



Government of **Western Australia**  
Public Transport Authority

**Request**  
**No. PTA250023**

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# **DESIGN AND CONSTRUCTION OF ELECTRIC PASSENGER VESSELS FOR THE TRANSPERTH FERRY SERVICE**

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**SPECIFICATION**

**BOOK 4 OF 4**

Request Closes:  
11.00 am Western Australian Time on Wednesday 21  
May 2025

Enquiries:  
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	STATEMENT	TYPE	PRIORITY	VERIFICATION
		<u>Heading</u> <u>Information</u> <u>Constraint</u> Requirement	<u>Desirable</u> <u>Important</u> n/a	<u>Third-Party</u> <u>Certification</u> <u>Analysis</u> <u>Demonstration</u> <u>Test</u> n/a
	<b>1. GENERAL</b>	Heading	n/a	n/a
	<b>1.1 Background</b>			
A.01	The Public Transport Authority of Western Australia (PTA) is focused on providing a better future for Western Australians through connected, resilient, safe, and sustainable public transport. The PTA delivers accessible, reliable, and safe public transport through the provision of metropolitan rail, bus and ferry services and regional services, country rail and coach services as well as regional school bus services.	Information	n/a	n/a
A.02	Transperth currently operates a passenger ferry service between Mend St Jetty (South Perth) and Elizabeth Quay Jetty (Perth) utilizing two low-wash aluminium ferries with conventional diesel engines.	Information	n/a	n/a
A.03	Transperth is expanding its ferry network to link Applecross (AP) and Matilda Bay, Nedlands (MB) with Elizabeth Quay, Perth (EQ) utilizing new low-wash battery electric ferries.	Information	n/a	n/a
A.04	Transperth undertook an EOI in 2024 seeking feedback from the local vessel manufacturing industry on an appropriate design for the ferries and capability of the local industry to deliver the requested features and performance requirements for the vessels, as well as the possible timeframes over which manufacturing and supply could be undertaken for varying numbers of vessels.	Information	n/a	n/a
A.05	The 2024 PTA240480 EOI included an indicative General Arrangement drawing ( <i>IC23210-011-00-02-REV-P6-General Arrangement - Electric Vessel.pdf</i> ), outline specification and vessel renders to articulate the development of solutions to meet the requirement. Respondents must ensure that their proposed design is substantially consistent with the General Arrangement.	Information	n/a	n/a
	<b>1.2 Intent</b>	Heading	n/a	n/a
A.06	This Function and Performance Specification (FPS) is intended to outline the minimum requirements for the New Transperth Ferry Vessel (NTFV).	Information	n/a	n/a
A.07	Requirements within this FPS are annotated to indicate their relative weighting in accordance with the Priority rating (i.e. Desirable or Important).	Information	n/a	n/a

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.08	In the event of a conflict between the text of this FPS and the references cited herein, the text of this FPS takes precedence. Nothing in this FPS, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.	Information	n/a	n/a
A.09	This FPS refers to both general requirements and requirements that may be taken as more specific to the NTFV. In the event of a conflict between the text of these general and specific references, the text of the more specific reference takes precedence.	Information	n/a	n/a
A.10	Should a conflict be identified, either between the requirement statements within this FPS, or where the precedence of references is ambiguous, then this should be resolved through discussion with the Client.	Information	n/a	n/a
	<b>1.3 List of Reference Documents</b>	Heading	n/a	n/a
A.11	PTA240480 EOI General Arrangement drawing (IC23210-011-00-02-REV-P6-General Arrangement)	Information	n/a	n/a
A.12	PTA240480 EOI Brief Specification (IC23210-003-00-01 REV P3 Brief Specification)	Information	n/a	n/a
A.13	PTA240480 EOI Vessel Renders 1-13 (IC23210-013-00-02-P4 (1-13))	Information	n/a	n/a
A.14	PTA 8880-700-004 Rev 5 PTA Urban Asset Security Closed Circuit Television (CCTV) Design and Installation	Information	n/a	n/a
A.15	PTA 8880-700-851 - Preferred Equipment List for Communication Systems	Information	n/a	n/a
	<b>2. VESSEL - GENERAL</b>	Heading	n/a	n/a
	<b>2.1 Particulars</b>	Heading	n/a	n/a
A.16	The NTFV shall be a catamaran passenger ferry	Constraint	Important	Inspection
A.17	The NTFV Measured Length shall not exceed 24.0 metres	Constraint	Important	Third-Party Certification
A.18	The NTFV extreme draft in the design deadweight condition shall not exceed 1.1 metres.	Constraint	Important	Third-Party Certification
A.19	The NTFV freeboard, at the boarding gate, in the design deadweight condition shall be 600 mm to match the freeboard of the existing Transperth shoreside facilities.	Constraint	Important	Inspection
A.20	The NTFV fender belting in the Light Loaded condition shall not sit higher than 680 mm from the water surface.	Constraint	Important	Inspection
A.21	The NTFV air draft in the light loaded condition shall not exceed 3.00 metres.	Constraint	Important	Inspection
A.22	The NTFV air draft requirement of 3.0 metres is to allow the NTFV to pass beneath the Perth Causeway Bridge which has a stated minimum clearance of 2.9 metres. NTFV passage would be undertaken at a suitable tide level (except when the Swan River is in flood).	Information	n/a	n/a

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.23	The NTFV shall be fitted with a battery electric propulsion system	Requirement	Important	Inspection
	<b>2.2 Vessel Operation</b>	Heading	n/a	n/a
A.24	The NTFV will undertake passenger transportation operations by day and night.	Information	n/a	n/a
A.25	The area of operation shall be the Swan River in Perth, Western Australia.	Information	n/a	n/a
A.26	The Stage 1 NTFV route legs will be:	Information	n/a	n/a
A.27	a) Elizabeth Quay (EQ) to Matilda Bay (MB)	Information	n/a	n/a
A.28	b) Matilda Bay (MB) to Applecross (AP)	Information	n/a	n/a
A.29	The full NTFV route cycle shall be EQ to MB, MB to AP, AP to MB and MB to EQ	Information	n/a	n/a
A.30	<p>The estimated full NTFV total timetable circuit time from Elizabeth Quay, as shown in the table below is 76 minutes. This comprises an in-service travel time of approximately 56 minutes and 20 minutes berthing time for 4 stops, 5 minutes at each stop.</p> <ul style="list-style-type: none"> <li>a) Total distance is estimated to be 10.1 nautical miles.</li> <li>b) Maximum speed in open waters is 25 knots. Average speed in open waters is 20 knots and restricted area speeds of 8 knots and 5 knots are applicable for the distances shown.</li> </ul> <p>Opportunity charging will be utilised during in service stops at Matilda Bay, and one spare vessel will be used to swap in and out of service to enable vessels to be totally recharged at Matilda Bay, as required, to enable the service to maintain continuous operation as per the timetable.</p> <p>Based on timings, a timetable of approximately 25 minutes is expected.</p>	Information	n/a	n/a

