National Certificate in Boatbuilding (Level 4) with strands in Marine Cabinetmaking, Composite Sparmaking, Alloy Boatbuilding, Marine Rigging, Interior and Exterior Marine Painting, Composite Boatbuilding, Steel Boatbuilding, Wooden Boatbuilding, Marine Systems Engineering, Metal Sparmaking, Composite Production Trailer Boats, and Alloy Production Trailer Boats

Level 4

Credits 156 - 364

This qualification has been **reviewed**. The last date to meet the requirements is 31 December 2019.

Transition Arrangements

This replaced qualification version 7 was republished in October 2017 to extend its last date for entry into training programmes from 31 December 2017 to 31 May 2018 and last date for assessment against the replaced qualification from 31 December 2018 to 31 December 2019.

This qualification has been reviewed and replaced by the New Zealand Certificate in Boat Building (Level 4) with strands Alloy, Composite, Steel and Wood [Ref: 3057]; the New Zealand Certificate in Marine Interiors (Level 4) [Ref: 3026] and the New Zealand Certificate in Production Boat Building (Level 4) with strands in Alloy and Composite [Ref: 3086].

The last date for entry into programmes leading to this qualification is 31 May 2018. The last date for assessment against the replaced qualification is 31 December 2019.

This qualification contains expiring unit standards for which replacement unit standards have now been registered. For the purposes of this qualification, people who have gained credit for the replacement unit standards are exempt from the requirement to gain credit for the expiring unit standards.

Expiring Unit Standard 2399 has been removed from Marine Systems Engineering Compulsory. Please note that the Marine Systems Engineering Elective minimum credit value from the Common Elective List has increased from 25 credits to 35 credits to compensate for this.

Credit for	Exempt from
414	28497
25546, 25547	28733, 28735
29234	3160, 3161, 3162, 3184, 3185
29236, 29237	18160
29235	25113, 25155, 25156

The credits required to complete this qualification have increased from 150 – 358 to 156 to 364.

For detailed information see **Review Summaries** on the NZQA website.

NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	July 2001	December 2003
Revision	2	October 2002	December 2004
Revision	3	May 2003	December 2014
Review	4	February 2007	December 2014
Review	5	July 2010	December 2016
Revision	6	July 2015	December 2018
Review	7	November 2015	December 2018
Republication	7	October 2017	December 2019

Standard Setting Body

NZ Marine and Composites Industry Training Organisation PO Box 90448 Victoria Street West Auckland 1142

Telephone 0800 600 242 Email training@bia.org.nz

National Certificate in Boatbuilding (Level 4) with strands in Marine Cabinetmaking, Composite Sparmaking, Alloy Boatbuilding, Marine Rigging, Interior and Exterior Marine Painting, Composite Boatbuilding, Steel Boatbuilding, Wooden Boatbuilding, Marine Systems Engineering, Metal Sparmaking, Composite Production Trailer Boats, and Alloy Production Trailer Boats

Level 4

Credits 150-358

Purpose

This qualification is for people working in the boatbuilding sector of the marine industry and is aimed primarily at people who want to gain an industry-developed and recognised qualification. It has been designed to recognise the knowledge and skills, and to formally acknowledge the status, of skilled tradespeople in the boatbuilding sector of the marine industry.

This qualification includes a core set of compulsory standards. This Core Compulsory section includes standards that describe generic boatbuilding knowledge and skills, health and safety, the operation of recreational craft by day, and knowledge of the distribution environment and the New Zealand marine industry.

In addition to the Core Compulsory section, the twelve strands allow people to choose standards that reflect the area of specialisation that best suits their employment needs or their own interests. Each strand includes a compulsory section and shares a Common Elective List section with the other strands. The compulsory sections include standards which describe knowledge and skills essential to the skills described by the title of the strands. The choice of standards in the Common Elective List allows candidates to specialise in areas relevant to their situation.

People who have gained the qualification with a particular strand will be industry-qualified in that particular area of boatbuilding.

This qualification builds on the National Certificate in Boatbuilding (Level 3) [Ref: 1493] with which it includes common standards. It also includes standards that are relevant to trades such as furniture making and mechanical engineering.

Special Notes

People in the workforce may have demonstrated competence in the outcomes specified in the individual standards in this qualification. These candidates should seek recognition of their current competence wherever it is relevant to this qualification. Recognition of current competence (RCC) must be carried out by accredited providers or registered assessors in accordance with NZQA guidelines. Candidates are encouraged to contact the ITO for information regarding RCC for the purposes of this national certificate.

Credit Range

	Core Compulsory
Level 2 credits	52
Level 3 credits	13
Level 4 credits	8
Minimum totals	73

	Marine Cabin Strand			parmaking
	Compulsory	Elective	Compulsory	Elective
Level 1 credits	-	0-2	-	0-2
Level 2 credits	21	0-20		0-20
Level 3 credits	42	0-20	44	0-20
Level 4 credits	94	0-20	63	0-20
Level 5 credits	-	0-3	3	0-3
Totals	1	177		30
Qualification total with strand	2	250		03

	Alloy Boatbuilding Strand		Marine Rigging Strand	
	Compulsory	Elective	Compulsory	Elective
Level 1 credits	-	0-2	-	0-2
Level 2 credits	32	0-25	-	0-10
Level 3 credits	68	0-25	15	0-10
Level 4 credits	108	0-25	52	0-10
Level 5 credits	-	0-3	-	0-3
Minimum totals	233		7	7
Qualification total with	306		15	50
strand				

