

Sector Engagement Project

BC Industrial Marine Sector



Association of
British Columbia
Marine Industries

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Introduction

This report contains the results of the Sector Labour Market Partnership Program Phase 1 Sector Engagement work completed by the Association of British Columbia Marine Industries (ABCMI) and its sub-contractor R.A. Malatest & Associates Ltd. (Malatest) for the BC Industrial Marine Sector. This work began in May of 2016 and continued through September 2016. This report includes an overview of sector engagement activities and methodologies used for sector engagement and development of a Governance Committee. It highlights the sector identified labour market challenges and themes resulting from sector engagement activities, and it provides conclusions, next steps, and appendices (including Terms of Reference).

The information provided in this report has been grouped into the following sections:

- **Sector Engagement Overview** - This section contains an overview of all of the sector engagement activities, including:
 - A sector description, which defines each of the six industrial marine sub-sectors;
 - Governance Committee establishment and project activities; and
 - Sector engagement activities, which included stakeholder outreach, key informant interviews, and sector engagement sessions.
- **Labour Market Challenges** - This section contains summaries of all of the labour market challenges identified by the sector (including the Governance Committee) through sector engagement activities. These identified challenges were used to develop research themes in the next section.
- **Phase 1 Project - Identified Themes** - This section contains categorized summaries of labour market information themes directly identified by sector stakeholders or drawn from the challenges identified in the previous section.
- **Conclusions** - This section contains a short list of conclusions resulting from the sector engagement activities (including Governance Committee meetings).
- **Next Steps** - This section contains steps to be taken for a Phase 2 Labour Market Information project.
- **Appendices** - The appendices attached to this report include:
 - A Terms of Reference providing a secondary data summary definition of the sector, North American Industry Classification System (NAICS) code identification for each sub-sector, National Occupation Classification (NOC) code identification for occupations in each sub-sector, and possible Phase 2 Labour Market Information research project approaches;
 - Governance Committee meeting minutes;
 - Communication materials used for sector engagement;
 - Data collection tools used for sector engagement and input; and
 - In-demand occupations identified by the industrial marine sector.

Sector Engagement Overview

The purpose of the Phase 1 Labour Market Partnership Program (LMP) project was to identify and characterize broad sector categories (sub-sectors) within the industrial marine sector and engage with partners and employers to better understand the scope of work required within each sub-sector, in order to address key human resource issues. This phase provides support to more fully engage key partners within a sector/region on relevant labour force issues.

Specifically, the scope of work for this project included the identification of occupations within each sub-sector, assessment of key labour market challenges, and the establishment of a Governance Committee to provide guidance and leadership during the Phase 1 and future projects.

The Phase 1 Sector LMP project included a secondary data review, key informant interviews, sector engagement sessions, and creation of a Governance Committee. R.A. Malatest & Associates Ltd. (Malatest) was contracted to complete key informant interviews, sector engagement sessions, and reporting on all engagement activities.

SECTOR DESCRIPTION

At the outset of the Phase 1 project, individual sub-sectors belonging to the industrial marine sector were identified and defined. The sub-sector definitions that were established are as follows:

Industrial Marine Sector					
Shipbuilding, Refit and Repair	Small Craft Marine	Marine Products	Ocean Science and technology	Marine Industrial Services	Marine Professional Services

1. **Shipbuilding, refit and repair** includes new construction, modernization, conversion, maintenance, in-service support, barge fabrication and repair and industrial fabrication;
2. **Small craft marine** includes construction of all recreational, pleasure, and small commercial or government craft including rigid hull inflatables and submersibles. Also includes all boatyards, marine repair facilities, chandleries, and yacht brokerages and marinas that also do repair or maintenance;
3. **Marine products** include all products that have a marine application and are used by companies in the industrial marine sector;

4. **Ocean science and technology** includes research instrumentation, autonomous and piloted underwater vehicles, cabled observatories, “smart” buoys, marine acoustics, and marine renewable energy;
5. **Marine industrial services** includes repair of port and marina infrastructure, marine renewable energy infrastructure, commercial diving and remotely operated underwater vehicles, underwater repair and underwater surveys, dredging, and pile driving; and
6. **Marine professional services** include marine engineering, naval architecture, marine law, marine consulting, software development and sales, as well as education and training around industrial marine activities.

At the outset of the project "Boat and Yacht Building" had been established as one of the six sub-sectors. The change to the above definition of the six sub-sectors in the industrial marine sector came about when the ABCMI Board decided that "Boat & Yacht Building" and "Small Craft Marine" were essentially the same sub-sector except that the former was purely new construction while the latter was about repair and maintenance of small marine craft. The ABCMI Board also decided that it was missing an important sub-sector; that being "Marine Products" which were not properly represented in any of the other defined sub-sectors. Thus, it was decided by the ABCMI Board to combine the construction and refit/maintenance activities around small marine craft into one sub-sector definition of "Small Craft Marine" and to create a new sub-sector titled "Marine Products". The only information underlining these decisions came from a list of companies that ABCMI put together that were either already ABCMI members or were prospective ABCMI members.

There was no formal guidance, methodology, or data that informed the development of the sub-sector definitions other than a list of companies that ABCMI put together that were either already ABCMI members or were prospective ABCMI members. ABCMI set out to represent the "industrial marine sector" in BC and needed to define what constituencies were actually to be included in this representation. A number of events including the transition of the West Coast Shipbuilding and Repair Forum into the new Association of British Columbia Marine Industries (ABCMI) and the amalgamation between ABCMI and the association known as Ocean Initiatives British Columbia (OIBC) influenced the decision to create defined sub-sectors of representation. Also driving the larger scope of inclusion in representation was the provincial and federal government's desire to deal with a more comprehensive singular representation of the Province's industrial marine sector. By defining the six sub-sectors, the ABCMI hoped to add clarity to who it was setting out to represent and assist through its operations and projects (i.e., created a focus on industrial marine activities separate from transportation and port operations).

GOVERNANCE COMMITTEE ESTABLISHMENT AND ACTIVITIES

The Governance Committee was established with the intent of having at least one representative organization for each one of the six sub-sectors as well as representatives from labour, education, manufacturing, and the marine surface community. The sub-sector representatives were chosen on the basis of their known active involvement and experience in their respective sub-sectors. The same applies to the labour, education and manufacturing representatives. The marine surface community representative (Chamber of Shipping of British Columbia) was added at the suggestion of the provincial

government. In some cases two representatives were selected to represent a sub-sector in order to ensure full representation at each sub-sector at each meeting of the Governance Committee. This was due to un-availability of certain representatives to make a full commitment to attend both meetings of the Governance Committee in this Phase 1 - Sector Engagement activity.

The Governance Committee created for the Phase 1 project is comprised of 17 individuals with at least one representative from each sub-sector plus representatives from labour, manufacturing, the Chamber of Shipping, education and training, and ABCMI. The following table lists all contacts recruited to the Governance Committee, their area of representation (sub-sector or other area), and their location (city) in BC.

The first meeting with the Governance Committee was held on August 3, 2016. The purpose of this meeting was to review the interim Phase 1 findings, validate the information collected, and determine appropriate themes to inform a terms of reference (TOR) for a potential Phase 2 Labour Market Research project (see meeting minutes in Appendix B1).

A second meeting of the Governance Committee was held on September 15, 2016 (see meeting minutes in Appendix B1). The purpose of this meeting was to finalize and approve the final Phase 1 project report and appended TOR, and to establish Request for Proposal (RFP) requirements for a Phase 2 Labour Market Information project.