	STATEMENT	TYPE	PRIORITY	VERIFICATION																																																																																																																																																																																																						
	<table><tr><th colspan="3">Timings</th><td></td><td></td><td></td></tr><tr><th>Speed</th><th>Knots</th><th>KPH</th><td></td><td></td><td></td></tr><tr><td>Ave Open Speed Travel (Max 25 Knots)</td><td>20</td><td>37.04</td><td colspan="3">Includes Speed Exemption Areas</td></tr><tr><td>Restricted Apeed Area</td><td>8</td><td>14.82</td><td></td><td></td><td></td></tr><tr><td>Acceleration and Deceleration EQ</td><td>5</td><td>9.26</td><td></td><td></td><td></td></tr><tr><th colspan="3">Berthing Times</th><td></td><td></td><td></td></tr><tr><td>Berthed Matilda Bay (A)</td><td>00:05:00</td><td></td><td></td><td></td><td></td></tr><tr><td>Berthed Matilda Bay (B)</td><td>00:05:00</td><td></td><td></td><td></td><td></td></tr><tr><td>Berthed Applecross</td><td>00:05:00</td><td></td><td></td><td></td><td></td></tr><tr><td>Berthed Elizabeth Quay</td><td>00:05:00</td><td></td><td></td><td></td><td></td></tr><tr><th>Route Segment Description</th><th>Speed</th><th>Speed</th><th>Measured Distance</th><th>Measured Distance</th><th>Time</th></tr><tr><td></td><th>(knots)</th><th>(km/hr)</th><th>(km)</th><th>(nm)</th><th>(mins)</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Leave Elizabeth Quay</td><td>5</td><td>9.26</td><td>1.00</td><td>0.54</td><td>0:06:29</td></tr><tr><td>Elizabeth Quay -Matilda Bay (UWA)</td><td>20</td><td>37.04</td><td>2.17</td><td>1.17</td><td>0:03:31</td></tr><tr><td>Approach Matilda Bay (UWA)</td><td>8</td><td>14.82</td><td>1.00</td><td>0.54</td><td>0:04:03</td></tr><tr><td>Matilda Bay (UWA) Berthed</td><td>0</td><td>0</td><td>0.00</td><td>0</td><td>0:05:00</td></tr><tr><td>Leave Matilda Bay (UWA)</td><td>8</td><td>14.82</td><td>1.57</td><td>0.85</td><td>0:06:22</td></tr><tr><td>Matilda Bay (UWA) - Applecross</td><td>20</td><td>37.04</td><td>2.96</td><td>1.6</td><td>0:04:48</td></tr><tr><td>Approach Applecross</td><td>8</td><td>14.82</td><td>0.63</td><td>0.34</td><td>0:02:33</td></tr><tr><td>Applecross Berthed</td><td>0</td><td>0</td><td>0.00</td><td>0</td><td>0:05:00</td></tr><tr><td>Leave Applecross</td><td>8</td><td>14.82</td><td>0.61</td><td>0.33</td><td>0:02:28</td></tr><tr><td>Applecross - Matilda Bay (UWA)</td><td>20</td><td>37.04</td><td>2.96</td><td>1.6</td><td>0:04:48</td></tr><tr><td>Approach Matilda Bay (UWA)</td><td>8</td><td>14.82</td><td>1.56</td><td>0.84</td><td>0:06:18</td></tr><tr><td>Matilda Bay (UWA) Berthed</td><td>0</td><td>0</td><td>0.00</td><td>0</td><td>0:05:00</td></tr><tr><td>Leave Matilda Bay (UWA)</td><td>8</td><td>14.82</td><td>0.98</td><td>0.53</td><td>0:03:59</td></tr><tr><td>Matilda Bay (UWA) - Elizabeth Quay</td><td>20</td><td>37.04</td><td>2.15</td><td>1.16</td><td>0:03:29</td></tr><tr><td>Approach Elizabeth Quay</td><td>5</td><td>9.26</td><td>1.09</td><td>0.59</td><td>0:07:05</td></tr><tr><td>Elizabeth Quay Berthed</td><td>0</td><td>0</td><td>0.00</td><td>0</td><td>0:05:00</td></tr><tr><td>Total Distance /Time</td><td></td><td></td><td>18.69</td><td>10.1</td><td>1:15:53</td></tr><tr><td></td><td></td><td></td><td></td><td>Travel Time</td><td>0:55:53</td></tr><tr><td></td><td></td><td></td><td></td><td>Berth Time</td><td>0:20:00</td></tr><tr><td></td><td></td><td></td><td>Ave Speed</td><td>10.8</td><td></td></tr></table>	Timings						Speed	Knots	KPH				Ave Open Speed Travel (Max 25 Knots)	20	37.04	Includes Speed Exemption Areas			Restricted Apeed Area	8	14.82				Acceleration and Deceleration EQ	5	9.26				Berthing Times						Berthed Matilda Bay (A)	00:05:00					Berthed Matilda Bay (B)	00:05:00					Berthed Applecross	00:05:00					Berthed Elizabeth Quay	00:05:00					Route Segment Description	Speed	Speed	Measured Distance	Measured Distance	Time		(knots)	(km/hr)	(km)	(nm)	(mins)							Leave Elizabeth Quay	5	9.26	1.00	0.54	0:06:29	Elizabeth Quay -Matilda Bay (UWA)	20	37.04	2.17	1.17	0:03:31	Approach Matilda Bay (UWA)	8	14.82	1.00	0.54	0:04:03	Matilda Bay (UWA) Berthed	0	0	0.00	0	0:05:00	Leave Matilda Bay (UWA)	8	14.82	1.57	0.85	0:06:22	Matilda Bay (UWA) - Applecross	20	37.04	2.96	1.6	0:04:48	Approach Applecross	8	14.82	0.63	0.34	0:02:33	Applecross Berthed	0	0	0.00	0	0:05:00	Leave Applecross	8	14.82	0.61	0.33	0:02:28	Applecross - Matilda Bay (UWA)	20	37.04	2.96	1.6	0:04:48	Approach Matilda Bay (UWA)	8	14.82	1.56	0.84	0:06:18	Matilda Bay (UWA) Berthed	0	0	0.00	0	0:05:00	Leave Matilda Bay (UWA)	8	14.82	0.98	0.53	0:03:59	Matilda Bay (UWA) - Elizabeth Quay	20	37.04	2.15	1.16	0:03:29	Approach Elizabeth Quay	5	9.26	1.09	0.59	0:07:05	Elizabeth Quay Berthed	0	0	0.00	0	0:05:00	Total Distance /Time			18.69	10.1	1:15:53					Travel Time	0:55:53					Berth Time	0:20:00				Ave Speed	10.8				
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A.31	There shall be five (5) NTFVs in the fleet with each NTFV identical in every respect.	Information	n/a	n/a																																																																																																																																																																																																						
A.32	The operating profile of each NTFV shall be: a) Vessel operations 330 days / year b) Vessel operations 18 hours / day	Requirement	Important	Analysis																																																																																																																																																																																																						
A.33	Each NTFV shall be manned as follows: a) Master b) Deck hand (Watchkeeper)	Information	n/a	n/a																																																																																																																																																																																																						

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	<b>2.2.1 Range/Endurance</b>	Heading	n/a	n/a
A.34	<p>The NTFV shall have the ability to complete 1 complete route cycle commencing from Elizabeth Quay and returning to Matilda Bay, subject to the following conditions:</p> <ul style="list-style-type: none"> <li>- maintaining the speed as detailed in the route speed profile:</li> <li>- with minimum 20% battery capacity of the normal operating depth of discharge remaining at completion.</li> <li>- operating in the Full Load Condition; and</li> <li>- operating in the Design Environmental Conditions.</li> </ul>	Requirement	Important	Test
	<b>2.2.2 Speed</b>	Heading	n/a	n/a
A.35	<p>The NTFV shall be capable of a maximum speed of at least 25 knots, subject to the following conditions:</p> <ul style="list-style-type: none"> <li>- in the Full Load Condition:</li> <li>- propulsion motors operating at 90% MCR; and</li> <li>- operating in the most onerous of the Design Environmental Conditions</li> </ul>	Requirement	Important	Test
	<b>2.2.3 Manoeuvrability</b>	Heading	n/a	n/a
A.36	The NTFV shall be capable of the following manoeuvres:	Requirement	Important	Test
A.37	Turn 180°, to port or starboard, at near zero speed within own length in the most onerous of the Design Environmental Conditions	Requirement	Important	Test
A.38	Navigate in reverse at near zero speed whilst berthing in the most onerous of the Design Environmental Conditions	Requirement	Important	Test
	<b>2.2.4 Tunnel Slamming</b>	Heading	n/a	n/a
A.39	Slamming occurs when the vessel experiences a combination of pitch and heave which causes the tunnel bridging structure to enter the water with sufficient velocity to cause a heavy impact. Slamming is characterized by high frequency transient vibration in the vessel structure which decays rapidly.	Information	n/a	n/a
A.40	When operating at 10 knots, 15 knots, and at the design speed, in the Design Environmental Conditions the vessel, at any tunnel location, shall not exhibit greater than 0.22 slamming events per hour	Requirement	Important	Analysis and Test
A.41	When operating at 10 knots, 15 knots, and at the design speed, in the Design Environmental Conditions the vessel, at any tunnel location, shall not exhibit greater than 0.1 slamming events per hour	Requirement	Desirable	Analysis and Test
	<b>2.2.5 Tunnel Wetness</b>	Heading	n/a	n/a
A.42	Tunnel wetness occurs when the vessel experiences a combination of pitch and heave which causes the tunnel bridging structure to enter the water with velocity that does not reach the threshold velocity for tunnel slamming. Tunnel wetness does not result in the high frequency transient vibration in the vessel structure associated with tunnel slamming.	Information	n/a	n/a
A.43	When operating at 10 knots, 15 knots, and at the design speed, in the Design Environmental Conditions the vessel, at any tunnel location, shall not exhibit greater than 50 tunnel wetness events per hour.	Requirement	Important	Analysis and Test

