AIMS Research Vessel

General:

The AIMS design brief was to improve both the capability of the Australian Institue of Marine Science's future 35m research vessel while also reducing the vessel's operational costs and improving its 'green' profile.

Modularised science fitout was a high priority since the variation of research work being undertaken was increasing, for example, a containerised laboratory for seismic survey or a special purpose ROV. Modularising the science equipment would allow reduced preparation time in port and improved vessel utilisation. The vessel should also be able to operate UAVs and deploy larger and heavier moorings than the current vessels. Low Underwater Radiated Noise (URN) to reduce the effect of the vessel on the sensitive aquatic environment was also important as was improved performance of vessels acoustic sensors.

Other important improvements for the future vessel included:

- Safer boarding for RHIB tender boats
- Better arrangement to enable science equipment, ship provisions and bunkers to be loaded simultaneously
- Improved crew habitability

The following aspects where considered for reducing operational costs:

- Crewing
- Fuel consumption
- Maintenance requirements

To better understand and benchmark the potential benefits of any novel hull platform for a research vessel, three concept designs were developed. The first is a like-for-like design which uses a conventional mono-hull and mechanical propulsion system similar to the existing AIMS vessel. The second design is similar to the like-for-like design but with green technologies applied. The third 'X-Factor' design is both a step change increase in capability over the like-for-like designs and also a more visually interesting design that differentiates it from other vessels and helps attract public attention to AIMS science activities and mission.

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Among the green technologies applied to the concept designs a hybrid diesel electric and battery system is specified. Batteries can be charged from the shaft generators while cruising or by the gensets when at anchor. This ensures that the gensets can be always loaded highly for more efficient running and gensets can cycle off periodically to reduce running hours and maintenance costs. Up to 40 kWe of solar photovoltaic panels and fitted extensively and will significantly reduce the power that is needed to be generated using diesel fuel. A kite sail system is also specified for assisted propulsion and can reduce propeller power requirements by up to 200 kW in favourable wind conditions. This is sufficient to fully power the vessel during slow speed trolling operations.

Main Particulars:	Length o.a., approx.	34.90 m
	Breadth, moulded	15.60 m
	Draught, scantling	3.00 m
	Deadweight	85 t
Capacity:	Crew	6 pers
	Containers	3 TEU
Speed:	Service speed	13.00 kn
Machinery and Equipment:	Installed power	600 kW
Scope of Work:	Concept Design	
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