		Interior and Exterior Marine Painting Strand		oatbuilding
	Compulsory	Elective	Compulsory	Elective
Level 1 credits	-	-	-	0-2
Level 2 credits	13	0-10	15	0-25
Level 3 credits	71	0-10	95	0-25
Level 4 credits	50	0-10	127	0-25
Level 5 credits	-	0-3	3	0-3
Minimum totals	totals 144 265		65	
Qualification total with strand	2	217		38

	Steel Boatbui	Steel Boatbuilding Strand		building
	Compulsory	Elective	Compulsory	Elective
Level 1 credits	-	0-2	-	0-2
Level 2 credits	32	0-25	15	0-25
Level 3 credits	84	0-25	72	0-25
Level 4 credits	88	0-25	173	0-25
Level 5 credits	-	0-3	-	0-3
Minimum totals	2	229		85
Qualification total with strand	3	302		58

		Marine Systems Engineering Strand		king Strand
	Compulsory	Elective	Compulsory	Elective
Level 1 credits	-	0-2		0-2
Level 2 credits	60	0-25	17	0-20
Level 3 credits	81	0-25	31	0-20
Level 4 credits	48	0-25	77	0-20
Level 5 credits	-	0-3	-	0-3
Minimum totals	2	214		45
Qualification total with strand	2	287		18

	•		Alloy Production Trailer Boats Strand	
	Compulsory	Elective	Compulsory	Elective
Level 1 credits	ı	0-2	-	0-2
Level 2 credits	15	0-15	32	0-15
Level 3 credits	77	0-15	33	0-15
Level 4 credits	80	0-15	94	0-15
Level 5 credits	3	0-3	-	0-3
Minimum totals	190		172	
Qualification total with	263		24	47
strand				

Requirements for Award of Qualification

Award of NZQF National Qualifications

Credit gained for a standard may be used only once to meet the requirements of this qualification.

Unit standards and achievement standards that are equivalent in outcome are mutually exclusive for the purpose of award. The table of mutually exclusive standards is provided on the New Zealand Qualifications Authority (NZQA) website: http://www.nzqa.govt.nz/qualifications-standards/standards-exclusion-list/.

Reviewed standards that continue to recognise the same overall outcome are registered as new versions and retain their identification number (ID). Any version of a standard with the same ID may be used to meet qualification requirements that list the ID and/or that specify the past or current classification of the standard.

Summary of Requirements

Core Compulsory standards

One of the following strands is required

- Marine Cabinetmaking Strand
- Composite Sparmaking Strand
- Alloy Boatbuilding Strand
- Marine Rigging Strand
- Interior and Exterior Marine Painting Strand
- Composite Boatbuilding Strand
- Steel Boatbuilding Strand
- Wooden Boatbuilding Strand
- Marine Systems Engineering Strand
- Metal Sparmaking Strand
- Composite Production Trailer Boats Strand
- Alloy Production Trailer Boats Strand

Detailed Requirements

Core Compulsory

The following standards are required

ID	Title	Level	Credit
18158	Select, use and care for hand tools used in boatbuilding	2	5
18159	Select, use and care for portable power tools used in boatbuilding	2	5
18160	Operate mechanical plant used in boatbuilding	2	12
18162	Calculate quantities and costs for boatbuilding projects	3	4
18163	Demonstrate knowledge of boatbuilding construction drawings and produce related freehand sketches	3	2

ID	Title	Level	Credit
18166	Participate in a project team in the boating industry	2	4
18170	Contribute to a project team in the boating industry	3	3
23243	Identify and explain the causes and prevention of material deterioration in the marine environment	4	8
23244	Identify and apply health and safety procedures for the boatbuilding industry	3	4
25343	Identify boat fittings and fastenings	2	4
25344	Demonstrate knowledge of marine trades and expectations of employees	2	3
25345	Demonstrate knowledge of terminology used in the marine industry	2	6

ID	Title Level Credit	
9913	Demonstrate knowledge of the New Zealand marine 2 3 industry	

Service Sector > Maritime > Sea Survival and Sea Safety

ID	Title			Level	Credit
26542	Demonstrate basic knowledge	of the or	peration of	2	6
	pleasure craft by day				

Service Sector > Retail, Distribution, and Sales > Distribution

ID	Title	Level	Credit
28497	Demonstrate technical knowledge of distribution facility operations	3	10

Marine Cabinetmaking Strand

Meet the requirements of all of the following sets

- Marine Cabinetmaking Compulsory
- Marine Cabinetmaking Elective

Marine Cabinetmaking Compulsory

The following standards are required

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic applications for marine use	4	8

Manufacturing > Boating Industries > Boatbuilding

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9923	Install internal and external boat hardware fittings	4	4
9932	Install interior boat cabinetry	4	10
9935	Construct interior boat cabinetry in timber	4	20
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6
10841	Produce a half-model of a small craft to scale	4	10
18161	Perform measurements and calculations used in boatbuilding	2	5
18164	Demonstrate knowledge of insulation and install insulation in boats	3	2
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
18169	Laminate and join timber materials used in boatbuilding	3	4
23041	Demonstrate knowledge of abrasives and equipment used in marine painting	3	3
23047	Demonstrate knowledge of clear marine finishes and application	3	4
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
25117	Demonstrate knowledge of timber used in boatbuilding	3	4
25118	Demonstrate knowledge of adhesives used in boatbuilding	3	3
25154	Prepare for and apply a marine interior coating system	4	8

Manufacturing > Boating Industries > Marine Sales and Services

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Manufacturing > Furniture > Furniture Finishing

ID	Title	Level	Credit
17740	Rectify faults in furniture surfaces for furniture finishing	2	4