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.44	When operating at 10 knots, 15 knots, and at the design speed, in the Design Environmental Conditions the vessel, at any tunnel location, shall not exhibit greater than 25 tunnel wetness events per hour.	Requirement	Desirable	Analysis and Test
	<b>2.2.6 Vessel Wake</b>	Heading	n/a	n/a
A.45	The NTFV wake energy per metre crest length of the maximum wave, measured 60 metres from the vessel track, for the NTFV at a speed of 25 knots, when loaded at the design deadweight condition, in water depth of 4.5 metres, shall not exceed 10,000 Joules/metre.	Requirement	Important	Analysis and Test
A.46	The NTFV wake energy per metre crest length of the maximum wave, measured 60 metres from the vessel track, for the NTFV at speed of 10 knots, when loaded at the design deadweight condition, in water depth of 4.5 metres, shall not exceed 600 Joules/metre.	Requirement	Important	Analysis and Test
A.47	The NTFV wake energy per metre crest length of the maximum wave, measured 60 metres from the vessel track, for the NTFV at a speed of 25 knots, when loaded at the design deadweight condition, in water depth of 4.5 metres, shall not exceed 8,000 Joules/metre.	Desirable	Important	Analysis and Test
A.48	The NTFV wake energy per metre crest length of the maximum wave, measured 60 metres from the vessel track, for the NTFV at speed of 10 knots, when loaded at the design deadweight condition, in water depth of 4.5 metres, shall not exceed 400 Joules/metre.	Desirable	Important	Analysis and Test
	<b>2.3 Vessel Shoreside Infrastructure</b>	Heading	n/a	n/a
A.49	Dedicated NTFV berth facilities shall be constructed at Matilda Bay, Elizabeth Quay and Applecross.	Information	n/a	n/a
A.50	NTFV infrastructure shall be separate to the NTFV vessel contract.	Information	n/a	n/a
A.51	The NTFV Matilda Bay facility shall incorporate 4 berths	Information	n/a	n/a
A.52	The NTFV Applecross facility shall incorporate one (1) berth	Information	n/a	n/a
A.53	The NTFV Elizabeth Quay facility shall incorporate one (1) berth	Information	n/a	n/a
A.54	The primary NTFV charging station will be located at Matilda Bay (MB)	Information	n/a	n/a
A.55	The primary charging station shall be maximum 1500 kW DC to MCS (Megawatt Charging System) standard.	Information	n/a	n/a
A.56	The secondary charging stations shall be maximum 350 kW DC to CCS2 standard,			
	<b>2.4 Design Environment</b>	Heading	n/a	n/a
A.57	The following Design Environmental Conditions shall be considered:	Information	n/a	n/a
A.58	a) Wind and wind generated waves are possible from all vessel heading directions (i.e head, beam and stern) Wind speed (10-min) 25 knots b) Significant Wave Height, Hs 0.45 metres Peak Wave Period Tp between 1.5 and 2.5 seconds	Information	n/a	n/a
A.59	Air Temperature Maximum Dry Bulb 40.5°C, Wet Bulb 24.1 °C	Information	n/a	n/a

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A.60	Air Temperature Minimum Dry Bulb 1.5°C, Wet Bub 1.4 °C	Information	n/a	n/a																																								
A.61	Internal Air Temperature (Summer) 25 °C and 55% relative humidity	Information	n/a	n/a																																								
A.62	Internal Air Temperature (Winter) 22 °C	Information	n/a	n/a																																								
A.63	Sea Water Temperature 32°C	Information	n/a	n/a																																								
A.64	Operating Water Depth Maximum 8.0 metres	Information	n/a	n/a																																								
A.65	Operating Water Depth Minimum 1.3 metres	Information	n/a	n/a																																								
	2.5 Design Deadweight	Heading	n/a	n/a																																								
A.66	<div>The NTFV design deadweight shall comprise the sum of the following items:<table><tr><td>a) Crew</td><td>2</td><td>@ 80 kg</td><td>200 kg</td></tr><tr><td>b) Crew Effects</td><td>2</td><td>@ 5 kg</td><td>10 kg</td></tr><tr><td>c) Passengers</td><td>100</td><td>@ 80 kg</td><td>8,000 kg</td></tr><tr><td>d) Passenger Effects</td><td>100</td><td>@ 5 kg</td><td>500 kg</td></tr><tr><td>e) Cargo (Bicycles)</td><td>4</td><td>@ 15 kg</td><td>48 kg</td></tr><tr><td>f) Potable Water</td><td>100%</td><td>of 200 l</td><td>200 kg</td></tr><tr><td>g) Black &amp; Grey Water</td><td>50%</td><td>of 800 l</td><td>400 kg</td></tr><tr><td>h) Spare Parts</td><td></td><td></td><td>100 kg</td></tr><tr><td>i) Tools</td><td></td><td></td><td>50 kg</td></tr><tr><td>j) Ballast</td><td></td><td></td><td>0 kg</td></tr></table></div>	a) Crew	2	@ 80 kg	200 kg	b) Crew Effects	2	@ 5 kg	10 kg	c) Passengers	100	@ 80 kg	8,000 kg	d) Passenger Effects	100	@ 5 kg	500 kg	e) Cargo (Bicycles)	4	@ 15 kg	48 kg	f) Potable Water	100%	of 200 l	200 kg	g) Black & Grey Water	50%	of 800 l	400 kg	h) Spare Parts			100 kg	i) Tools			50 kg	j) Ballast			0 kg	Requirement	Important	Third-party Certification
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j) Ballast			0 kg																																									
A.67	<div>The NTFV Light Loaded Deadweight shall comprise the sum of the following items:<table><tr><td>a) Crew</td><td>2</td><td>@ 80 kg</td><td>200 kg</td></tr><tr><td>b) Crew Effects</td><td>2</td><td>@ 5 kg</td><td>10 kg</td></tr><tr><td>c) Passengers</td><td>0</td><td>@ 80 kg</td><td>0 kg</td></tr><tr><td>d) Passenger Effects</td><td>0</td><td>@ 5 kg</td><td>0 kg</td></tr><tr><td>e) Cargo (Bicycles)</td><td>0</td><td>@ 15 kg</td><td>0 kg</td></tr><tr><td>f) Potable Water</td><td>10%</td><td>of 200 l</td><td>20 kg</td></tr><tr><td>g) Black &amp; Grey Water</td><td>10%</td><td>of 800 l</td><td>80 kg</td></tr><tr><td>h) Spare Parts</td><td></td><td></td><td>100 kg</td></tr><tr><td>i) Tools</td><td></td><td></td><td>50 kg</td></tr><tr><td>j) Ballast</td><td></td><td></td><td>0 kg</td></tr></table></div>	a) Crew	2	@ 80 kg	200 kg	b) Crew Effects	2	@ 5 kg	10 kg	c) Passengers	0	@ 80 kg	0 kg	d) Passenger Effects	0	@ 5 kg	0 kg	e) Cargo (Bicycles)	0	@ 15 kg	0 kg	f) Potable Water	10%	of 200 l	20 kg	g) Black & Grey Water	10%	of 800 l	80 kg	h) Spare Parts			100 kg	i) Tools			50 kg	j) Ballast			0 kg	Requirement	Important	Third-party Certification
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i) Tools			50 kg																																									
j) Ballast			0 kg																																									
	2.6 Complement	Heading	n/a	n/a																																								



