains close to Pelican Point, kites are highly visible over long distances, and interactions occur in open water where both the ferry and kite-boarders have greater opportunity to manoeuvre and maintain separation.

OPERATIONAL AND ROUTE

9. Ferry route crossing conflict at the navigational channel.

The route to JoJo's requires navigating a crossing situation at the main navigational channel west of the site. Vessels coming up the channel must stop and wait for the ferry, or the ferry must slow and pass behind recreational craft.

This is a conventional and manageable give-way crossing situation between powered vessels and would be carried out in open water, between trained and licensed boat skippers and where there are clear and direct sight-lines, predictable transit paths as well as sufficient open water space and time to alter course.

While this crossing represents an operational consideration, similar crossing conflicts would also occur for a Matilda Bay terminal, where the same navigational channel would still need to be crossed and where there would be additional crossing situations including interactions with vessels entering and leaving the public boat ramp and unpowered recreational users entering and leaving the bay.

Compared with Matilda Bay, the JoJo's crossing occurs within a wider navigable channel where sight-lines are clear, vessel movements are generally predictable, there is less congestion, lower speed differentials between crossing crafts and greater opportunities for early collision avoidance.

10. Ferry route complexity through the inner dolphin.

The proposed route requires navigating around the inner and outer dolphin markers before approaching the terminal. Although the manoeuvre increases navigational complexity compared with a straight-line approach, it occurs in open water with good visibility. in an area where other water users may be present.

Weekend racing fleets, recreational powerboats and ferry movements converge near Outer Dolphin, where ferry operations will interact with other vessels, particularly during peak sailing periods. The exposure is predominantly limited to experienced sailors and powerboat operators navigating a well-established navigation area and predictable directions of travel.

The risk is further reduced by the Open-water environment, which provides good sightlines and manoeuvring space, allowing early collision avoidance. A possible relocation of the Outer Dolphin marker would further increase separation between ferry traffic and recreational vessels, and reduced ferry speed during the terminal approach provides additional time for hazard detection and evasive manoeuvring.

11. Wind exposure and sea breeze docking

The JoJo's site is more exposed to the south-westerly sea breeze than Matilda Bay, which can make docking more challenging in strong afternoon conditions. Configuration of berthing and pontoons can act as a wave attenuator to substantially mitigate this. Wind exposure is an engineering and operational challenge.

INFRASTRUCTURE AND ENVIRONMENT

12. Flooding risk to landside electrical charging infrastructure.

The JoJo's site is located at a relatively low elevation adjacent to the Swan River and is therefore exposed to coastal hazards during extreme flood events. The principal consequence is potential inundation of landside electrical charging infrastructure and associated operational disruption and replacement costs. The likelihood is considered unlikely, due to the low occurrence and as contemporary engineering practice routinely addresses these risks through flood-resilient design.

The available engineering information indicates that the fixed jetty level is proposed to be set at approximately the 1-in-100-year Average Recurrence Interval (ARI) still water level, with allowance for 0.46 m of projected sea level rise. The finished floor level and electrical infrastructure can be further protected through elevated installation, flood-proofing measures and appropriate equipment selection. Similar flood exposure exists at other ferry terminals and foreshore infrastructure throughout the Swan River.

Consequently, while flooding is a design consideration, it is considered a manageable engineering risk rather than a determining constraint on site suitability.

DATA AND PROCESS

13. Contested water use data for the JoJo's area.

DTMI characterised the JoJo's area as being heavily utilised by recreational water users. During stakeholder consultation, this characterisation was consistently challenged in comparison to the utilisation of Matilda Bay. This was directly and consistently disputed by every water user group at the July 2025 session.

If DTMI's activity volume assumptions of recreational activity within the JoJo's area has been overestimated, the resulting likelihood exposure rating and overall risk ratings derived from them are similarly overstated, meaning actual risk exposure at JoJo's may be lower than assessment records.

Conversely, if informal and passive recreational use within Matilda Bay was not comprehensively identified or mapped, the relative risk exposure of Matilda Bay has not been fully presented or considered. may have been underestimated.

14. JoJo's foreshore seawall prevents casual water access and creates a fall hazard.

Unlike Matilda Bay, the JoJo's foreshore is characterised by a seawall rather than a gently sloping beach. This substantially reduces casual entry into the water by swimmers, families and other informal recreational users. This was cited by many survey respondents as a reason the site is more appropriate for a ferry terminal.

It also means any members of the public who do attempt to access the water at JoJo's after the terminal opens face a fall hazard from the seawall edge, particularly if ferry passenger numbers attract more general public to the precinct. This is a low-level risk but one that does not exist at Matilda Bay and should be noted.

Any increase in pedestrian activity associated with the terminal should be addressed through standard waterfront safety measures, including edge protection, lighting, signage and emergency access.

ADDITIONAL

15. Ecological sensitivity - proximity to Pelican Point Ramsar-listed wetland.

A marine park sits adjacent to the JoJo's area. An independent review by Associate Professor Mike van Keulen concluded that the available environmental evidence did not support dismissing the Nedlands Jetty option on environmental grounds.

The review identified reduced construction disturbance associated with the existing jetty, absence of adjacent seagrass, reduced sediment disturbance due to deeper water, and no apparent increase in risk to the Pelican Point Ramsar-listed wetland compared with the Matilda Bay proposal.

Conversely, the Matilda Bay proposal was identified as requiring greater construction activity with associated risks relating to seagrass clearing and disturbance, sediment mobilisation, acid sulfate soils and shoreline erosion.

The Matilda Bay and Nedlands Jetty locations are equidistant from the Pelican Point bird habitat, requiring operational consideration for both sites, with the deeper waters at Nedlands Jetty assisting in reducing environmental impacts during ferry operations.