Manufacturing > Furniture > Furniture Making

ID	Title	Level	Credit
2201	Design and construct an assembly jig for wooden furniture	3	4
2241	Match, join, and press veneer overlay for furniture making	4	5
18896	Manufacture laminated, shaped furniture components	4	5
18897	Edge joint materials used in furniture making to make a flat panel	3	3
25532	Assemble non-show wood dining chair seat frames	2	2
25533	Assemble non-show wood lounge chair or settee frames	3	5
28733	Produce a cutting list and calculate material quantities for an item of furniture	3	8
28735	Produce complex cutting lists and calculate material quantities for a furniture unit	4	10

Marine Cabinetmaking Elective

A minimum of 20 credits
From the Common Elective List (defined below)

Composite Sparmaking Strand

Meet the requirements of all of the following sets

- Composite Sparmaking Compulsory
- Composite Sparmaking Elective

Composite Sparmaking Compulsory

The following standards are required

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic	4	8
	applications for marine use		

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
11788	Prepare fibre-reinforced composite substrates for marine surface coatings	4	5
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
18171	Demonstrate knowledge of spars and rigging	3	5
23039	Demonstrate knowledge of the transportation of spars and rigging	3	4

ID	Title	Level	Credit
23049	Demonstrate knowledge of composite technology for boatbuilding	4	6
25119	Describe and safely control work aloft on yacht rigs	4	4
25120	Demonstrate knowledge of the design and specification of yacht spars and rigging	4	4
25123	Interpret, select, and assemble components of yacht spars and rigging	4	6

Manufacturing > Composites > Industrial Composites

ID	Title	Le	vel	Credit
3190	Repair damaged or faulty composites	4		5

Manufacturing > Composites > Production Composites

ID	Title	Level	Credit
3161	Produce an epoxy resin item to a product specification for composites	3	5
3165	Produce a laminated item using resins that cure at elevated temperatures for composites	4	6
3166	Produce an item using resin pre-impregnated reinforcement for composites	4	5
3170	Produce a laminate by vacuum bagging for composites	4	2
3171	Produce a cored laminate for composites	3	3
3177	Cure an item in an autoclave for composites	4	3
3183	Prepare pre-form materials for lamination for composites	3	4
3184	Prepare a mould for moulding for composites	4	5
3185	Demould laminated items for composites	3	6
3186	Finish product to specification for composites	3	5
3192	Provide for and attach fixings and fastenings in composites	4	4
3193	Apply quantity surveying to composite production	3	2
3198	Alter resin rheology with fillers, extenders and additives for composites	5	3

Composite Sparmaking Elective

A minimum of 20 credits
From the Common Elective List (defined below)

Alloy Boatbuilding Strand

Meet the requirements of all of the following sets

- Alloy Boatbuilding Compulsory
- Alloy Boatbuilding Elective

Alloy Boatbuilding Compulsory

The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering - Fabrication

ID	Title	Level	Credit
25075	Perform basic fabrication operations under supervision	2	12
25698	Form and shape light fabrication materials	4	20
25874	Lay out and mark off light fabrication shapes	4	15

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
2675	Weld aluminium in the downhand positions using the gas metal arc welding process	3	6
2677	Weld aluminium in the downhand positions using the gas tungsten arc welding process	3	6
2686	Weld aluminium in all positions using the gas metal arc welding process	4	10
2689	Weld aluminium in all positions using the gas tungsten arc welding process	4	10
21907	Demonstrate and apply knowledge of safe welding procedures under supervision	2	3

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic applications for marine use	4	8

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9923	Install internal and external boat hardware fittings	4	4
9933	Install exterior boat joinery, modules and components	4	10
9944	Identify the characteristics of aluminium alloys relevant to boatbuilding	2	2
9946	Assemble multiple and complex metal boat components for joining	4	10

ID	Title	Level	Credit
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6
11790	Prepare aluminium substrates for marine surface coatings	4	5
18161	Perform measurements and calculations used in boatbuilding	2	5
18164	Demonstrate knowledge of insulation and install insulation in boats	3	2
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
23035	Describe and install boat tankage systems	3	6
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
25113	Describe filling and fairing technology used in boatbuilding	3	4
25115	Describe, install and test plumbing systems in boats	3	6
25116	Lift, support, and move boats and components	3	8
25157	Build metal boat framework under supervision	3	20

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Alloy Boatbuilding Elective

A minimum of 25 credits

From the Common Elective List (defined below)

Marine Rigging Strand

Meet the requirements of all of the following sets

- Marine Rigging Compulsory
- Marine Rigging Elective

Marine Rigging Compulsory

The following standards are required

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic applications for marine use	4	8

Manufacturing > Boating Industries > Boatbuilding

ID	Title	Level	Credit
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
18171	Demonstrate knowledge of spars and rigging	3	5
23039	Demonstrate knowledge of the transportation of spars and rigging	3	4
23040	Demonstrate knowledge of yacht spar and rigging systems	4	8
25119	Describe and safely control work aloft on yacht rigs	4	4
25120	Demonstrate knowledge of the design and specification of yacht spars and rigging	4	4
25121	Maintain yacht spars, rigging and hardware	4	4
25122	Install and remove yacht spars and rigging	4	8
25123	Interpret, select, and assemble components of yacht spars and rigging	4	6
25151	Fabricate yacht rigging	4	10

Marine Rigging Elective

A minimum of 10 credits
From the Common Elective List (defined below)

Interior and Exterior Marine Painting Strand

Meet the requirements of all of the following sets

- Interior and Exterior Marine Painting Compulsory
- Interior and Exterior Marine Painting Elective

Interior and Exterior Marine Painting Compulsory

The following standards are required

ID	Title	Level	Credit
11786	Anti-foul a boat	4	2
11787	Prepare wooden substrates for marine surface coatings	4	5
11791	Apply build coats and finish coats for marine exterior paint surfaces	4	20
18161	Perform measurements and calculations used in boatbuilding	2	5
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6