The membership and representation within the Governance Committee is listed below:

Sub-sector / Other Rep	Primary Representative		Additional Representatives	
	Contact	Location	Contact	Location
Shipbuilding, Refit and Repair	Steve Baker , Director of Operations Seaspan Victoria Shipyards sbaker@seaspan.com	Victoria		
Small Craft Marine	Bruce Kempling General Manager, Ocean Pacific Marine brucek@oceanpacificmarine.com	Campbell River	Campbell Black President, Blackline Marine cblack@quadrantmarine.com	Sidney
Marine Products	Bill Jackson Business Partner – Marine Sector Schneider Electric bill.jackson@schneider-electric.com	Saanich	Ray Brougham Prototype Equipment Design President ray@engineersmachineshop.ca	Victoria
Ocean Science & Technology	David Fissel ASL Environmental Sciences Inc Board Chair dfissel@aslenv.com	Victoria	Ryan Nicoll Dynamic Systems Analysis Ltd ryan@dsa-ltd.ca	Victoria
Marine Industrial Services	Gary Hamata Vice President & General Manager Vancouver Pile Driving ghamata@vanpile.com	Vancouver		

Sub-sector / Other Rep	Primary Representative		Additional Representatives	
	Contact	Location	Contact	Location
Marine Professional Services	Rollie Webb Senior Vice President Robert Allan Ltd. rwebb@ral.ca	Vancouver		
Labour	Ron Wickett Business Manager Machinists, Fitters & Helpers ron.wickett@machinistslocal3.ca	Victoria	Des Rogers President Federal Government Dockyard Trades & Labour Council Des.Rogers@forces.gc.ca	Victoria
Manufacturing	Marcus Ewert-Johns Chair BC Alliance for Manufacturing marcus@manufacturingbc.org	Richmond		
Chamber of Shipping BC	Robert Lewis Manning President Chamber of Shipping of BC robert@cosbc.ca	Vancouver		
Education and Training	Laurie Holland-Therrien Manager, Corporate Training & Industry BCIT Laurie_Therrien@bcit.ca	Burnaby		
ABCMI	Leann Collins Executive Director ABCMI leann@abcmi.ca	Victoria	Alex Rueben Secretary ABCMI Board of Directors alex.rueben@imtarc.com Derek Davis Treasurer ABCMI Board of Directors Dw.Davis@telus.net	Victoria

SECTOR ENGAGEMENT ACTIVITIES

A backgrounder document (see Appendix C1) with information about the sub-sector definitions and the Phase 1 project was developed and circulated by ABCMI to all identified stakeholders¹ in the industrial marine sector to inform them about the Phase 1 project and to invite their participation in the forming of a governance body, key informant interviews, and sector engagement sessions (see Appendix C1). All stakeholders were subsequently contacted by Malatest through email and phone following ABCMI's initial outreach to determine interest in participation in the project and book interviews/meetings. The remainder of this section details the sector participation that resulted from these outreach activities.

¹ Identified stakeholders were established through ABCMI's list of members and potential members. This list provided the best available information on all key contacts within the sector and included indicators of sub-sector representation.

A total of 41 organizations and 44 individuals participated in key informant interviews and sector engagement sessions. Key informant interviews were conducted between June 13 and June 24, 2016, and they included 10 organizations and 11 individuals representing all six sub-sectors. Sector engagement sessions were discussion-based meetings conducted in person and by teleconference. A complete listing of organizational participation and sub-sector representation in the key informant interviews can be found in Appendix D1.

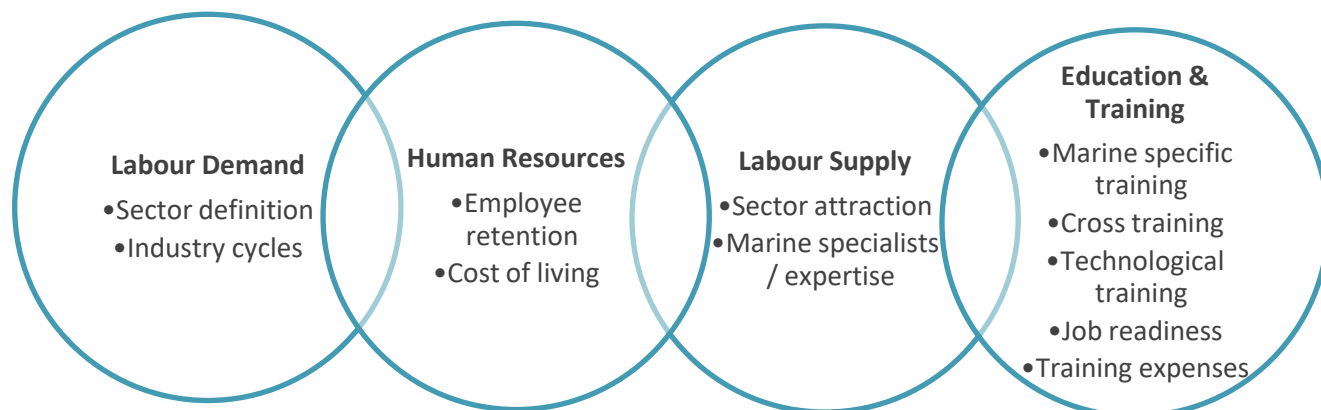
A key informant interview guide was developed by Malatest, with review and approval by ABCMI, to collect information from key informants about their labour market issues and information needs. The final key informant interview guide can be found in Appendix D1. The results from the key informant interviews were used in combination with a secondary data review to develop a discussion paper (see Appendix E1) to help guide and facilitate discussion during the sector engagement sessions.

The discussion paper provided for the sector engagement sessions outlined key labour market issues affecting British Columbia and was used to facilitate discussion on the labour market issues that were particular to the industrial marine sector. Sector engagement session participants were also provided with an agenda for the session (see Appendix E1) and a handout (see Appendix E1) that could be used to provide information privately (i.e., without sharing with the group) and to ensure that their specific needs were addressed.

A total of 4 sector engagement sessions were held in Vancouver and Victoria BC, with 2 sessions on July 5, 2016 and 2 sessions on July 7, 2016. These sessions included both in person and teleconference attendance. Sector engagement session participation included 31 organizations and 33 individuals. A complete listing of organizational participation and sub-sector representation in the sector engagement sessions can be found in Appendix E1.

Labour Market Challenges

Labour market challenges were identified through key informant interviews and further explored during the sector engagement sessions with representatives of all six industrial marine sub-sectors. These results were presented to the Governance Committee for review and validation. The final set of labour market challenges identified by the industrial marine sector included the following key themes:



Labour demand challenges, as perceived by stakeholders, included a lack of information to produce a **sector definition** and **industry cycles** that create unpredictable market dynamics. While individual studies for some of the sub-sectors (e.g., shipbuilding, refit and repair) have been conducted, these studies are becoming dated and do not account for the entire sector. Further to this, public data sources (e.g., Labour Force Survey data) do not align with the sub-sector definitions or occupations in the sector at a fine enough level to be useful in establishing the size and composition of the sector. Related to this lack of information is a "boom and bust" cycle that affects particular sub-sectors (i.e., shipbuilding, refit and repair, marine products, marine industrial services, and marine professional services) more than the others (i.e., small craft marine, and ocean science and technology). The inability to predict these cycles leaves a large portion of the sector without sufficient information to engage in human resource planning activities that support labour market sustainability in the long term.