	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.68	The NTFV complement shall be: a) Two (2) crew, and b) Not less than 100 passengers	Requirement	Important	Third-party Certification
	<b>Classification</b>	Heading	n/a	n/a
A.69	The NTFV shall be in survey with AMSA as a domestic commercial vessel	Requirement	Important	Third-party Certification
A.70	The NTFV shall be provided with an AMSA Certificate of Survey in Class 1E (2 Crew + 100 Passengers)	Requirement	Important	Third-party Certification
A.71	The NTFV assigned accommodation level, as defined in NSCV Part C Section 1 shall be AL<12	Requirement	Important	Third-party Certification
A.72	The NTFV shall be designed in accordance with the NSCV requirements for novel vessels with structure, machinery, electrical and fire protection to be designed in accordance with the rules of an IACS Classification Society.	Requirement	Important	Third-party Certification
	<b>2.6.1 Support</b>	Heading	n/a	n/a
A.73	The Support System will be comprised of:	Requirement	Important	Analysis
A.74	a) Operating Support:	Requirement	Important	Analysis
A.75	b) Operating manuals and technical data;	Requirement	Important	Analysis
A.76	c) Engineering Support:	Requirement	Important	Analysis
A.77	d) Engineering manuals technical data	Requirement	Important	Analysis
A.78	e) Maintenance Support:	Requirement	Important	Analysis
A.79	f) Maintenance manuals and technical data;	Requirement	Important	Analysis
A.80	g) Maintenance support and test equipment	Requirement	Important	Analysis
A.81	h) Supply Support:	Requirement	Important	Analysis
A.82	i) Supply technical data	Requirement	Important	Analysis
A.83	j) Spare parts as specified	Requirement	Important	Analysis
A.84	k) Packaging of spare parts	Requirement	Important	Analysis
A.85	l) Training Support	Requirement	Important	Analysis
A.86	The NTFV shall be provided with local support and management for a period of 6 months following delivery.	Requirement	Important	Inspection

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.87	The NTFV shall be provided with in-country support and management for a period of 2 years following delivery.	Requirement	Important	Inspection
	<b>2.6.2 Technical Data</b>	Heading	n/a	n/a
A.88	The NTFV shall be provided with all information required to operate and maintain the vessel.	Requirement	Important	Inspection
	<b>2.6.3 Spare Parts</b>	Heading	n/a	n/a
A.89	A Spare parts list of parts to be provided with each vessel shall be developed in conjunction with PTA. (To the value of AUD 50,000 per vessel for costing purposes)	Requirement	Important	Inspection
	<b>Reliability</b>	Heading	n/a	n/a
A.90	The NTFV shall incorporate redundancy such that no single point failure within the following systems which would render the Mission System inoperable:	Constraint	Important	Analysis
A.91	a) propulsion;	Constraint	Important	Analysis
A.92	b) steering;	Constraint	Important	Analysis
A.93	c) electrical distribution; and	Constraint	Important	Analysis
A.94	d) potable water.	Constraint	Important	Analysis
	<b>2.6.4 Maintainability</b>	Heading	n/a	n/a
A.95	The NTFV shall be configured to ensure equipment can be readily accessed and maintained.	Constraint	Important	Analysis
	<b>2.7 VESSEL - HULL</b>	Heading	n/a	n/a
	<b>2.7.1 Hull General</b>	Heading	n/a	n/a
A.96	The NTFV hull structure shall comply with NSCV requirements	Requirement	Important	Third-party Certification
A.97	The NTFV hull structure shall incorporate sufficient limber holes and drainage provisions to ensure that all moisture, sea water or other fluid will flow to the lowest point of the compartment.	Requirement	Important	Inspection
	<b>2.7.2 Tanks</b>	Heading	n/a	n/a
A.98	The NTFV black/grey water holding tank shall be a non-integral tank of GRP, or welded HDPE construction	Requirement	Important	Inspection
A.99	All penetrations to the NTFV black/grey water holding tank shall be from the top of the tank.	Requirement	Important	Inspection
A.100	The NTFV potable water tank shall be a non-integral tank of GRP, or welded HDPE construction	Requirement	Important	Inspection
	<b>2.7.3 Fenders</b>	Heading	n/a	n/a

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.101	The NTFV shall be fitted with aluminium fender extrusions (approx. 280mm wide x 167 mm deep with 127 mm face, 6mm thick) on the port and starboard side	Requirement	Important	Inspection
A.102	The NTFV fenders shall be fitted with a black HDPE rubbing strip (approx. 100mm deep x 16mm thick) on the outboard side	Requirement	Important	Inspection
	<b>2.7.4 Coatings - External</b>	Heading	n/a	n/a
A.103	The NTFV external coating system shall be in accordance with a detailed coatings technical specification provided by the coatings manufacturer. Surface preparation and coatings application is to be undertaken in strict compliance with the technical and application guidelines of the coatings manufacturer. Coating shall include anti-graffiti solution where practicable	Requirement	Important	Inspection
A.104	A detailed coatings drawing shall be prepared for review which illustrates all external areas of the vessel and the coatings which are to be applied to each area.	Requirement	Important	Inspection
	<b>2.7.5 Hull Bottom</b>	Heading	n/a	n/a
A.105	The NTFV hull bottom shall be coated with a topcoat of silicone-based antifouling with recommended primer/under coating/s.	Requirement	Important	Inspection
A.106	The NTFV anti-fouling shall extend to 200 mm above the loaded waterline	Requirement	Important	Inspection
A.107	The NTFV antifouling shall be black in colour	Requirement	Important	Inspection
A.108	The NTFV anti-fouling shall be suitable for 24 months service	Requirement	Important	Inspection
	<b>2.7.6 Hull Topsides and Forward Under Wing</b>	Heading	n/a	n/a
A.109	The NTFV hull topsides and forward underwing (to underside of fender) shall be coated with a topcoat of two component, recoatable, acrylic, polyurethane with recommended primer/under coating/s	Requirement	Important	Inspection
A.110	The NTFV hull topsides and forward underwing (to underside of fender) topcoat shall be Transperth Green in colour (PMS 355 or equivalent).	Requirement	Important	Inspection
	<b>2.7.7 Hull Wet Deck</b>	Heading	n/a	n/a
A.111	The NTFV hull wet deck shall be coated with clear coat.	Requirement	Important	Inspection
	<b>2.7.8 Superstructure</b>			
A.112	The NTFV superstructure (above fender) shall be coated with a topcoat of two component, recoatable, acrylic, polyurethane with recommended primer/under coating/s.	Requirement	Important	Inspection
A.113	The NTFV superstructure (above fender) topcoat shall be white in colour.	Requirement	Important	Inspection
A.114	The NTFV superstructure top coating shall incorporate non-skid.	Requirement	Important	Inspection

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.115	The NTFV superstructure top shall incorporate the Transperth logo, approx. 4m in diameter, in Green (PMS 355 or equivalent).	Requirement	Important	Inspection
A.116	The Transperth name and logo, in vinyl transfers, shall be fixed to the superstructure sides, port and starboard.	Requirement	Important	Inspection
	<b>2.7.9 Main Deck External</b>	Heading	n/a	n/a
A.117	The NTFV external main deck shall be coated with a topcoat of non-skid, two component, surface tolerant epoxy coating with recommended primer/under coating/s.	Requirement	Important	Inspection
A.118	The NTFV external main deck topcoat shall be grey blue in colour (International colour B53 Grey Blue or equivalent).	Requirement	Important	Inspection
	<b>2.7.10 Handrails</b>	Heading	n/a	n/a
A.119	The NTFV handrails shall not be coated.	Requirement	Important	Inspection
	<b>2.7.11 Coatings - Internal</b>	Heading	n/a	n/a
	<b>2.7.12 Interior Sides</b>	Heading	n/a	n/a
A.120	The NTFV interior sides topcoat shall be charcoal grey in colour.	Requirement	Important	Inspection
	<b>2.7.13 Interior Ceilings</b>	Heading	n/a	n/a
A.121	The NTFV interior sides, within the passenger space, topcoat shall be polar white in colour.	Requirement	Important	Inspection
A.122	The NTFV interior sides, within the wheelhouse space, topcoat shall be charcoal grey in colour.	Requirement	Important	Inspection
	<b>2.7.14 External Cathodic Protection</b>	Heading	n/a	n/a
A.123	The NTFV hull shall be fitted with recessed anodes bolted to the hull structure	Requirement	Important	Inspection
A.124	The external cathodic protection system shall be designed to provide 24-month protection	Requirement	Important	Analysis
A.125	The composition, number, size, and arrangement of the anodes shall be designed in accordance with a recognized standard (i.e. DNV-RP-B401).	Requirement	Important	Inspection
	<b>2.8 EQUIPMENT FOR CARGO</b>	Heading	n/a	n/a
	<b>2.8.1 Access Hatches and Manholes</b>	Heading	n/a	n/a
A.126	All NTFV compartments shall have access arrangements which meet the requirements of the NSCV.	Requirement	Important	Third-party Certification
	<b>2.9 VESSEL EQUIPMENT</b>	Heading	n/a	n/a
	<b>2.9.1 Steering</b>	Heading	n/a	n/a