ID	Title	Level	Credit
23041	Demonstrate knowledge of abrasives and equipment used in marine painting	3	3
23042	Demonstrate knowledge of substrate preparation for marine painting	3	4
23044	Demonstrate knowledge of marine paint technology	3	5
23045	Demonstrate knowledge of paint system calculations for marine paint	4	4
23046	Demonstrate knowledge of marine paint systems application	3	4
23047	Demonstrate knowledge of clear marine finishes and application	3	4
23048	Demonstrate knowledge of marine paint finish problems	4	3
25113	Describe filling and fairing technology used in boatbuilding	3	4
25114	Mask and protect boats for painting	3	4
25154	Prepare for and apply a marine interior coating system	4	8
25155	Fair boat surfaces	3	4
25156	Fill boat surfaces	3	6
25998	Demonstrate knowledge of marine paint system repair	3	5
25999	Repair marine paint systems	4	8

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Manufacturing > Furniture > Furniture Finishing

ID	Title	Level	Credit
2208	Select and mix stain for application to furniture surfaces	3	8
17740	Rectify faults in furniture surfaces for furniture finishing	2	4
25527	Set up and maintain conventional spray equipment for furniture finishing	3	6
25528	Set up and maintain air-assisted spray equipment for furniture finishing	3	5

Planning and Construction > Construction Trades > Core Construction

ID	Title	Level	Credit
9184	Erect non-notifiable prefabricated scaffolding	3	3

Interior and Exterior Marine Painting Elective

A minimum of 10 credits From the Common Elective List (defined below)

Composite Boatbuilding Strand

Meet the requirements of all of the following sets

- Composite Boatbuilding Compulsory
- Composite Boatbuilding Elective

Composite Boatbuilding Compulsory

The following standards are required

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	L	eve	el e	Cre	dit
5433	Demonstrate knowledge of electrical and electronic	4			8	
	applications for marine use					

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9923	Install internal and external boat hardware fittings	4	4
9932	Install interior boat cabinetry	4	10
9933	Install exterior boat joinery, modules and components	4	10
9942	Construct internal and external boat joinery in fibre- reinforced composites (FRC)	4	15
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6
10841	Produce a half-model of a small craft to scale	4	10
11788	Prepare fibre-reinforced composite substrates for marine surface coatings	4	5
12942	Build boat framework under supervision	3	15
18161	Perform measurements and calculations used in boatbuilding	2	5
18164	Demonstrate knowledge of insulation and install insulation in boats	3	2
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
23035	Describe and install boat tankage systems	3	6
23036	Describe infusion and resin transfer moulding processes used in boatbuilding	4	4

ID	Title	Level	Credit
23049	Demonstrate knowledge of composite technology for boatbuilding	4	6
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
25113	Describe filling and fairing technology used in boatbuilding	3	4
25115	Describe, install and test plumbing systems in boats	3	6
25116	Lift, support, and move boats and components	3	8
25117	Demonstrate knowledge of timber used in boatbuilding	3	4
25118	Demonstrate knowledge of adhesives used in boatbuilding	3	3

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Manufacturing > Composites > Industrial Composites

ID	Title			Level	Credit
3190	Repair damaged or faulty cor	mposites		4	5

Manufacturing > Composites > Production Composites

ID	Title	Level	Credit
3160	Produce a laminated polyester resin item to a product specification for composites	3	5
3161	Produce an epoxy resin item to a product specification for composites	3	5
3162	Produce a vinylester resin item to a product specification for composites	3	5
3165	Produce a laminated item using resins that cure at elevated temperatures for composites	4	6
3166	Produce an item using resin pre-impregnated reinforcement for composites	4	5
3170	Produce a laminate by vacuum bagging for composites	4	2
3171	Produce a cored laminate for composites	3	3
3179	Produce a laminate using a pre-wet machine for composites	3	2
3181	Produce a plug or pattern for composites	4	12

ID	Title	Level	Credit
3182	Produce a mould or tool from a plug or pattern for composites	4	5
3183	Prepare pre-form materials for lamination for composites	3	4
3185	Demould laminated items for composites	3	6
3186	Finish product to specification for composites	3	5
3192	Provide for and attach fixings and fastenings in composites	4	4
3193	Apply quantity surveying to composite production	3	2
3198	Alter resin rheology with fillers, extenders and additives for composites	5	3

Composite Boatbuilding Elective

A minimum of 25 credits From the Common Elective List (defined below)

Steel Boatbuilding Strand

Meet the requirements of all of the following sets

- Steel Boatbuilding Compulsory
- Steel Boatbuilding Elective

Steel Boatbuilding Compulsory

The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering - Fabrication

ID	Title	Level	Credit
25075	Perform basic fabrication operations under supervision	2	12
25874	Lay out and mark off light fabrication shapes	4	15

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
2671	Weld steel structures in the downhand positions using the manual metal arc welding process	3	6
2672	Weld steel in the downhand positions to a general purpose industry standard using the gas metal arc welding process	3	6
2673	Weld steel structures in the downhand positions using the gas metal arc and flux cored arc welding processes	3	6
2682	Weld steel in the downhand positions to a general purpose industry standard using the manual metal arc welding process	3	6

ID	Title	Level	Credit
2683	Cut metals using manual thermal processes	3	4
2684	Weld steel structures in all positions using the gas metal arc or flux cored arc welding processes	4	10
2685	Weld steel structures in all positions using the manual metal arc welding process	4	10
21907	Demonstrate and apply knowledge of safe welding procedures under supervision	2	3