Annex B - Document Register

This register identifies the principal documents, datasets, stakeholder material, operational information and independent observations considered in forming the opinions contained within this review. It provides transparency regarding the breadth of evidence reviewed and supports the independence of the assessment.

DOCUMENTARY EVIDENCE REVIEWED

This review has been prepared through analysis of Government planning, environmental, engineering and regulatory documentation relating to the proposed METRONET on Swan Ferry Service Expansion. This review also analysed independent expert evidence, stakeholder submissions, consultation records, legislation, waterway activity and safety surveys and independent week-long water observations, club activity registers and incident records, Freedom of Information material, maritime incidents and relevant technical literature.

GOVERNMENT PLANNING, DESIGN AND ENVIRONMENTAL DOCUMENTATION

Primary Government documentation relating to the planning, design, environmental assessment and approvals for the METRONET on Swan Ferry Service Expansion, including:

- Summary of the Feasibility Study and Business Case (Parliament of Western Australia)
- Project Overview and Frequently Asked Questions (Public Transport Authority)
- Summary of the Multi-Criteria Analysis
- Environmental Review Document
- Environmental Assessment Report
- Development Application
- Transport Impact Statement
- Coastal Processes and Hazard Assessment
- Coastal Process Impact Assessment
- Ferry Charging Infrastructure
- Architectural Reference Design
- Decision Making Authorities Table
- WAPC Development Approval
- EPA Determination
- Clearing Permit

PLANNING POLICY, STRATEGY AND LEGISLATIVE FRAMEWORK

Planning strategies, management plans, Government policy and legislation relevant to the assessment, including:

- Work Health and Safety Act 2020 (WA)
- Swan and Canning Rivers Management Act 2006
- Western Australian Marine Act 1982
- Prevention of Collisions in State Waters Regulations 1983
- Navigable Waters Regulations 1958
- Corporate Policy Statement No. 42
- Matilda Bay Reserve Management Plan
- Matilda Bay Precinct Plan
- UWA–QEII Activity Centre planning documents
- Department of Biodiversity, Conservation and Attractions planning guidance
- Public Transport Authority strategic objectives and performance measures

EXISITING CONDITIONS AND BASELINE WATERWAY INFORMATION

Existing environmental and operational information on current conditions, including:

- Swan Canning Riverpark Aquatic Use Review
- Nautical Charts
- GIS Mapping
- Bathymetric data
- Hydrodynamic studies
- Curtin University full-scale boat wake and wind wave trials on the Swan River
- Strava Global Heatmap
- Club Activity Register Analysis: Fey Findings. Drawn from club activity registers and incident histories submitted by eight clubs on Matilda Bay and the Swan River. Covering the periods between February 2026 – April 2026.
- Waterway use and safety survey
- Structured drone and ground observation programme between 8th – 14th April 2026 across both sites
- Waterway course mapping: (UWA Boat Club, UWA Outdoor Club, Royal Perth Yacht Club, Perth Dinghy and Sailing Club, Mounts Bay Sailing Club, South of Perth Yacht Club, Nedlands Yacht Club, Windsurfing WA, Sailability WA, Fishability WA, Shenton College, Hale School, Paddling WA)

INDEPENDENT TECHNICAL REVIEWS AND EXPERT EVIDENCE

Independent engineering, environmental and maritime reviews prepared by:

- Z Marine – Marine engineering consultants specialising in maritime infrastructure and jetty design
- Associate Professor Gregor MacFarlane – Naval Architect specialising in vessel wake, wash and hydrodynamics
- Associate Professor Mike van Keulen – Dean of Environmental and Conservation Sciences, Murdoch University; Chair, IUCN Species Survival Commission for Seagrasses
- Scott Goodbody – Commercial Skipper (Master <24 m), Marine Engine Driver Grade 1, former Swan River Ferry Operations Manager
- John Burrows – Former UWA Campus Manager and manager of the previous UWA ferry service
- Leon Griffiths – Former Matilda Bay Operations Manager and member of the joint agency committee that developed the Swan River Management Strategy
- Alex Watson – Town Planner consultant

STAKEHOLDER SUBMISSIONS, CONSULTATION AND OPERATIONAL EVIDENCE

Operational information and consultation material:

- Public Transport Authority May 2025 and July 2025 stakeholder workshops
- Community and business stakeholder submissions
- Stakeholder submissions to Government: (University of Western Australia, UWA Boat Club, Australian Sailing, Rowing WA, Yachting WA, Royal Perth Yacht Club, Perth Dinghy and Sailing Club, Mounts Bay Sailing Club, Windsurfing WA, Sailability WA, Fishability WA, Safety on Swan, SportWest, Shenton College)

WATERWAY RULES, STANDARDS AND INDUSTRY GUIDANCE

Reference material used to assess navigation, maritime safety and infrastructure planning, including:

- Boating Rules in WA
- Swan Canning Riverpark Boating Guide
- Paddle Craft Safety
- Windsurfing and Kiteboarding Safety
- Marine Safety Equipment guidance
- PIANC Harbour Approach Channel Design Guidelines

FREEDOM OF INFORMATION MATERIAL AND GOVERNMENT CORRESPONDENCE

Government correspondence and Freedom of Information releases obtained from:

- Office of the Deputy Premier
- Department of Transport and Major Infrastructure
- Public Transport Authority
- Western Power
- City of Nedlands

SUPPORTING LITERATURE

Additional planning, transport, environmental and historical publications reviewed to provide broader context to the assessment, including Government reports, management plans, policy documents and technical literature relevant to ferry operations, waterway management, incident records, coastal processes and public infrastructure planning.