Human resources challenges, as perceived by stakeholders, included **employee retention** and **cost of living** issues. **Employee retention** issues for the industrial marine sector primarily involved competition from other sectors and from regions outside of BC. Upswings in key sectors, such as oil and gas or construction, draw both tradespersons and professionals (e.g., engineers) particularly where there is a general shortage of workers for these in-demand occupations. Attractive compensation packages and work schedules can entice workers to leave the sector, which results in lost capacity to complete contracts, lost knowledge and specialization, and, in some cases, lost training dollars. In addition to losing workers to other regions and sectors, the BC industrial marine sectors face the somewhat unique challenge of industry agglomerations² along the urban coastal areas. These regions have a high **cost of**

² Agglomerations are clusters of economic activity where economies of scale can be achieved through close proximity of related businesses/industries.

living, in large part due to housing costs. The cost of living in Vancouver and Victoria can be prohibitive for workers to work for even relatively high to moderate levels of income and successfully afford living expenses for themselves and their families. It should be investigated as to whether these cost of living issues also put employers in a bind in terms of affordability of staffing, and thereby limit their ability take on new contracts.

Labour supply challenges, as perceived by stakeholders, included **sector attraction** and **marine specialists and expertise**. To create a robust and thriving labour pool requires that a labour supply enter the occupations that are needed by the sector and are looking to the sector as a general area of interest. Stakeholders participating in key informant interviews and sector engagement sessions believed that there are not enough young people entering trades and engineering programs/occupations or considering the marine sector as a potential area to build a career. Further to this, stakeholders expressed a great need for workers with marine specific skill sets or experience. These skills were particularly lacking for general trades, skilled trades, and skilled professionals (e.g., engineers). Stakeholders were also interested in understanding best practices for attracting workers to the marine sector. A complete listing of in-demand occupations as identified by sector stakeholders can be found in the Terms of Reference (TOR).

Education and training challenges, as perceived by stakeholders, included **marine specific training or skill gaps, cross training, technological training, job readiness, and training expenses**. Training needs of the industrial marine sector need to be researched, including areas such as developing a potential workforce (e.g., marine programs in high schools) and upgrading the existing workforce with marine training. **Marine specific training or skill gaps** needs to be researched, including availability, quality, cost and format in programs such as bridging programs for tradespersons and professionals, courses that develop understanding of marine concepts and terminology in the existing workforce, and exposure to marine concepts and terminology at the K-12 and post-secondary levels. Some of the industrial marine sub-sectors, such as small craft marine, need to have **cross training** (whereby employees entering these sub-sectors require multiple competencies to address employer requirements) needs to be researched. **Technological training** needs that require research are twofold: (1) upgrading and increased program offerings that work with current technologies used by the sector; and (2) value of increased use of technology as a mode of training delivery (e.g., online course offerings). Lack of **job readiness** in post secondary graduates was observed by stakeholders as a general issue that needs to be researched. Another perceived challenge to be explored in a research study challenge is **training expenses** incurred by employers (e.g., on the job training, external training).

Phase 1 Project - Identified Themes

Stakeholders who participated in the key informant interviews and sector engagement sessions also identified key themes for a potential Phase 2 Labour Market Information project. These themes were reviewed by the Governance Committee and prioritized as follows:

1. **Sector Definition** - establishing a clear understanding of the size and composition of the sector and six sub-sectors would help create a basis for labour force projections, human resource metrics (e.g., turnover rates), and future research. An important component of this activity would be taking into consideration any overlap between sub-sectors, as well as differences across sub-sectors (e.g., shipbuilding, refit and repair versus small craft marine). Unionized and non-unionized environments would also need to be reviewed to create a complete picture of the sector and differences across sub-sectors. Further to these considerations, establishing a sector definition that would support generating labour projections would need to account for how industry cycles may (or may not) impact future labour force needs for each of the sub-sectors. Sector definition work may include the following types of activities: a secondary data review, a literature review (i.e., inclusion of existing information such as the Camosun College 2009 study in the area of ocean science and technology and the 2013 ocean science and technology report by Lacroix for the BC Government), an employer survey, employer interviews, and/or sub-sector or employer case studies.

2. **Education and Training** - establishing a clear understanding of the education and training requirements for the sector and best practices in program delivery to create a labour pool that is ready to enter industrial marine occupations. Research into education and training requirements and program delivery should consider the following areas for the individual sub-sectors:
 - Marine specialization and expertise (skill gaps for skilled trades and professionals);
 - Knowledge transfer from soon-to-rotate sector experts;
 - Mentorship of small and medium sized enterprises by larger corporations;
 - Trades bridging;
 - Cross training;
 - Training certification standardization (i.e., trades, safety, and other common certifications within the sector);
 - Co-op education and other internships used particular sub-sectors;
 - Education and training best practices;
 - Endorsements or other bodies of knowledge that can be added to trades training;
 - Other potential training models accessing secondary and post-secondary students;
 - Cost saving/sharing training modalities; and/or
 - Technological training (both in terms of upgrading programs and use of technology to improve training options).

Research into these areas could include the following activities and approaches: a literature review, a best practice review, case studies, key informant interviews, a survey of educators/trainers, and/or a survey of employers.

- 3. Employee Attraction** - establishing an understanding of the need to increase worker attraction into the industrial marine sector could be addressed through determining the drivers or motivating factors that bring youth, new graduates, existing workers, and foreign workers in the sector and in-demand occupations. In order to establish this information, the following approaches may involve: a review of best practices (e.g., international, other sectors), case studies (e.g., Parkland Marine Academy at Parkland Secondary School in North Saanich, use of co-op students by ocean science and technology and marine professional services sub-sectors - note these case studies could overlap with education and training), a literature review, surveys with employers and/or the potential/existing labour pool, focus groups, and/or competitive benchmarking.
- 4. Employee Retention** - establishing an understanding of which sub-sectors have the greatest challenge with employee retention and assessing approaches to keep employees both local and in the industrial marine sector was the last priority. Investigating employee retention issues could be addressed in part through the sector definition activities (e.g., turnover rates), however, specific sub-sector approaches to employee retention would require information about the individual employee retention issues faced by each sub-sector (e.g., retention of people in skilled trades versus in-demand experienced professionals). Further to sub-sector specific issues, broader retention issues and approaches could be explored to determine best fit approaches to keep both knowledge and skill sets in BC (e.g., workforce sharing strategies within sector or in partnership with other sectors). Approaches for determining the nature of employee retention issues and useful methods to address these issues could include: employee (current and past) surveys, employer surveys, key informant interviews, and/or case studies.

Conclusions

The labour market issues of importance to industrial marine sector stakeholders demonstrate a need for additional information about the size and composition of the sector, the dynamics of the sector, and the nature and extent of challenges related to education/training, employee attraction, and employee retention. These information needs map directly to themes which could be explored and better understood through a Phase 2 Labour Market Information project. The purpose of the Project is to conduct a detailed review and analysis of the industrial Marine sector's labour force within each of the six (6) defined sub-sectors and the sector's key issues, including the labour market forecast and economic trends that affect this sector and the current educational and training programs found for these occupations. By way of a Phase 2 project, the industrial marine sector would then be positioned to engage in sector strategy development to address some of the crucial issues in the sector.

General observations made by stakeholders and Governance Committee members were that Phase 2 activities need to result in useful information products for sector stakeholders (as an incentive for participation and in order to be a cost-effective activity) and separate approaches should be undertaken for addressing short-term versus long-term needs (e.g., are workers needed immediately or should the Phase 2 project be concerned with the future workforce). The Governance Committee preference is to focus on a timeframe out to 10 years at a maximum with a view on 2, 5, and 10 years out from the data collection point.