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic	4	8
	applications for marine use		

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9923	Install internal and external boat hardware fittings	4	4
9933	Install exterior boat joinery, modules and components	4	10
9946	Assemble multiple and complex metal boat components for joining	4	10
9949	Identify the characteristics of steels relevant to boatbuilding	2	2
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6
11789	Prepare steel substrates for marine surface coatings	4	5
18161	Perform measurements and calculations used in boatbuilding	2	5
18164	Demonstrate knowledge of insulation and install insulation in boats	3	2
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
23035	Describe and install boat tankage systems	3	6
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
25113	Describe filling and fairing technology used in boatbuilding	3	4
25115	Describe, install and test plumbing systems in boats	3	6
25116	Lift, support, and move boats and components	3	8

ID	Title	Level	Credit
25157	Build metal boat framework under supervision	3	20

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Steel Boatbuilding Elective

A minimum of 25 credits From the Common Elective List (defined below)

Wooden Boatbuilding Strand

Meet the requirements of all of the following sets

- Wooden Boatbuilding Compulsory
- Wooden Boatbuilding Elective

Wooden Boatbuilding Compulsory

The following standards are required

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic	4	8
	applications for marine use		

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9923	Install internal and external boat hardware fittings	4	4
9930	Plank a boat framework	4	20
9932	Install interior boat cabinetry	4	10
9933	Install exterior boat joinery, modules and components	4	10
9934	Construct interior wooden support structures for boats	4	15
9935	Construct interior boat cabinetry in timber	4	20
9936	Construct exterior boat joinery in timber	4	20
9939	Build boat frameworks in timber	4	20
9940	Plank and glass sheathe a mould or boat	4	15
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6

ID	Title	Level	Credit
10841	Produce a half-model of a small craft to scale	4	10
11787	Prepare wooden substrates for marine surface coatings	4	5
12942	Build boat framework under supervision	3	15
18161	Perform measurements and calculations used in boatbuilding	2	5
18164	Demonstrate knowledge of insulation and install insulation in boats	3	2
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
18169	Laminate and join timber materials used in boatbuilding	3	4
23035	Describe and install boat tankage systems	3	6
23037	Demonstrate knowledge of traditional wooden boatbuilding	3	10
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
25113	Describe filling and fairing technology used in boatbuilding	3	4
25115	Describe, install and test plumbing systems in boats	3	6
25116	Lift, support, and move boats and components	3	8
25117	Demonstrate knowledge of timber used in boatbuilding	3	4
25118	Demonstrate knowledge of adhesives used in boatbuilding	3	3

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Wooden Boatbuilding Elective

A minimum of 25 credits

From the Common Elective List (defined below)

Marine Systems Engineering Strand

Meet the requirements of all of the following sets

- Marine Systems Engineering Compulsory
- Marine Systems Engineering Elective

Marine Systems Engineering Compulsory

The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering Drawing and Design

ID	Title	Level	Credit
2430	Draw and interpret engineering sketches under supervision	2	4
2431	Draw and interpret engineering drawings under supervision	2	8

Engineering and Technology > Mechanical Engineering > Engineering Machining and Toolmaking

ID	Title	Le	evel	Credit
11661	Produce components by performing basic engineering drilling operations	2		8
11662	Produce components by performing basic engineering turning operations	2		12
11663	Produce components by performing basic engineering milling operations	2		12

Engineering and Technology > Mechanical Engineering > Maintenance and Diagnostics in Mechanical Engineering

ID	Title	Level	Credit
2406	Dismantle, inspect, assemble and test components	4	6

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
2672	Weld steel in the downhand positions to a general purpose industry standard using the gas metal arc welding process	3	6
2682	Weld steel in the downhand positions to a general purpose industry standard using the manual metal arc welding process	3	6
2683	Cut metals using manual thermal processes	3	4
21907	Demonstrate and apply knowledge of safe welding procedures under supervision	2	3

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic applications for marine use	4	8

Engineering and Technology > Motor Industry > Automotive Fuel Systems and Exhaust

ID	Title	Level	Credit
21677	Demonstrate knowledge of a diesel fuel system	2	2
21692	Perform minor servicing tasks on a diesel fuel system	2	2
24179	Demonstrate knowledge of a forced air intake system on an engine	3	4
24180	Inspect and test diesel engine intake and exhaust systems	3	4

Manufacturing > Boating Industries > Boatbuilding

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9923	Install internal and external boat hardware fittings	4	4
9937	Install interior and exterior boat systems	4	10
9938	Install pipework in boats	3	15
11778	Install and test custom power plants and power trains	4	20
18161	Perform measurements and calculations used in boatbuilding	2	5
18164	Demonstrate knowledge of insulation and install insulation in boats	3	2
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
23035	Describe and install boat tankage systems	3	6
25115	Describe, install and test plumbing systems in boats	3	6
25116	Lift, support, and move boats and components	3	8

Manufacturing > Boating Industries > Marine Sales and Services

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Marine Systems Engineering Elective

A minimum of 35 credits

From the Common Elective List (defined below)

Metal Sparmaking Strand

Meet the requirements of all of the following sets

- Metal Sparmaking Compulsory
- Metal Sparmaking Elective

Metal Sparmaking Compulsory

The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering - Fabrication

ID	Title	Level	Credit
25075	Perform basic fabrication operations under supervision	2	12
25700	Assemble and join light fabrication materials	4	20

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
2675	Weld aluminium in the downhand positions using the gas metal arc welding process	3	6
2677	Weld aluminium in the downhand positions using the gas tungsten arc welding process	3	6
2686	Weld aluminium in all positions using the gas metal arc welding process	4	10
2689	Weld aluminium in all positions using the gas tungsten arc welding process	4	10
21907	Demonstrate and apply knowledge of safe welding procedures under supervision	2	3