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.127	The NTFV shall be fitted with a redundant steering system such that failure of any one (1) component does not render the entire steering system unserviceable. Steering operation at reduced capacity is acceptable in case of failure.	Requirement	Important	Inspection
A.128	The NTFV steering system shall alert the Master in case of any failure.	Requirement	Important	Inspection
A.129	The NTFV steering system shall, in the case of any failure, allow any change-over to be made from the wheelhouse.	Requirement	Important	Inspection
	<b>2.9.2 Navigation Equipment</b>	Heading	n/a	n/a
A.130	The NTFV shall be fitted with navigation equipment, which as a minimum, meets the requirements of the NSCV.	Requirement	Important	Third-party Certification
A.131	The NTFV shall be fitted with a dome-type magnetic compass located in front of the helm position.	Requirement	Important	Inspection
A.132	The NTFV shall be fitted with two (2) solid-state radars (forward and aft-mounted) each with range of between 0 – 48 nm, and with doppler and target acquisition/tracking functionality. The radar antennas shall be of the radome-type. The radars output shall be displayed on either of the multi-function display units.	Requirement	Important	Inspection
A.133	The NTFV shall be fitted with one (1) 600 W, 200 kHz echo sounder. The echo sounder output shall be displayed on either of the multi-function display units	Requirement	Important	Inspection
A.134	The NTFV shall be fitted with two (2) 19-inch multifunction displays. Each display shall be integrated with the other navigation equipment.	Requirement	Important	Inspection
A.135	The NTFV multifunction displays shall be fitted with high-resolution charts of the area of operation.	Requirement	Important	Inspection
A.136	The NTFV shall be fitted with a GNSS receiver which is integrated with the multifunction displays.	Requirement	Important	Inspection
A.137	The NTFV shall be fitted with an integrated navigation assistance system which utilises the outputs of the exterior manoeuvring CCTV cameras to provide a system which monitors and classifies targets and provides alerts to the NTFV Master. The system shall be integrated with the multi-function display units to allow viewing and also tracking of objects with both camera and radar.	Requirement	Important	Inspection
	<b>2.9.3 Lights and Signal Equipment</b>	Heading	n/a	n/a
A.138	The NTFV shall be fitted with an air horn of approx. 160mm diameter. Horn actuation shall be from the wheelhouse.	Requirement	Important	Inspection
A.139	The NTFV shall be fitted with a remote-controlled LED searchlight. The searchlight minimum nominal output shall be 20000 lumens. The searchlight shall be controlled from the wheelhouse.	Requirement	Important	Inspection
A.140	The NTFV shall be fitted with LED navigation lights in accordance with NSCV requirements.	Requirement	Important	Third-party Certification
A.141	The NTFV shall be fitted with a 360-degree orange flashing light, visible to all other river users.	Requirement	Important	Inspection
	<b>2.9.4 Communications Equipment</b>	Heading	n/a	n/a

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.142	The NTFV shall be fitted with a marine 25W VHF transceiver with a suitable antenna	Requirement	Important	Inspection and Test
A.143	The NTFV shall be fitted with a public address system which allows the NTFV Master to make announcements to all areas of the vessel.	Requirement	Important	Inspection and Test
A.144	The NTFV shall be fitted with a loud hailer which allows the NTFV Master to hail other vessels.	Requirement	Important	Inspection & Test
A.145	The NTFV shall be fitted with a PTA-supplied 5G router and necessary networking equipment which shall provide a high-speed data link to the PTA system. This equipment shall be mounted in a 19" equipment cabinet (approx. dimensions 700 mm wide and 800 mm deep. Clearance is to be provided for maintenance.	Requirement	Important	Inspection and Test
A.146	The NTFV shall be fitted with a duress alarm. The duress alarm shall be integrated with the vessel CCTV system and shall be connected to the PTA Central Monitoring Room and shall provide an alarm at this facility.	Requirement	Important	Inspection and Test
A.147	All communications equipment shall comply with the referenced documents, as applicable.	Requirement	Important	Inspection
A.148	The NTFV shall be fitted with a GPS EPIRB in a float-free bracket.	Requirement	Important	Inspection
	<b>2.9.5 CCTV System</b>	Heading	n/a	n/a
A.149	The NTFV shall be fitted with an integrated CCTV system which records CCTV data onboard and which also allows access to the CCTV system from shore via the 5G data link	Requirement	Important	Inspection
A.150	The NTFV shall be fitted with sufficient standard CCTV cameras to provide coverage to all areas of the vessel which are publicly accessible.	Requirement	Important	Inspection
A.151	The NTFV battery compartment/s shall be fitted with sufficient standard CCTV cameras to provide coverage of the entire space.	Requirement	Important	Inspection
A.152	The NTFV shall be fitted with exterior manoeuvring CCTV cameras which provide full coverage of the exterior of the vessel, including waters surrounding the vessel.	Requirement	Important	Inspection
A.153	All standard CCTV cameras shall be colour, 8-megapixel, power over Ethernet cameras, with IP ratings suitable for the area in which they are installed.	Requirement	Important	Inspection
A.154	All exterior manoeuvring CCTV cameras shall be dome-type, colour, night vision, 8-megapixel, power over ethernet cameras, with IP ratings suitable for the area in which they are installed.	Requirement	Important	Inspection
A.155	All CCTV equipment shall comply with the referenced documents.	Requirement	Important	Inspection
A.156	All CCTV cameras in public areas shall be vandal resistant.	Requirement	Important	Inspection
	<b>2.9.6 Towing</b>	Heading	n/a	n/a

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.157	The NTFV shall be capable of being towed from the bow, subject to the following conditions: <ul style="list-style-type: none"> <li>- maintaining a speed of at least 5 knots;</li> <li>- in the most onerous of the Design Environmental Conditions; and</li> <li>- at the Design Deadweight.</li> </ul>	Requirement	Important	Analysis
	<b>2.9.7 Anchoring</b>	Heading	n/a	n/a
A.158	The NTFV shall be fitted with anchors, anchor cables and anchor windlass/es in accordance with Survey requirements.	Requirement	Important	Third-party Certification
A.159	The NTFV anchor/s shall be arranged to free fall when released.	Requirement	Important	Inspection
A.160	The NTFV shall be fitted with means to secure the anchor/s.	Requirement	Important	Inspection
A.161	The NTFV anchor housing shall be configured to prevent entry of sea water onto the foredeck during the most onerous of the Design Environmental Conditions.	Requirement	Important	Analysis
	<b>2.9.8 Mooring</b>	Heading	n/a	n/a
A.162	The NTFV shall be provided with eight (8) mooring lines of polypropylene, 8-plait, construction, each 15 metres long, with a spliced eye on one (1) end.	Requirement	Important	Third-party Certification
A.163	THE NTFV mooring lines shall have a minimum breaking load of 10 tonnes.	Requirement	Important	Inspection
A.164	The NTFV shall be fitted with minimum ten (10) mooring bitts.	Requirement	Important	Inspection
A.165	THE NTFV mooring bitts shall be of similar arrangement to those on the existing Transperth Ferry, the MV Tricia.	Requirement	Important	Inspection
A.166	The NTFV mooring bitts shall have safe working load (SWL) to suit the mooring lines.	Requirement	Important	Analysis
A.167	The NTFV mooring bitts shall be labelled with safe working load (SWL).	Requirement	Important	Inspection
	<b>2.10 EQUIPMENT FOR CREW AND PASSENGERS</b>	Heading	n/a	n/a
	<b>Wheelhouse Arrangement</b>	Heading	n/a	n/a
A.168	The NTFV wheelhouse shall be located forward on the vessel centre line.	Requirement	Important	Inspection
A.169	The NTFV Master shall operate the vessel from a forward wheelhouse control station.	Requirement	Important	Inspection
A.170	The NTFV wheelhouse shall include the helm control station.	Requirement	Important	Inspection
A.171	The NTFV wheelhouse station shall be provided with a Master's chair which is both fore/aft and height adjustable with an approved maximum person weight of 150kg.	Requirement	Important	Inspection
A.172	The NTFV Master's chair shall incorporate steering and throttle controls into the chair armrest.	Requirement	Important	Inspection