Next Steps

Based on the high levels of support from stakeholders participating in the Phase 1 project for the potential Phase 2 project, ABCMI has advised the Governance Committee of its intent to pursue funding for a Phase 2 Labour Market Research project. The Terms of Reference (TOR) was provided to the Governance Committee for review and approval prior to pursuing funding for the Phase 2 project. The Phase 2 RFP to procure the right subcontractor(s) who have the capabilities and capacity to support the work of the governance committee - for the collection, review, and analysis of labour market information to be used to support development of sector and/or sub-sector strategies by the Governance Committee in a Phase 3 project - detailing project requirements, was also established and confirmed by the Governance Committee. The Phase 2 project will include the collection, review, and analysis of labour market information to be used to support development of sector and/or sub-sector strategies by the Governance Committee in a Phase 3 project.

Next steps to be undertaken by ABCMI include:

1. Submit the Phase 1 Final Report and appended TOR to the provincial government for review and approval. ABCMI has worked with the provincial government to ensure that the Phase 1 Final Report and TOR meet with the Sector Labour Market Partnership Program guidelines for the Phase 1 and Phase 2 projects.
2. Circulate the Phase 1 Final Report to the Governance Committee for reference.
3. Finalize the Request for Proposals (RFP) - for the collection, review, and analysis of labour market information to be used to support development of sector and/or sub-sector strategies by the Governance Committee in a Phase 3 project - based on requirements established by the Governance Committee.
4. Make application to the provincial government for Phase 2 Labour Market Information Study.
5. Circulate RFP to qualified recipients in industry.
6. Negotiate and enter into a Phase 2 Labour Market Information Study contract with provincial government.
7. Using members of the Governance Committee, reviews proposals received through RFP process and select a successful proponent(s).
8. Negotiate and enter into a contract with the successful proponent(s).

Appendix A1: Terms of Reference

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Terms of Reference (TOR) for the Phase 2 Labour Market Project

This TOR was developed to address the objectives of identifying and characterizing the broad sector categories (sub-sectors) within the industrial marine sector and identification occupations within each sub-sector and to identify a research approach to be taken as part of the Phase 2 project.

SUB-SECTOR DEFINITIONS

The BC industrial marine sector can be classified under the North American Industry Classification System (NAICS) codes of 237, 336, 441, 483, 488, and 541. Based on the sub-sector definitions for the BC industrial marine sector, the NAICS codes identified in the following table have been matched to the six BC industrial marine sub-sectors.

NAICS	NAICS Category Description	Sub-sector Definition
3366	Ship and boat building	Shipbuilding, refit and repair includes new construction, modernization, conversion, maintenance, in-service support, barge fabrication and repair and industrial fabrication.
3366 4412	Ship and boat building Other motor vehicle dealers	Small craft marine includes construction of all recreational, pleasure, and small commercial or government craft including rigid hull inflatables and submersibles. Also includes all boatyards, marine repair facilities, chandleries, and yacht brokerages and marinas that also do repair or maintenance.
3325 3363	Hardware manufacturing Motor vehicle parts manufacturing	Marine products include all products that have a marine application and are used by companies in the industrial marine sector.
3345 5416 5417	(12) Measuring, medical and controlling devices manufacturing Management, scientific and technical consulting services Scientific research and development services	Ocean science and technology includes research instrumentation, autonomous and piloted underwater vehicles, cabled observatories, “smart” buoys, marine acoustics, and marine renewable energy.
2379 4831 4883 4885	Other heavy and civil engineering construction Deep sea, coastal and great lakes water transportation Support activities for water transportation Freight transportation arrangement	Marine industrial services includes repair of port and marina infrastructure, marine renewable energy infrastructure, commercial diving and remotely operated underwater vehicles, underwater repair and underwater surveys, dredging, and pile driving.
5413 5416 5417	Architectural, engineering and related services Management, scientific and technical consulting services Scientific research and development services	Marine professional services include marine engineering, naval architecture, marine law, marine consulting, software development and sales, as well as education and training around industrial marine activities.

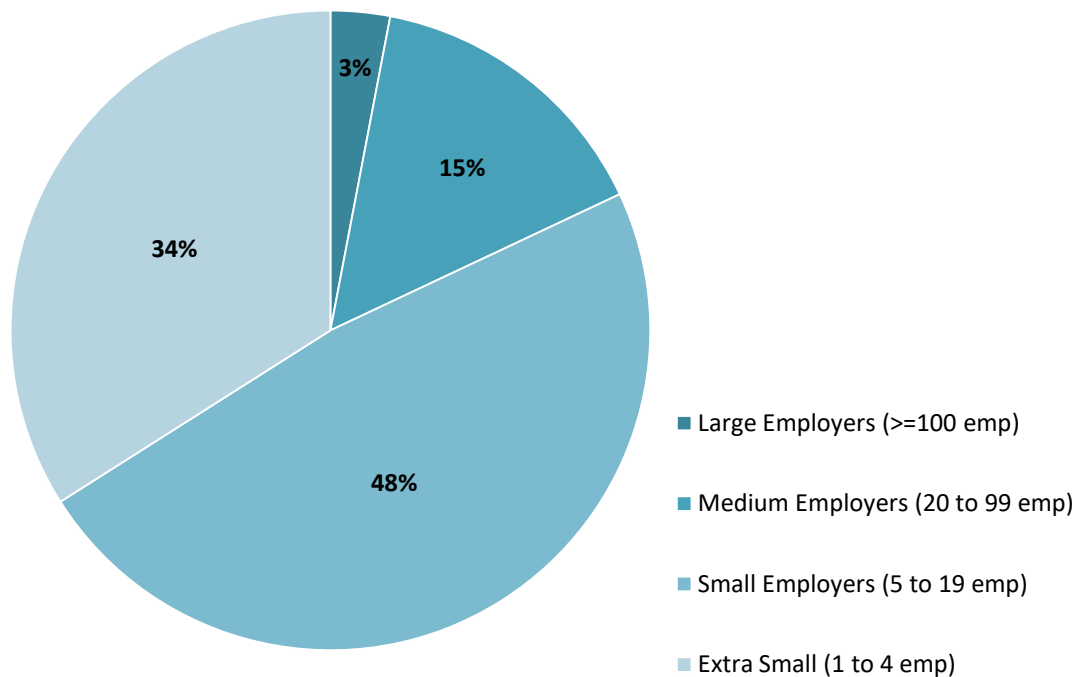
Source: Statistics Canada; North American Industry Classification System (NAICS) Canada 2012; 2012; retrieved from: <http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=118464>.

The industrial marine sector and its sub-sectors are not a direct match to specific NAICS codes, and as such, workforce estimates based on NAICS will overestimate the actual number of employees in the

workforce. To the extent possible, this TOR has focused on marine specific industrial activities, occupations, and education and training. However, it must be observed that these estimates will either over- or under-represent the size, composition, and other details of the industrial marine sector workforce. Additional challenges arise in determining the size and composition of the industrial marine sub-sectors. As shown in the prior table, there is overlap at the 4-digit NAICS level across sub-sectors.

Based on available data from ABCMI and InfoCanada, the BC industrial marine sector includes an estimated total of 806 employers and 13,528 employees. The majority of these employers (82%) are small employers by the BC standard grouping of less than 19 employees. Due to the large size of this group, the chart, below, provides an extra small employer (1 to 4 employees) and small employer (5 to 19 employees) breakdown. Medium sized employers (employers with 20 to 99 employees) account for 15% of the sector. Large employers, employers with 100 employees or more, make up only 3% of the sector.³

BC Industrial Marine Sector Employer Size



Sources: ABCMI industry contact list. InfoCanada business listings data.