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic	4	8
	applications for marine use		

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9944	Identify the characteristics of aluminium alloys relevant to boatbuilding	2	2
9946	Assemble multiple and complex metal boat components for joining	4	10
11790	Prepare aluminium substrates for marine surface coatings	4	5
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
18171	Demonstrate knowledge of spars and rigging	3	5
23039	Demonstrate knowledge of the transportation of spars and rigging	3	4
25119	Describe and safely control work aloft on yacht rigs	4	4

ID	Title	Level	Credit
25120	Demonstrate knowledge of the design and specification of yacht spars and rigging	4	4
25123	Interpret, select, and assemble components of yacht spars and rigging	4	6

Metal Sparmaking Elective

A minimum of 20 credits

From the Common Elective List (defined below)

Composite Production Trailer Boats Strand

Meet the requirements of all of the following sets

- Composite Production Trailer Boats Compulsory
- Composite Production Trailer Boats Elective

Composite Production Trailer Boats Compulsory

The following standards are required

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

ID	Title	Level	Credit
5433	Demonstrate knowledge of electrical and electronic	4	8
	applications for marine use		

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6
18161	Perform measurements and calculations used in boatbuilding	2	5
23049	Demonstrate knowledge of composite technology for boatbuilding	4	6
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
23245	Fit hatches, windscreens, and screen rails on production trailer boats	3	3
23246	Apply linings and floor coverings on production trailer boats	3	3
23247	Describe upholstery applications on production trailer boats	3	3
23248	Detail production trailer boats	3	3
23249	Fit electrical systems to production trailer boats	3	3

ID	Title	Level	Credit
23250	Describe production trailer boat support and transport requirements	3	3
23251	Demonstrate knowledge of production processes used in trailer boat building	3	8
23252	Demonstrate knowledge of production trailer boat design	4	4
23253	Join composite production trailer boat hulls and decks	4	4
23254	Restore and repair gelcoat on production trailer boats	4	4
23255	Install an outboard motor on a production trailer boat	4	3
23256	Demonstrate knowledge of quality control for production trailer boats	4	3
23257	Install and describe a production trailer boat fuel system	4	5
25115	Describe, install and test plumbing systems in boats	3	6

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Manufacturing > Composites > Industrial Composites

ID	Title		T		Level	Credit
3190	Repair damaged or fau	Ity com	posites		4	5

Manufacturing > Composites > Production Composites

ID	Title	Level	Credit
3160	Produce a laminated polyester resin item to a product specification for composites	3	5
3167	Deposit composite matrix with a depositor or chopper gun	3	6
3168	Deposit a polyester gel coat by hand for composites	3	4
3169	Deposit a polyester gel coat by spray method for composites	3	6
3171	Produce a cored laminate for composites	3	3
3181	Produce a plug or pattern for composites	4	12
3182	Produce a mould or tool from a plug or pattern for composites	4	5
3183	Prepare pre-form materials for lamination for composites	3	4

ID	Title	Level	Credit
3184	Prepare a mould for moulding for composites	4	5
3185	Demould laminated items for composites	3	6
3186	Finish product to specification for composites	3	5
3193	Apply quantity surveying to composite production	3	2
3198	Alter resin rheology with fillers, extenders and additives for composites	5	3

Composite Production Trailer Boats Elective

A minimum of 15 credits

From the Common Elective List (defined below)

Alloy Production Trailer Boats Strand

Meet the requirements of all of the following sets

- Alloy Production Trailer Boats Compulsory
- Alloy Production Trailer Boats Elective

Alloy Production Trailer Boats Compulsory

The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering - Fabrication

ID	Title	Level	Credit
25075	Perform basic fabrication operations under supervision	2	12
25700	Assemble and join light fabrication materials	4	20
25874	Lay out and mark off light fabrication shapes	4	15

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
2675	Weld aluminium in the downhand positions using the gas metal arc welding process	3	6
2676	Weld stainless steel sheet using the gas tungsten arc welding process	3	6
2686	Weld aluminium in all positions using the gas metal arc welding process	4	10
21907	Demonstrate and apply knowledge of safe welding procedures under supervision	2	3

Engineering and Technology > Motor Industry > Automotive Electrical and Electronics

Title	Level	Credit
Demonstrate knowledge of electrical and electronic	4	8
		Demonstrate knowledge of electrical and electronic 4

Manufacturing > Boating Industries > Boatbuilding

ID	Title	Level	Credit
9922	Produce templates and patterns used in boatbuilding	3	4
9944	Identify the characteristics of aluminium alloys relevant to boatbuilding	2	2
9946	Assemble multiple and complex metal boat components for joining	4	10
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6
18161	Perform measurements and calculations used in boatbuilding	2	5
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
23245	Fit hatches, windscreens, and screen rails on production trailer boats	3	3
23247	Describe upholstery applications on production trailer boats	3	3
23248	Detail production trailer boats	3	3
23249	Fit electrical systems to production trailer boats	3	3
23250	Describe production trailer boat support and transport requirements	3	3
23251	Demonstrate knowledge of production processes used in trailer boat building	3	8
23252	Demonstrate knowledge of production trailer boat design	4	4
23255	Install an outboard motor on a production trailer boat	4	3
23256	Demonstrate knowledge of quality control for production trailer boats	4	3
23257	Install and describe a production trailer boat fuel system	4	5

Manufacturing > Boating Industries > Marine Sales and Services

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Alloy Production Trailer Boats Elective

A minimum of 15 credits From the Common Elective List (defined below)