	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.173	The NTFV wheelhouse station shall be provided with a Watchkeeper's chair which is both fore/aft and height adjustable with an approved maximum person weight of 150kg.	Requirement	Important	Inspection
A.174	The NTFV wheelhouse arrangement shall allow the vessel to be operated from both the standing and seated positions.	Requirement	Important	Third-party Certification
A.175	Visibility from the control station shall meet the requirements of NSCV Part C.1	Requirement	Important	Third-party Certification
A.176	The NTFV wheelhouse shall incorporate all specified control, navigation and communication equipment.	Requirement	Important	Inspection
A.177	The equipment in the NTFV wheelhouse shall be arranged in order to optimize the layout and design of equipment and information to be handled by the operator(s) in the different vessel modes of operation.	Requirement	Important	Analysis
A.178	The NTFV wheelhouse shall be fitted with a small kitchenette which shall be fitted with: <ul style="list-style-type: none"> <li>a) Small stainless-steel sink with cold water supply</li> <li>b) Below bench refrigerator approx. volume 110 litres</li> <li>c) Below bench, 1000W, 25-litre, convection microwave oven</li> <li>d) Storage for kettle</li> <li>e) Storage for cups, tea and coffee</li> <li>f) Cupboards below</li> <li>g) Two (2) double 10A GPOs</li> </ul>	Requirement	Important	Inspection
	<b>2.10.1 Primary Boarding Area Arrangement</b>	Heading	n/a	n/a
A.179	The NTFV shall be arranged to allow passenger boarding from the primary boarding area on either the port or starboard side.	Requirement	Important	Inspection
A.180	The NTFV primary passenger boarding areas shall be located forward, outboard of the wheelhouse.	Requirement	Important	Inspection
	<b>2.10.2 Secondary Boarding Area Arrangement</b>	Heading	n/a	n/a
A.181	The NTFV shall be arranged to allow passenger boarding from the secondary boarding area on either the port or starboard side.	Requirement	Important	Inspection
A.182	The NTFV secondary passenger boarding areas shall be located aft within the exterior passenger area.	Requirement	Important	Inspection
A.183	The NTFV secondary passenger boarding areas shall be fitted with suitable gates in the bulwark/handrails which are capable of being locked.			
	<b>2.10.3 Passenger Area (Interior) Arrangement</b>	Heading	n/a	n/a
A.184	The NTFV passenger spaces shall be arranged in compliance with the requirements of NSCV Part C.1.	Requirement	Important	Third-party Certification
A.185	The NTFV interior passenger compartment shall be arranged aft of the vessel wheelhouse and boarding areas.	Requirement	Important	Inspection



	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.186	The NTFV interior passenger compartment shall be provided with a door which allows access aft to the exterior passenger area.	Requirement	Important	Inspection
A.187	The NTFV interior colour scheme including interior paneling, ceilings, seats and flooring shall be agreed with the PTA.	Requirement	Important	Inspection
A.188	The NTFV interior passenger compartment shall be provided with seating for minimum 94 passengers	Requirement	Important	Inspection
A.189	The NTFV interior passenger compartment shall be provided with a minimum of 74 fixed passenger seats which shall be McConnell 'Centra' (or equivalent).	Requirement	Important	Inspection
A.190	The NTFV interior passenger compartment shall be provided with 20 folding passenger seats which shall be McConnell 'Super Slim (or equivalent).	Requirement	Important	Inspection
A.191	The NTFV fixed interior passenger seats shall be arranged with minimum 800mm pitch, 460mm seat base and 470mm spacing. Armrests shall be provided on aisle seats only.	Requirement	Important	Inspection
A.192	The NTFV interior passenger area shall be provided with fold-down bicycle storage racks to allow storage of 4 bicycles. The racks shall incorporate means to secure the bicycles whilst the NTFV is underway.	Requirement	Important	Inspection
A.193	The NTFV interior passenger area shall be provided with designated space for four (4) wheelchairs.	Requirement	Important	Inspection
A.194	The NTFV interior passenger area flooring shall be non-slip, homogeneous vinyl.	Requirement	Important	Inspection
	<b>2.10.4 Passenger Area (Exterior) Arrangement</b>	Heading	n/a	n/a
A.195	The NTFV exterior passenger area shall be located aft of the interior passenger area.	Requirement	Important	Inspection
A.196	The NTFV exterior passenger area shall be provided with seating for minimum 36 passengers.	Requirement	Important	Inspection
A.197	The NTFV exterior passenger area passenger seating shall be arranged so that all seats are located beneath the exterior deck head.	Requirement	Important	Inspection
A.198	The NTFV exterior passenger area shall be provided with designated space for two (2) wheelchairs.	Requirement	Important	Inspection
A.199	The NTFV exterior passenger area passenger seating shall be fixed, aluminium, bench-type seating.	Requirement	Important	Inspection
A.200	The NTFV exterior passenger seats shall be arranged with minimum 800mm pitch, 460mm seat base and 470mm spacing.	Requirement	Important	Inspection
	<b>2.10.5 Windows</b>	Heading	n/a	n/a
A.201	The NTFV wheelhouse shall be fitted with windows which provide exterior visibility forward and to the sides and aft to the interior passenger space	Requirement	Important	Inspection
A.202	The NTFV forward wheelhouse windows shall slope forward.	Requirement	Important	Inspection
A.203	The NTFV wheelhouse windows shall be fitted with anti-glare roller screens which are suitable for use in vessel navigation station.	Requirement	Important	Inspection

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.204	The NTFV wheelhouse windows shall be fitted with window wipers, or equivalent, in accordance with NSCV requirements.	Requirement	Important	Third-party Certification
A.205	The NTFV interior passenger space shall be fitted with fixed windows which provide visibility outboard for all seat rows.	Requirement	Important	Inspection
A.206	The NTFV interior passenger spaces shall be provided with windows which provide maximum thermal transmittance coefficient, U, of 3.7 W <sup>2</sup> /K, and a maximum Solar Heat Gain Coefficient of 0.40.	Requirement	Important	Inspection
A.207	The NTFV interior passenger space windows shall be able to open to a maximum opening distance of 150mm	Requirement	Important	Inspection
A.208	The NTFV interior passenger space windows shall be fitted with anti-graffiti films on the inside, and all outside surfaces as far as practicable.	Requirement	Important	Inspection
	<b>2.10.6 Doors</b>	Heading	n/a	n/a
A.209	The NTFV wheelhouse shall be provided with two (2) sliding doors, port and starboard, to allow for access to the passenger boarding areas. The wheelhouse doors shall incorporate sliding windows of the maximum size.	Requirement	Important	Inspection
A.210	The NTFV interior passenger compartment shall be provided with sliding doors which allow access to/from the forward boarding areas, port and starboard. The doors shall have clear opening widths which meets accessibility requirements. The forward interior passenger compartment doors shall incorporate windows of the maximum size.	Requirement	Important	Inspection
A.211	The NTFV interior passenger compartment forward doors shall be arranged to minimize the likelihood of water entering the passenger compartment through the lower door sill seal whilst the NTFV is underway.	Requirement	Important	Inspection
A.212	The NTFV interior passenger compartment shall be provided with a door which allows access aft to the exterior passenger area. The aft interior passenger compartment door shall incorporate windows of the maximum size.	Requirement	Important	Inspection
A.213	The NTFV interior passenger compartment forward and aft doors shall, if sill arrangements require, be fitted with a non-slip wheelchair access ramp to AS 1428.1.	Requirement	Important	Third-party Certification
	<b>2.10.7 Insulation</b>	Heading	n/a	n/a
A.214	The NTFV shall be fitted with structural fire protection insulation in accordance with NSCV requirements.	Requirement	Important	Third-party Certification
A.215	The NTFV interior areas shall be fitted with thermal insulation, in the exposed deckhead and sides, which provides a maximum thermal transmittance coefficient, U, of 0.60 W <sup>2</sup> /K	Requirement	Important	Inspection
	<b>2.10.8 Sanitary Facilities</b>	Heading	n/a	n/a
A.216	The NTFV shall be fitted with one (1) toilet compartment which is provided with seawater flush toilet, toilet roll holder, sanitary disposal bin, soap dispenser and a handbasin with cold potable water.	Requirement	Important	Inspection
A.217	The NTFV shall be fitted with one (1) accessible toilet compartment which meets the requirements of AS 1428.1-2009. The toilet compartment shall be fitted with seawater flush toilet, toilet roll holder, sanitary disposal bin, soap dispenser, and a hand basin with cold potable water.	Requirement	Important	Third-party Certification