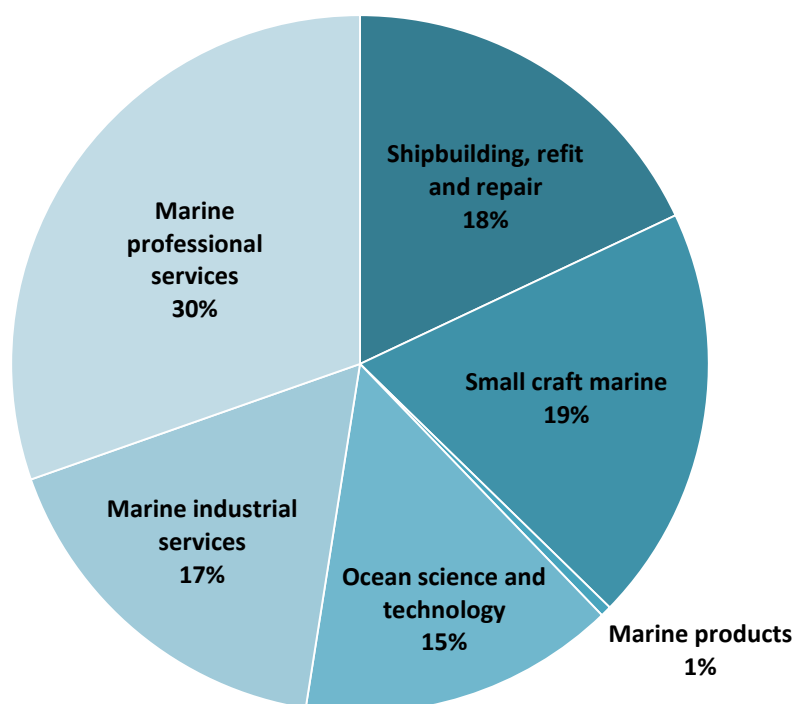
Over three-quarters (79%) of employers in the sector are located in the Lower Mainland/Southwest and Vancouver Island/Coast regions. Specifically, almost one-half (45%) of the sector's employers are located in the Lower Mainland/Southwest region, closely followed by about one-third (34%) of employers in the

³ Note that medium and large size categories do not strictly follow the BC standards of medium = 20 to 249 employees and large = 250 or more employees. This approach was not used due to the small number of employers with 250 or more employees. More information is required to determine best fit employer size categories for this sector.

Vancouver Island/Coast region. Other than the southern coastal regions of the province, Thompson-Okanagan has the next largest proportion of employers (8%). Furthermore, 89% of the sector's workforce is located in the Lower Mainland/Southwest and Vancouver Island/Coast regions.

Based on available data, the sector's workforce is relatively evenly distributed between the majority of the sub-sectors. The marine professional services sub-sector accounts for the highest proportion of the workforce (30%), followed by small craft marine (19%), shipbuilding, refit and repair (18%), marine industrial services (17%), and ocean science and technology (15%). The marine products sub-sector is the exception, with available data showing that only 1% of the workforce works in this sub-sector.

BC Industrial Marine Sector Employer Workforce Proportion by Primary Sub-sector



Sources: ABCMI industry contact list. InfoCanada business listings data. Canadian Company Capabilities database.

The workforce size totals were determined by summation of the number of employees per marine business given in InfoCanada's database, cross-referenced with relevant organizations from the Canadian Company Capabilities database, and the directory list provided by ABCMI. These data were cleaned and collated to ensure that they were reflective of the current state of the sector. However, without information about employers where no employee size information was available, estimates will either over- or under-estimate the relative proportion of the sector's workforce by sub-sector.

INDUSTRIAL MARINE SECTOR SUB-SECTOR OCCUPATIONS

Occupations for each sub-sector were categorized into 4-digit National Occupation Classification (NOC) codes and categorized into occupational groups. This categorization was done through a combination of stakeholder input and a secondary data review. The 4-digit NOC codes and descriptions provide general categorization for occupations in each sub-sector, and, as such, particular occupations or multiple competency occupations are either subsumed by the general categories (e.g., commercial divers are categorized under NOC 7384 "other trades and related occupation, n.e.c.") or cannot be directly mapped to NOC codes (e.g., skilled pipefitters with marine electrical skills).

The following NOC coded occupations have been assigned to each sub-sector as specified:

Shipbuilding, refit and repair		
Occupational Group	NOC code(s)	
Manager	0016	Senior Managers - Construction, Transportation, Production and Utilities
	0711	Construction Managers
	0911	Manufacturing Managers
Professional / Technical	2132	Mechanical Engineer
	2141	Industrial and Manufacturing Engineers
	2148	Other Professional Engineers, N.E.C. (Naval Architect, Naval Engineer, Marine Engineer, Marine Systems Engineer)
	2232	Mechanical Engineering Technologists and Technicians
Skilled / Trades	2261	Non-destructive Testers and Inspection Technicians
	2243	Industrial Instrument Technicians and Mechanics (Instrumentation and Control Technicians)
	7201	Contractors and Supervisors, Machining, Metal Forming, Shaping and Erecting Trades and Related Occupations (Machinist)
	7202	Contractors and Supervisors, Electrical Trades and Telecommunications Occupations (Construction Electricians)
	7232	Tool and Die Makers
	7234	Boilermakers
	7235	Structural Metal and Platework Fabricators and Fitters
	7237	Welders and Related Machine Operators
	7242	Industrial Electricians
	7252	Steamfitters, Pipefitters and Sprinkler System Installers
	7271	Carpenters
	7293	Insulators
	7294	Painters and Decorators (Except Interior Decorators)
	7301	Contractors and Supervisors, Mechanic Trades
	7312	Heavy-Duty Equipment Mechanics
	7313	Refrigeration and Air Conditioning Mechanics
7333	Electrical Mechanics (Electric Motor Systems Technician)	
7371	Crane Operators	

Shipbuilding, refit and repair		
Occupational Group	NOC code(s)	
	7384	Other Trades and Related Occupations, N.E.C.
	7445	Other Repairers and Services
	7521	Heavy-Duty Equipment Operators
	9241	Power Engineers and Power Systems Operators
	9523	Electronics Assemblers, Fabricators, Inspectors and Testers
Semi-skilled	1221	Administrative Officers
	7611	Construction Trades Helpers and Labourers
	7612	Other Trades Helpers and Labourers
	9525	Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers
	9612	Labourers in Metal Fabrication
	9619	Other Labourers In Processing, Manufacturing and Utilities
	9621	Labourers in Metal Fabrication

Small Craft Marine		
Occupational Group	NOC code(s)	
Manager	0016	Senior Managers - Construction, Transportation, Production and Utilities
	0711	Construction Managers
	0911	Manufacturing Managers
Professional / Technical	2141	Industrial and Manufacturing Engineers
	2261	Non-destructive Testers and Inspection Technicians
	2262	Engineering Inspectors and Regulator Officers
Skilled / Trades	2232	Mechanical Engineering Technologists and Technicians (Mechanical Technician)
	7201	Contractors and Supervisors, Machining, Metal Forming, Shaping and Erecting Trades and Related Occupations
	7202	Contractors and Supervisors, Electrical Trades and Telecommunications Occupations (Construction Electricians)
	7235	Structural Metal and Platework Fabricators and Fitters
	7237	Welders and Related Machine Operators
	7242	Industrial Electricians
	7271	Carpenters
	7294	Painters and Decorators (Except Interior Decorators)
	7312	Heavy-Duty Equipment Mechanics
	7384	Other Trades and Related Occupations, N.E.C. (Marine Service Technician)
	7521	Heavy-Duty Equipment Operators
	7612	Other trades helpers and labourers