Common Elective List

Engineering and Technology > Mechanical Engineering > Engineering Drawing and

Design

ID	Title	Level	Credit
2434	Manually produce detailed engineering drawings under supervision	3	15

Engineering and Technology > Mechanical Engineering > Engineering - Fabrication

ID	Title	Level	Credit
25698	Form and shape light fabrication materials	4	20

Engineering and Technology > Mechanical Engineering > Engineering Machining and

Toolmaking

ID	Title	Level	Credit
2714	Produce components by performing engineering turning operations	3	15
2715	Produce components by performing engineering milling operations	3	15
11661	Produce components by performing basic engineering drilling operations	2	8
11662	Produce components by performing basic engineering turning operations	2	12
11663	Produce components by performing basic engineering milling operations	2	12

Engineering and Technology > Mechanical Engineering > Metal Surface Finishing

ID	Title	Level	Credit
16961	Polish welded stainless steel fabrications	3	10

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
2674	Weld stainless steel plate in the downhand positions using the gas metal arc and flux cored arc welding processes	3	6
2675	Weld aluminium in the downhand positions using the gas metal arc welding process	3	6
2676	Weld stainless steel sheet using the gas tungsten arc welding process	3	6
2677	Weld aluminium in the downhand positions using the gas tungsten arc welding process	3	6
2683	Cut metals using manual thermal processes	3	4
2686	Weld aluminium in all positions using the gas metal arc welding process	4	10

ID	Title	Level	Credit
2687	Weld stainless steel sheet and plate in all positions using the gas metal arc or flux cored arc welding process	4	10
2688	Weld stainless steel tube using the gas tungsten arc welding process	4	12
2689	Weld aluminium in all positions using the gas tungsten arc welding process	4	10

Engineering and Technology > Motor Industry > Automotive Fuel Systems and Exhaust

ID	Title	Le	evel	Credit
15403	Test and diagnose diesel fuel injection systems, and repair fuel delivery systems	3		4

ID	Title	Level	Credit
9931	Overlay boat decks with teak	4	15
9934	Construct interior wooden support structures for boats	4	15
9935	Construct interior boat cabinetry in timber	4	20
9936	Construct exterior boat joinery in timber	4	20
9937	Install interior and exterior boat systems	4	10
9940	Plank and glass sheathe a mould or boat	4	15
9941	Carry out the repair, restoration, and structural alteration of fibre-reinforced composite boats	2	20
9944	Identify the characteristics of aluminium alloys relevant to boatbuilding		2
10841	Produce a half-model of a small craft to scale		10
10843	Mark out full sized boat components from loftings and computer-generated mylars		2
11777	Install production inboard engine packages in boats		6
11778	Install and test custom power plants and power trains		20
11781	Preserve and evaluate previously-submerged power plants		3
11782	Maintain and repair marine engine systems under supervision	3	20
11788	Prepare fibre-reinforced composite substrates for marine surface coatings		5
11789	Prepare steel substrates for marine surface coatings		5
11790	Prepare aluminium substrates for marine surface coatings	4	5

ID	Title	Level	Credit
18161	Perform measurements and calculations used in boatbuilding	2	5
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
18169	Laminate and join timber materials used in boatbuilding	3	4
18171	Demonstrate knowledge of spars and rigging	3	5
23035	Describe and install boat tankage systems	3	6
23036	Describe infusion and resin transfer moulding processes used in boatbuilding	4	4
23038	Form and shape compound aluminium plate for boats	4	10
23040	Demonstrate knowledge of yacht spar and rigging systems		8
23049	Demonstrate knowledge of composite technology for boatbuilding	3	6
23246	Apply linings and floor coverings on production trailer boats		3
25113	Describe filling and fairing technology used in boatbuilding		4
25115	Describe, install and test plumbing systems in boats		6
25116	Lift, support, and move boats and components	3	8
25121	Maintain yacht spars, rigging and hardware	4	4
25122	Install and remove yacht spars and rigging	4	8
25152	Apply 2D CAD/CAM in boatbuilding	4	5
25153	Describe computerised manufacturing processes used in boatbuilding	4	3
25154	Prepare for and apply a marine interior coating system	4	8
25155	Fair boat surfaces	3	4
25156	Fill boat surfaces	3	6

ID	Title	Level	Credit
9917	Demonstrate knowledge of boatbuilding methods	2	4

Manufacturing > Composites > Production Composites

ID	Title	Level	Credit
3160	Produce a laminated polyester resin item to a product	3	5
	specification for composites		

ID	Title	Level	Credit
3161	Produce an epoxy resin item to a product specification for composites	3	5
3162	Produce a vinylester resin item to a product specification for composites	3	5
3167	Deposit composite matrix with a depositor or chopper gun	3	6
3168	Deposit a polyester gel coat by hand for composites	3	4
3169	Deposit a polyester gel coat by spray method for composites	3	6
3170	Produce a laminate by vacuum bagging for composites	4	2
3171	Produce a cored laminate for composites	3	3
3179	Produce a laminate using a pre-wet machine for composites	3	2
3181	Produce a plug or pattern for composites	4	12
3182	Produce a mould or tool from a plug or pattern for composites	4	5
3196	Test properties of a composite laminate	4	10
3198	Alter resin rheology with fillers, extenders and additives for composites	5	3

Manufacturing > Furniture > Furniture Finishing

ID	Title	Level	Credit
25527	Set up and maintain conventional spray equipment for furniture finishing	3	6
25528	Set up and maintain air-assisted spray equipment for furniture finishing	3	5

Manufacturing > Furniture > Furniture Making

ID	Title	Level	Credit
2203	Repair wooden furniture ready for finishing	4	5
2229	Operate a Computer Numerical Controlled (CNC) machine to produce furniture components	3	4
14996	Construct working drawings for use in furniture making	3	5

Transition Arrangements

Version 6

Version 6 was issued following revision in order to ensure the achievability of the qualification with the Interior and Exterior Marine Painting strand.