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.218	The NTFV accessible toilet compartment shall be provided with appropriate signage.	Requirement	Important	Inspection
A.219	The NTFV potable water system shall include potable water fill stations on both the port and starboard sides of the vessel.	Requirement	Important	Inspection
	<b>2.10.9 Air Conditioning - Wheelhouse</b>	Heading	n/a	n/a
A.220	The NTFV wheelhouse shall be provided with air conditioning which can provide both cooling and heating.	Requirement	Important	Inspection
A.221	The NTFV wheelhouse air conditioning system shall maintain the internal temperature to the specified values (Summer and Winter) in the specified external environment.	Requirement	Important	Analysis
A.222	The NTFV wheelhouse windows shall be fitted with air conditioning outlets which allow for demisting.	Requirement	Important	Inspection
A.223	The NTFV wheelhouse air conditioning system shall be designed to meet the requirements of ISO 7547:2022.	Requirement	Important	Analysis
	<b>2.10.10 Ventilation – Interior Passenger Space</b>	Heading	n/a	n/a
A.224	The NTFV interior passenger space shall not be fitted with air conditioning.	Requirement	Important	Inspection
A.225	The NTFV interior passenger space shall be fitted with a system of variable-speed, mechanically forced ventilation which allows external air to flow from inlet vents located forward through the internal passenger space to exhaust vents located aft.	Requirement	Important	Inspection
A.226	The NTFV interior passenger space ventilation system shall provide 30 air changes per hour.	Requirement	Important	Analysis
A.227	The NTFV passenger space forward air inlets shall be fitted with mist elimination grilles.	Requirement	Important	Inspection
	<b>2.10.11 Handrails</b>	Heading	n/a	n/a
A.228	The NTFV shall be provided with handrails, or bulwarks, in all deck areas which passengers or crew can access. The handrails and bulwarks shall meet NSCV requirements as a minimum.	Requirement	Important	Third-party Certification
A.229	The NTFV boarding area handrails shall be provided with gates which allow for crew/passenger access. Gates shall have clear opening which meet accessibility requirements.	Requirement	Important	Third-party Certification
A.230	NTFV handrails, if fitted, shall be of the type which reduces the risk of passengers climbing the handrails.	Requirement	Important	Inspection
A.231	NTFV handrails, if fitted, shall be 1200 mm high and shall be provided with vertical intermediate members spaced to allow no greater than 125mm clearance between any parts of the handrail or deck.	Requirement	Important	Inspection
	<b>2.10.12 Ticketing</b>	Heading	n/a	n/a
A.232	A PTA-supplied ticketing machine system (Parkeon Wayfarer 6) comprising driver console in wheelhouse and two (2) validators at port and starboard boarding areas, shall be supplied by the PTA and installed by the Shipbuilder.	Requirement	Important	Inspection
	<b>2.10.13 Lifesaving and Safety Equipment</b>	Heading	n/a	n/a
A.233	The NTFV shall be fitted with lifesaving and safety equipment which meets NSCV requirements.	Requirement	Important	Third-party Certification

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.234	The NTFV shall be fitted with a fully automatic defibrillator mounted on the Wheelhouse bulkhead.	Requirement	Important	Inspection
	<b>2.11 MACHINERY MAIN COMPONENTS</b>	Heading	n/a	n/a
A.235	The NTFV propulsion motors shall be electric	Requirement	Important	Inspection
A.236	The NTFV propulsion equipment shall be designed and installed to meet the requirements of NSCV.	Requirement	Important	Third-party Certification
	<b>2.12 SYSTEMS FOR MACHINERY MAIN COMPONENTS</b>	Heading	n/a	n/a
	<b>2.12.1 Lubricating Oil Systems</b>	Heading	n/a	n/a
A.237	NTFV equipment and machinery shall be arranged and installed to allow lubricating oil and filter exchange, if required, to be undertaken efficiently by shore maintenance personnel.	Requirement	Important	Inspection
A.238	The NTFV shall be fitted with drip trays under any lubricating oil filter which require changing.	Requirement	Important	Inspection
	<b>2.12.2 Cooling Systems</b>	Heading	n/a	n/a
A.239	NTFV machinery cooling systems, if fitted, shall be arranged and installed to allow access, as required for servicing.	Requirement	Important	Inspection
	<b>2.12.3 Automation Systems for Machinery</b>	Heading	n/a	n/a
A.240	The NTFV shall be fitted with an integrated vessel automation system which incorporates all required alarms, monitoring and control for all vessel systems.	Requirement	Important	Inspection
A.241	The NTFV vessel automation system shall be controlled from a single control station, located in the wheelhouse.	Requirement	Important	Inspection
A.242	The NTFV vessel automation system shall be linked with the NTFV high-speed data system to allow shore-based access to the system.	Requirement	Important	Inspection
	<b>2.13 VESSEL COMMON SYSTEMS</b>	Heading	n/a	n/a
	<b>2.13.1 Ballast System</b>	Heading	n/a	n/a
A.243	The NTFV shall be designed to enable a ballast system to be fitted in the future. Tanks, hull and tank penetrations, and hull and tank valves shall be fitted during the construction. Space shall be allocated for future fitting of necessary piping, pumps and controls if the system is fitted in the future. The ballast system shall be designed to reduce the NTFV air draft by 300 mm so as to allow transit beneath the Perth Causeway bridge with the river in flood.	Requirement	Important	Inspection
A.244	THE NTFV ballast system shall utilise sea water and shall allow transition from non-ballasted to ballasted loading condition within 10 minutes.	Requirement	Important	Inspection

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.245	THE NTFV ballast system shall utilise sea water and shall allow transition from ballasted to non-ballasted loading condition within 10 minutes.	Requirement	Important	Inspection
A.246	The NTFV ballast tanks shall be provided with electronic tank level gauges which are integrated with the NTFV automation system.	Requirement	Important	Inspection
A.247	The NTFV ballast system shall be operated from the wheelhouse.	Requirement	Important	Inspection
A.248	The NTFV shall, when in the ballasted condition, be limited to a maximum speed of 8 knots.	Requirement	Important	Inspection
A.249	The NTFV ballast tanks shall be fitted with a connection to allow fresh water flushing of the tanks using a freshwater connection from shore.	Requirement	Important	Inspection
	<b>2.13.2 Bilge System</b>	Heading	n/a	n/a
A.250	The NTFV shall be provided with a bilge system which meets the requirements of the NSCV.	Requirement	Important	Third-party Certification
	<b>2.13.3 Fire Systems</b>	Heading	n/a	n/a
A.251	The NTFV shall be provided with a fire detection system which meets the requirements of the NSCV.	Requirement	Important	Third-party Certification
A.252	The NTFV shall be provided with firefighting systems which meet the requirements of the NSCV.	Requirement	Important	Third-party Certification
A.253	The NTFV shall be provided with fixed firefighting systems which meet the requirements of the NSCV.	Requirement	Important	Third-party Certification
	<b>2.13.4 Hydraulic Systems</b>	Heading	n/a	n/a
A.254	The NTFV hydraulic systems, if installed, shall incorporate drip trays beneath any filters, fills or drains.	Requirement	Important	Inspection
	<b>2.13.5 Electrical Systems</b>	Heading	n/a	n/a
A.255	The NTFV shall be fitted with a battery electric system which provides all electrical power on board the vessel.	Requirement	Important	Inspection
A.256	The NTFV electrical system shall meet the requirements of the NSCV.	Requirement	Important	Third-party Certification
A.257	The NTFV electrical system shall be designed and installed in accordance with the requirements of a Classification Society for the specific notation relating to battery systems utilised for propulsion (i.e. DNV:- Battery (Power), Bureau Veritas:- battery system ,or Lloyds Register:- Hybrid Power). Note: Relevant Class rule compliance is to be used as part of novel vessel AMSA plan approval process.	Requirement	Important	Third-party Certification
	<b>2.13.6 Batteries</b>	Heading	n/a	n/a
A.258	The NTFV battery system shall be designed for a minimum battery life of 9 years.	Requirement	Important	Analysis