Small Craft Marine		
Occupational Group	NOC code(s)	
	9414	Concrete, Clay and Stone Forming Operators
	9531	Boat Assembler and Inspectors
	9535	Plastic Products Assemblers, Finishers and Inspectors (Fibreglass Repair and Fabrication)
Semi-skilled	1221	Administrative Officers
	7611	Construction Trades Helpers and Labourers
	9525	Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers
	9612	Labourers in Metal Fabrication
	9619	Other Labourers In Processing, Manufacturing And Utilities

Marine Products		
Occupational Group	NOC code(s)	
Manager	0016	Senior Managers - Construction, Transportation, Production and Utilities
	0711	Construction Managers
	0911	Manufacturing Managers
Professional / Technical	2131	Civil Engineers (Coastal Engineers, Hydraulic Engineers)
	2132	Mechanical Engineer
	2141	Industrial And Manufacturing Engineers (Quality Assurance)
	2148	Other Professional Engineers, N.E.C. (Naval Architect, Naval Engineer, Marine Engineer, Marine Systems Engineer)
	2232	Mechanical Engineering Technologists/Technicians
Skilled / Trades	2243	Industrial Instrument Technicians and Mechanics (Instrumentation and Control Technicians)
	7237	Welders and Related Machine Operators
	7242	Industrial Electricians
	7243	Power System Electricians
	7201	Contractors and Supervisors, Machining, Metal Forming, Shaping and Erecting Trades and Related Occupations
	7202	Contractors and Supervisors, Electrical Trades and Telecommunications Occupations (Construction Electricians)
	7231	Machinists and Machining and Tooling Inspectors
	7312	Heavy-Duty Equipment Mechanics
	7333	Electrical Mechanics (Electric Motor Systems Technician)
	7235	Structural Metal and Platework Fabricators and Fitters
	7371	Crane Operators (Pile Drivers)
	7384	Other Trades and Related Occupations, N.E.C. (Marine Service Technician)
	7521	Heavy-Duty Equipment Operators
Semi-skilled	1221	Administrative Officers

Marine Products		
Occupational Group	NOC code(s)	
	7612	Other trades helpers and labourers
	9525	Assemblers, Fabricators and Inspectors, Industrial Electrical Motors and Transformers
	9612	Labourers in Metal Fabrication
	9619	Other Labourers In Processing, Manufacturing And Utilities

Ocean Science and Technology		
Occupational Group	NOC code(s)	
Manager	0016	Senior Managers - Construction, Transportation, Production and Utilities
	0211	Engineering Managers
	0212	Architecture and Science Managers
	0714	Facility Operations And Maintenance Managers (Marinas)
Professional / Technical	2113	Geoscientists and Oceanographers
	2121	Biologists and Related Scientists
	2131	Civil Engineers (Coastal Engineers, Hydraulic Engineers)
	2132	Mechanical Engineers
	2133	Electrical and Electronics Engineers
	2148	Other Professional Engineers, N.E.C. (Naval Architect, Naval Engineer, Marine Engineer, Marine Systems Engineer)
	2173	Software Engineers and Designers
	2241	Electrical and Electronics Engineering Technologists and Technicians
	2255	Technical Occupations in Geomatics and Meteorology
	4161	Natural/Applied Science Policy Researchers/Consultants/Program Officers
	4167	Recreational..Researcher, Consultants, Program Officers
	7384	Other Trades and Related Occupations, N.E.C. (Marine Service Technician)
Skilled/Trades	2232	Mechanical Engineering Technologists/Technicians (Marine Mechanical Technician)
	7202	Contractors and Supervisors, Electrical Trades and Telecommunications Occupations
	7384	Other Trades and Related Occupations, N.E.C. (Marine Service Technician)
Semi-skilled	1221	Administrative Officers
	9619	Other Labourers In Processing, Manufacturing And Utilities

Marine Industrial Services		
Occupational Group	NOC code(s)	
Manager	0016	Senior Managers - Construction, Transportation, Production and Utilities
	0711	Construction Managers

Marine Industrial Services		
Occupational Group	NOC code(s)	
	0714	Facility Operation and Maintenance Managers
	0911	Manufacturing Managers
Professional / Technical	2113	Geoscientists and Oceanographers (Hydrographic Surveyors)
	2131	Civil Engineers (Coastal Engineers, Hydraulic Engineers)
Skilled / Trades	1523	Production Logistics Coordinators (Project Administrators)
	1525	Dispatchers
	2154	Land Surveyors
	2231	Civil Engineering Technologist & Technicians
	2232	Mechanical Engineering Technologists/Technicians (Marine Mechanical Technician)
	2234	Construction Estimator
	2254	Land Survey Technologists and Technicians (Surveyor)
	2264	Construction Inspectors
	7201	Contractors and Supervisors, Machining, Metal Forming, Shaping and Erecting Trades and Related Occupations (Foreman)
	7202	Contractors and Supervisors, Electrical Trades and Telecommunications Occupations
	7204	Contractors and Supervisors, Carpentry Trades (Carpenter Foreman)
	7231	Machinists and Machining and Tooling Inspectors
	7237	Welders and Related Machine Operators
	7242	Industrial Electricians
	7243	Power System Electricians
	7271	Carpenters
	7301	Contractors and Supervisors, Mechanic Trades (Heavy Duty Equipment Foreman)
	7302	Contractors and Supervisors, Heavy Equipment Operator Crews (Dredging Foreman)
	7312	Heavy Duty Equipment Mechanics
	7371	Crane Operators (Pile Drivers)
	7384	Other Trades and Related Occupations, N.E.C. (Marine Service Technician)
	7532	Water Transport Deck and Engine Room Crew (Dredge Deckhand)
	7553	Boat and Cable Ferry Operators and Related Occupations
	7611	Construction Trades Helpers and Labourers (Piledriving Ground Worker)
	7612	Other trades helpers and labourers
	9241	Power Engineers and Power Systems Operators
Semi-skilled	1221	Administrative Officers
	7612	Other Trade Helpers (Diver Helper)
	9619	Other Labourers In Processing, Manufacturing And Utilities

Marine Professional Services		
Occupational Group	NOC code(s)	
Manager	0014	Senior Managers - Health, Education, Social and Community Services and Member Organizations
	0016	Senior Managers - Construction, Transportation, Production and Utilities
	0211	Engineering Managers
	0212	Architecture And Science Managers
	0421	Administrators - Post-secondary Education and Vocational Training
	0714	Facility Operation and Maintenance Managers
Professional / Technical	1123	Professional Occupations in Advertising, Marketing and Public Relations
	2113	Geoscientists And Oceanographers
	2131	Civil Engineers (Coastal Engineers, Hydraulic Engineers)
	2132	Mechanical Engineer
	2133	Electrical and Electronics Engineers
	2134	Chemical Engineers
	2145	Petroleum Engineers
	2148	Other Professional Engineers, N.E.C. (Naval Architect, Naval Engineer, Marine Engineer, Marine Systems Engineer)
	2173	Software Engineers and Designers
	2241	Electrical and Electronics Engineering Technologists and Technicians
	2253	Drafting Technologists And Technicians
	4011	University Professors And Lecturers
	4112	Lawyers and Quebec Notaries
4161	Natural and Applied Science Policy Researchers, Consultants and Program Officers	
Skilled / Trades	2174	Computer Programmers and Interactive Media Developers
	6221	Technical Sales Specialists - Wholesale Trade
	9241	Power Engineers and Power Systems Operators
Semi-skilled	1221	Administrative Officer
	1241	Office Administrative Assistant

Sources: Government of Canada; National Occupation Classification 2011; 2011; retrieved from: <http://www5.hrsdc.gc.ca/NOC/English/NOC/2011/Welcome.aspx>. Phase 1 Key Informant Interview; Phase 1 Sector Engagement Sessions.