Changes to structure and content

- Expired unit standards 97, 100, and 1073 were removed from the compulsory section of the Interior and Exterior Martine Painting strand.
- Expired unit standard 5231 was removed from the common elective list.
- Unit standards 6401 and 6402 were removed.
- The credit value for the strand Interior and Exterior Marine Painting, has decreased from 247 to 217 credits.

For detailed information see Review Summaries on the NZQA website...

People working towards version 5 of this qualification may either complete the requirements of that version by December 2016 or transfer their results to version 6. Programmes leading to the award of version 6 of the qualification can start when this version is registered. All new candidates will be enrolled onto programmes leading to the award of version 6.

This qualification contains standards that have expired standards - unit standards 97, 100, and 1073. The outcomes of standards 97 and 100 are assessed by standard 11791. There is no replacement standard for unit standard 1073 which meets the need of industry. Therefore, there are no exemptions applicable.

It is not intended that anyone is disadvantaged by this review. However, anyone who feels they have been disadvantaged may appeal to the NZ Marine and Composites Industry Training Organisation at the address below.

Previous versions of the qualification

Version 5 was issued following review. Changes to structure and content included: the qualification was restructured to include a Core Compulsory section and three strands: Fill and Fair Marine Substrates, Interior Marine Painting, and Exterior Marine Painting; standards 3198, 9917, 18162, 23043, 23049, 25113, 25155, and 25156 from the Compulsory section of the previous version of the qualification were moved to the Compulsory section of the new Fill and Fair Marine Substrates strand; standard 11787 from the Compulsory section of the previous version of the qualification were moved to the new Interior Marine Painting strand; standards 25113, 25155, and 25156 from the Compulsory section of the previous version of the qualification were moved to the new Exterior Marine Painting strand; standards 11787, 11788, 11789, 11790, 18160, and 25152 from the Elective section of the previous version of the qualification were moved to the Elective section of the new Fill and Fair Marine Substrates strand.

Version 4 was issued following review. Two new strands (Composite Production Trailer Boats and Alloy Production Trailer Boats) were added to the qualification; standards 9917 and 18165 were moved from the core compulsory to all strands, except for Composite Production Trailer Boats and Alloy Production Trailer Boats; standards 497; 9915; 10837, 10838 and 10842; 10839 and 10840; 12299; and 241 were replaced by standards 23244; 23243; 23241; 23242; 21913; and 21677 and 21692 respectively; standard 3162 was added to the Core Elective.

Version 3 was issued following revision. Standards 9923 and 9952 added to the Core Elective; Alloy Boatbuilding Strand - standard 9921 added, and the minimum total for the strand increased from 272 to 277; Marine Painting Strand - standards 17739 and 17740 added, and the minimum total for the strand increased from 121 to 153; and Marine Systems Engineering Strand - standards 15403, 15404 and 15448 added, and the minimum total for the strand increased from 221 to 240.

Version 2 was issued in October 2002. Changes to content included: standard 9951 removed from the Marine Rigging strand; furniture making and carpentry standards were updated in the Marine Cabinetmaking Strand; credit total for the qualification with the Marine Rigging Strand decreased from 155 to 133; and credit total for the qualification with the Marine Cabinetmaking Strand increased from 250 to 253.

Version 1 replaced the following qualifications in July 2001:

- National Certificate in Boatbuilding and Maintenance (Level 4) with strands in Marine Surface Applications, and Marine Cabinetmaking [Ref: 0546]
- National Certificate in Boatbuilding and Maintenance (Level 4) with strands in Marine Systems Engineering, and Boatbuilding [Ref: 0545]
- National Certificate in Boatbuilding and Maintenance (Level 3) with strands in Marine Surface Applications, Marine Cabinetmaking, Marine Systems Engineering, and Boatbuilding [Ref: 0544]
- National Certificate in Boatbuilding and Maintenance (Level 2) with strands in Marine Surface Applications, Marine Cabinetmaking, Marine Systems Engineering, and Boatbuilding [Ref: 0543]
- National Certificate in Boatbuilding and Maintenance (Sparmaking Metal) [Ref: 0685]
- National Certificate in Boatbuilding and Maintenance (Sparmaking Fibre-reinforced Composites) [Ref: 0686]
- National Certificate in Boatbuilding and Maintenance (Marine Rigging) [Ref: 0684]

The final date for the award for the replaced qualifications was 31 December 2003.

Other standard setting bodies whose standards are included in the qualification

NZ Motor Industry Training Organisation (Incorporated)
NZQA
ServiceIQ
The Skills Organisation

Certification

This certificate will display the logo of the NZQA, the NZ Marine and Composites Industry Training Organisation and the organisation that has been granted consent to assess against standards that meet the requirements of the qualification (accredited).

Classification

This qualification is classified according to the classification system listed on the Directory

of Assessment Standards (DAS) and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

DAS Classification		NZSCE	NZSCED		
Code	Description	Code	Description		
1769	Manufacturing > Boating Industries > Boatbuilding	031703	Engineering and Related Technologies > Maritime Engineering and Technology > Marine Construction		

Quality Management Systems

Providers and Industry Training Organisations must be granted consent to assess by a recognised Quality Assurance Body before they can register credits from assessment against standards. Organisation with consent to assess and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Consent to assess requirements and the moderation system are outlined in the associated Consent and Moderation Requirements (CMR) for each standard.