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.259	The NTFV batteries shall, at the end of specified minimum battery life, be capable of providing the specified range/endurance.	Requirement	Important	Analysis
A.260	The NTFV batteries shall be warranted for a period of 9 years, including for performance degradation.	Requirement	Important	Inspection
A.261	The NTFV battery system shall incorporate single cell-level passive thermal runaway isolation that completely prevents failure propagation to adjacent cells and equipment or other equivalent measures. Such isolation shall not rely on any active systems or intervention.	Requirement	Important	Analysis
A.262	The NTFV battery system shall make use of battery arrangements that include the use of cell material compositions, that remove or further manage the risk of short-circuit failure, fire and thermal runaway.	Requirement	Desirable	Analysis
	<b>2.13.7 Shore Charging</b>	Heading	n/a	n/a
A.263	The NTFV shall be capable of being charged from shore primary chargers at 1500 kW DC (MCS system)	Requirement	Important	Inspection
A.264	The NTFV shall be fitted with primary charging inlets on each side of the vessel. Only one (1) inlet shall be used at any one time.	Requirement	Important	Inspection
A.265	The NTFV shall be capable of accepting primary charging at up to 1000V DC and up to 1500A to achieve the nominal charging power making use of the Megawatt Charging Standard (MCS) connector and associated communications standards and arrangements	Requirement	Important	Demonstration
A.266	The NTFV shall be capable of accepting primary charging at up to 1250V DC in full compliance with the MCS standard.	Requirement	Desirable	Demonstration
A.267	The NTFV shall be capable of being charged from shore secondary chargers at at-least 350 kW DC (CCS2 system)	Requirement	Important	Inspection
A.268	The NTFV shall be fitted with secondary charging inlets on each side of the vessel. Only one (1) inlet shall be used at any one time.	Requirement	Important	Inspection
A.269	The NTFV charging ports or system shall be interlocked to prevent the use of multiple DC charging inlets simultaneously.	Requirement	Important	Demonstration
A.270	The NTFV shall be capable of accepting secondary charging at up to 920V DC and up to 500A to achieve the nominal charging power making use of the Combined Charging Standard Combo 2 connector and associated communications standards and arrangements	Requirement	Important	Demonstration
A.271	The NTFV shall locate primary and secondary charging inlets adjacent to one another on each side of the vessel	Requirement	Important	Inspection
A.272	The NTFV shall position charging inlets to minimize the required length of shoreside MCS and CCS2 charging connection cables as far as practicable.	Requirement	Important	Demonstration
A.273	The NTFV charging connections shall be capable of being performed by one (1) person.	Requirement	Important	Demonstration
A.274	The NTFV shall be fitted with an interlock system which prevents the propulsion being engaged if primary or secondary charging cables are connected.	Requirement	Important	Test
A.275	The NTFV shall be capable of being charged from shore AC supply 415V, 3-phase, 63 Amps.	Requirement	Important	Inspection

	STATEMENT	TYPE	PRIORITY	VERIFICATION
A.276	The NTFV shall be fitted with AC charging inlets on each side of the vessel. Only one (1) inlet shall be used at any one time.	Requirement	Important	Inspection
A.277	The NTFV AC shore supply shall be fitted with an isolation transformer on shore.	Information	n/a	n/a
A.278	The NTFV charging system shall make use of industry standard electric-vehicle communications protocols to facilitate communications between the vessel and charging equipment making use of MCS and CCS connectors.	Requirement	Important	Demonstration
A.279	The NTFV electrical charging systems integrator shall allow to test, integrate and prove vessel charging with the shoreside charging equipment to be advised later.	Requirement	Important	Demonstration
A.280	The NTFV charging inlets shall be arranged and protected to suit the expected environmental conditions when berthed, in-use and under-way.	Requirement	Important	Demonstration
	<b>2.13.8 Lighting - Interior</b>	Heading	n/a	n/a
A.281	The NTFV interior lighting shall be of LED type.	Requirement	Important	Demonstration
A.282	The NTFV shall be fitted with an LED lighting system which allows for both day and night operations	Requirement	Important	Demonstration
	<b>2.13.9 Lighting – Machinery Spaces</b>	Heading	n/a	n/a
A.283	The NTFV machinery and electrical space lighting shall be of LED type.	Requirement	Important	Inspection
A.284	The NTFV machinery and electrical space light fittings shall have IP ratings suitable for the installed location	Requirement	Important	Inspection
	<b>2.13.10 Lighting - Exterior</b>	Heading	n/a	n/a
A.285	The NTFV exterior lighting shall be of LED type.	Requirement	Important	Inspection
A.286	The NTFV exterior light fittings shall be minimum IP66 rated.	Requirement	Important	Inspection
A.287	The NTFV shall be fitted with LED-strip lighting, green in colour, installed below the fender at port/starboard sides.	Requirement	Important	Inspection
A.288	The NTFV shall be fitted with LED-strip lighting, green in colour, installed below the fender at the stern.	Requirement	Important	Inspection



ACRONYMS, ABBREVIATIONS & DEFINITIONS		
1)	Analysis	An element of verification that utilises data to verify conformity or evaluate functionality, and can include simulations or modelling techniques, extension of established results from testing comparable materiel, or design comparison with existing materiel.
2)	Available	The ship is at sea able to conduct all primary missions for which it is designed.
3)	Beam	The width of the ship's widest point as measured at the ship's nominal waterline.
4)	°C	degree Celsius.
5)	CDRL	Contract Data Requirements List
6)	Class	IACS Classification Society
7)	Classification Society	An IACS Classification Society
8)	Client	Public Transport Authority of Western Australia
9)	Demonstration	An element of verification that involves the operation of a system, sub-system, or component to show that a requirement can be achieved by the system. It is generally used for a basic confirmation of performance capability and is differentiated from testing by the level of risk involved and the subsequent reduced detail in data gathering.
10)	Desirable	Indicates a requirement that is not a key factor in the achievement of the intended functionality and/ or performance, but which is perceived as beneficial. Where a Desirable requirement is included in solicitation documentation, failure to meet such a requirement will not exclude an offer; however, it may be included in the assessment of value for money.
11)	Draft, Loaded	The vertical distance between the waterline and the bottom of the keel when the ship is fully loaded.
12)	Economical Speed	The highest maintained speed at which a vessel is able to achieve its specified range performance.
13)	Essential	Indicates a requirement without which the achievement of the Capability would be very difficult. Where an Essential requirement is included in solicitation documentation it demonstrates its high prioritisation within the capability requirements and subsequently provides a capability basis for considerations regarding the value for money judgement in solicitation evaluations. For Covered procurements they are considered mandatory requirements.
14)	FPS	Function and Performance Specification
15)	Full Load Condition	Lightship Condition + Maximum Deadweight
16)	HVAC	Heating, Ventilation, and Air Conditioning
17)	IACS	International Association of Classification Societies
18)	Important	Indicates a requirement which is necessary to achieve the intended functionality and/or performance. Where an Important requirement is included in solicitation documentation it demonstrates its middle order prioritisation within the capability requirements and subsequently provides a capability basis for considerations regarding the value for money judgement in solicitation evaluations.
19)	Inspection	An element of verification that consists of conducting a visual examination of the system, component, or sub-system. It is generally used to verify physical design features or specific manufacturer identification
20)	ITP	Inspection and Test Plan



21)	KG	The distance between the keel baseline and the vertical centre of gravity.
22)	kg	Kilogram, the SI unit of mass
23)	kts	Plural of knots with a knot being a non-SI unit of speed equal to one nautical mile per hour.
24)	LAT	Lowest astronomical tide
25)	Life of Type	The period of time commencing with the delivery of the first NTFV and ending when the design service life of the last delivered NTFV has completed.
26)	litre	litre, a non-SI unit of volume
27)	Length Overall	The maximum length of the ship measured parallel to the waterline.
28)	Lightship Condition	Lightship condition is a ship complete in all respects, but without consumables, stores, cargo, crew and effects, and without any liquids on board except that machinery and piping fluids, such as lubricants and hydraulics, are at operating levels.
29)	m	metre, the SI unit of length
30)		
31)	Critical spares	Spare parts the failure of which would render the NTFV inoperable at 100% capacity.
32)	mm	Millimeter
33)	nm	Nautical mile, a non-SI unit of distance equal to 1,852 m.
34)	NTFV	New Transperth Ferry Vessel
35)	OEM	Original equipment manufacturer
36)	P&S	Port and starboard
37)	Persons	Crew and / or general public.
38)	RF	Radio frequency
39)	PTA	Western Australian Public Transport Authority
40)	RFP	Request For Proposal
41)	s	second, the SI unit of time
42)	Stbd.	Starboard.
43)	Test	An element of verification that involves an activity in which a scientific method is used to obtain quantitative or qualitative data relating to the safety, performance, functionality and supportability of a system.
44)	Third-Party Certification	An aggregate verification method, which, in its detail, may use one or more of the previous methods, but is undertaken by a third party having a degree of independence from both the acquirer and supplier, being assessed as competent, and having the trust of the acquirer. Third-party certification is often relevant for standards-based requirements, where the third party is verifying compliance with that standard.

45)	Trials Displacement	Equals Full Load Condition.
46)	Verification	Methods utilised to accomplish verification that the NTFV conforms to the FPS.