Although all occupations listed in this report are relevant for a Phase 2 Labour Market Information Study, the following occupations were identified by industrial marine sector stakeholders in key informant interviews, sector engagement sessions, and Governance Committee meetings as being in-demand or difficult to hire-for occupations. This combined list represents crossover of occupations from within sub-sectors. These occupations were identified as being most relevant to the industrial marine industry as a whole.

NOC	NOC Description	Stakeholder Identified In-demand Occupations
0211	Engineering Managers	Project Managers
1123	Professional Occupations in Advertising, Marketing and Public Relations	Marketing
2113	Geoscientists and Oceanographers	Physical Oceanography
2132	Mechanical Engineers	Automation Engineers Commissioning Engineers Design Engineers Mechanical Engineers
2133	Electrical and Electronics Engineers	Electrical Engineers Process Control Engineers
2145	Petroleum Engineers	ROV Pilots / Subsea Engineers
2148	Other Professional Engineers, N.E.C.	Naval Architecture Naval Engineering
2173	Software Engineers and Designers	Software Developers
2174	Computer Programmers and Interactive Media Developers	Programmers
2241	Electrical and Electronics Engineering Technologists and Technicians	Technologists
2261	Non-destructive Testers and Inspection Technicians	Non-destructive Testers
6221	Technical Sales Specialists - Wholesale Trade	Technical Sales
7201	Contractors and Supervisors, Machining, Metal Forming, Shaping and Erecting Trades and Related Occupations	Sailboat Riggers Shipwrights
7231	Machinists and Machining and Tooling Inspectors	Machinists
7235	Structural Metal and Platework Fabricators and Fitters	Fabricators Fitters
7237	Welders and Related Machine Operators	Welders
7242	Industrial Electricians	Electricians
7294	Painters and Decorators (Except Interior Decorators)	Painters
7312	Heavy-duty Equipment Mechanics	Equipment Technicians
7371	Crane Operators	Pile Drivers
7384	Other Trades and Related Occupations	Commercial Divers
9241	Power Engineers and Power Systems Operators	Power Engineers
9612	Labourers in Metal Fabrication	Sand Blasters



Sources: Government of Canada; National Occupation Classification 2011; 2011; retrieved from:
<http://www5.hrsdc.gc.ca/NOC/English/NOC/2011/Welcome.aspx>. Phase 1 Key Informant Interview; Phase 1 Sector
Engagement Sessions.

ACTIVITIES TO BE COMPLETED FOR PHASE 2

A Phase 2 Labour Market Information project will require attention to elements of project scope, sufficient detail to ensure that the information and/or analysis is unique and reported in accordance with standard classification models (e.g., NOC), historical sensitivity, and reliability.⁴ This section provides recommended activities that could be undertaken part of a Phase 2 Labour Market Information project. These recommendations have been developed to inform all areas to be addressed in a Phase 2 project, however, it should be noted that each of these activities would require detailed research plans to ensure that the guidelines for scope, level of detail, historical sensitivity, and reliability are met.

1. Methodology Options

The following are methodological overview for Phase 2 Labour Market Information research options:

1. Analysis and Synthesis of Existing Labour Market Information

Although it was noted that there is very little data available from public data sources (e.g., the Labour Force Survey, 2011 Census) due to factors such as the size of the sector and how it maps to conventional industry classification systems, it is possible that some information can be drawn from sub-sector studies and supported with information from the recent 2016 Census (data will be available in late 2017 and could be combined with information collected through other Phase 2 activities) to develop a baseline profile of the sector and six sub-sectors.

2. Surveys of Employers

Given that the size and composition of the workforce in each sub-sector is unknown, it will be necessary to reach out to employers in each sub-sector. Further, given the diversity of each sector, it is envisioned that each sector would have its own survey reflecting the occupation profile for each sub-sector. Due the need to collect data across six sub-sectors, it is expected that approximately from 400 up to 600 employer surveys should be completed with sufficient completions per sub-sector for subgroup analysis. Note that detailed subgroup analysis (e.g., union/non-union employees, employer size, geographic region) *at the sub-sector level* would require additional completion targets to be developed in a detailed sampling plan.

3. Analysis of Existing Economic Information

To ensure that industry cycles are understood and accounted for in labour market projections, analysis of existing economic information reporting historical trends for the industrial marine sector could be undertaken. This activity would support a more in-depth understanding of: (1) the trajectory of the sub-sectors impacted by industry cycles; (2) the inter-relationships of the sub-sectors; and (3) impacts of predictable external factors on the sector.

⁴ Ministry of Jobs, Tourism and Skills Training; Sector Labour Market Partnership Program Labour Market Information Research Guidelines; June 1, 2016; retried from: <https://www.workbc.ca/getmedia/fc13ef50-4477-422e-bb60-0e84e40cf21b/2016-06-01-SLMP-LMI-Research-Guidelines.pdf.aspx>

4. Key Informant Interviews

To assess the key labour market and training issues for scope, relevance, and future implications, in-depth interviews should be held with employer, labour, and education and training representatives. It would be expected that 20 such interviews should be completed.

5. Review and Inventory of Education and Training System

As part of the Phase 2 labour market study, it would be important to identify the full range of education and training programs available in British Columbia and Canada (national level information would be important for particular occupations for which training is unavailable in BC). This would also include estimates of the number of graduates and identification of challenges facing the education and training system. In addition, it may be appropriate to examine the education and training models used in other jurisdictions in Canada and abroad that could be adopted in British Columbia.

6. Other Research Activities

It is possible to undertake additional research activities to provide insights as to some of the issues identified in the Phase 1 project. Other research activities may include:

- Surveys and/or focus groups with youth and/or new graduates - to ascertain their perceptions of the marine sector, determine factors that attract them to particular sectors and occupations, and determine why they would or would not enter the sector after graduation (e.g., cost living concerns, compensation levels).
- Surveys and/or focus groups with current employees/employers to explore issues of:
 - Attraction/Retention - explore attraction and retention issues with existing employees in the sector. This would include answering the question of how long the sector can expect to retain workers in a downturn in the sector, before losing them to other sectors and/or regions.
 - Short-term and long-term workforce needs - investigate the extent of the need for short-term and long-term labour demand (i.e., which occupations are needed in the next year and which will be needed in 5 to 10 years) and possible labour pools that can be accessed and/or enhanced to address labour demand in the short- and long-term. This activity should include research into global shortages for particular occupations/skill sets and estimation of potential financial loss due to a lack of particular occupations/skills sets.
- Case studies with employers - to highlight innovative or best practices with respect to training and retention.
- Case studies of education/training programs - to better understand success and best practices models for delivering marine education/training.
- Case studies on co-op and other internship programs - to assess value of internship models and effectiveness in supporting workforce and employer recruitment requirements.

- Key informant interviews to explore focused education/training issues:
 - Cross training - issues of cross training are difficult for the education/training sector to address as there are insufficient enrollment volumes for this kind of training. Training add-ons and modularized training may be viable options.
 - Marine Service Technician and Marine Mechanical Technician apprenticeship streams - determine the importance (i.e., need for trades and on-the-job training) for the Industry Technical Authority (ITA) to continue to support these apprenticeship streams through approved training providers.
 - Endorsements - assess the need for endorsements or additional bodies of knowledge that can be added to trades training and explore online training models for endorsements.

2. Tools

Depending on the methodological options selected for Phase 2, tools for data collection could include any of the following:

- General research questions for scoping and direction;
- Surveys - online, telephone, paper, or mixed-mode - with targeted populations (e.g., employers, youth, workers, tradespersons, new graduates, etc.);
- Key informant interview guides tailored to identified key informant groups;
- Focus group moderators guides tailored to identified participant groups;
- Case study protocols detailing case study approach, targeted organizations, programs, and/or populations, and accompanying supportive instruments (e.g., interview guides);
- Literature/document scan protocol; and
- Secondary data review protocol.

3. Activity Reports

It would be expected that regular (e.g., bi-weekly, monthly) activity reports would be generated to demonstrate the progress of the Phase 2 project. Typically, such activity reports would include:

- Status of the key project deliverables (i.e., number of key information interviews completed, employer survey completions, etc.);
- Description of project challenges and proposed mitigation strategies (as appropriate); and
- Discussion of project timelines.

4. Labour Market Information Draft Report

A draft Labour Market Information report would need to be developed to include, at minimum the content requirements provided in the Sector LMP Program "Labour Market Information Research

Guidelines" in addition to the methodological requirements for the Labour Market Information project, to be specified in a Request for Proposal document.

5. Final Labour Market Information Report

A final Labour Market Information report would need to be developed to include, at a minimum, the content specified for the draft Labour Market Information Report. The final report would be the primary deliverable for the Labour Market Information Phase 2 project. The report would need to satisfy the objectives set out in the methodological design.



Appendix B1: Governance Committee Meeting Minutes

Meeting Minutes – August 3, 2016
Held at R.A. Malatest & Associates Ltd.
858 Pandora Ave, Victoria B.C.

Inaugural Governance Committee meeting to discuss Phase 1 project results and next steps held on August 3, 2016 in person and by conference call, commencing at 10:30 A.M. PDT

Present were:

- Alex Rueben (Chair) - Industrial Marine Training & Applied Research Centre, ABCMI Board
- Campbell Black - Blackline Marine
- Gary Hamata - Vancouver Pile Driving
- Laurie Holland - Therrien - BCIT
- Steve Baker - Seaspan Victoria Shipyards
- Marcus Ewert-Johns - BC Alliance for Manufacturing
- Derek Davis - Derek Davis Consulting Inc., ABCMI Board
- Bruce Kempling - Ocean Pacific Marine
- Rollie Webb - Robert Allan Ltd.
- Teresa Wong - Prototype Equipment Design (representing Ray Brougham)
- Des Rogers - Federal Government Dockyard Trades & Labour Council
- Dave Fissel - ASL Environmental Sciences Inc.
- Ryan Nicoll - Dynamic Systems Analysis Ltd.
- Shauna Collister - BC Government
- Rob Malatest (Contractor Lead) - Malatest
- Michelle Riddle – Malatest

Absent:

- Bill Jackson – Schneider Electric
- Robert Lewis-Manning – Chamber of Shipping of BC
- Ron Wickett – Machinists, Fitters & Helpers Industrial Union, Local No. 3

Minutes submitted by: Alex Rueben and Michelle Riddle

1. Agenda

- 1. Introductions** - The Chair invited all attendees to introduce themselves and provide an overview of their role in the context of the BC industrial marine sector.

2. **Sector Labour Market Partnership Program** – Shauna Collister, Program Manager, Sector Programs Ministry of Jobs, Tourism & Skills Training and Responsible for Labour, outlined the five phases of the Sector Labour Market Partnership Program.
3. **Role of Governance Board** – The Chair, assisted by the Contractor Lead, outlined the role and expectations of the Governance Committee for the current and future phases.
4. **Overview of Key Findings from the Phase 1 Project** – The Contractor Lead provided an overview of the results from the secondary data review, key informant interviews, and sector engagement sessions.
 - a. Key labour market issues
 - b. Ensuing labour market themes
 - c. Phase 2 considerations
5. **Options for Phase 2: Priorities and Approaches** – The Chair, assisted by the Contractor Lead, led a discussion on the priorities, approaches and consensus for a Phase 2 Sector Labour Market Information Project.
6. **Wrap-up and Next Steps** – The Chair, assisted by the Contractor Lead, provided an overview of the next steps for the Governance Board and the sector.

2. Topics Discussed

Sector Labour Market Partnership (LMP) Program:

- Any phase of the LMP Program can be approached as long as data exists to enter that phase.
- The current phase is to help determine what the current industrial marine sector partnerships look like and who will be on the Governance Committee (GC).
- Other related project phases are currently underway. For example, the international shipping industry is engaged in a Phase 2 project. However, the industrial marine sector will be looking at a broader context.

Role of the Governance Committee:

- Ensure that the correct labour market issues and themes are being identified in the current Phase 1 - Sector Engagement project.
- Future participation levels will include about 2 to 3 meetings per phase. Information will be circulated prior to the meetings to ensure that participants are well prepared to launch into a decision making oriented meeting.

Labour Market Issues:

- The following issues were presented to the group: lack of sector definition, industry cycles, sector attraction, need for marine sector specialists/experts, employee retention, education/training, and prohibitive cost of living.

BC Industrial Marine Sector Phase 1 - Sector Engagement Project

- Issues identified by the group as missing included: cross training needs for small businesses and small craft marine sub-sector (e.g., need for pipefitting and electrical skill in a single employee).
 - It was confirmed that needs differ between the industrial side and recreational side of the sector. A Phase 2 project would need to be flexible enough to address these differences.
 - The labour requirements for work in the small craft marine sector are much different than in shipbuilding & ship repair. In small craft marine, an environment that is often not unionized, workers require specific training to do more than just one particular skill set. Thus, there is a requirement to have a range of add-on training packages to specific trades that provide this breadth of competencies in the small craft marine labour force.
- Issues of cross training are difficult for the education/training sector to address as there are insufficient enrollment volumes for this kind of training. Training add-ons and modularized training may be viable options.
- The small craft marine sector has a need for trades training in the Marine Service Technician and Marine Mechanical Technician apprenticeship streams and thus it is important for the Industry Technical Authority (ITA) to continue to support these apprenticeship streams through approved training providers. What is also required, however; is for the ITA to work closely with companies in the small craft marine sector to support on-the-job training.
- Labour market issues theme to add to interim report, "look at the need for endorsements or additional bodies of knowledge that can be added to trades training."
- Labour market issues theme to add to interim report, "skill gaps"
 - Lacking shipwrights with knowledge of marine survey. New people coming into the industry don't have these kind of combined of skill sets. Hull techs from navy are not coming with marine survey skills.
- Labour market issues need to reflect whether the need is short-term or long-term (e.g., need workers overnight = tap into existing labour pools or build skill sets in existing labour pool).
 - In cases of a global shortage of particular skill sets, employers have to pay a premium.
 - Graduates do not always stay local.

Phase 2 Themes:

- The follow Phase 2 themes were presented to the group:
 - Sector definition - establish size and composition of sector
 - Employee attraction - determine the drivers/motivators for people to enter the sector
 - Employee retention - determine which sub-sectors have the greatest challenge with employee retention and investigates ways to keep employees in the sector and local
 - Education and training - assess needs and requirements, as well as feasibility of program types/offerings

- Marine specialization/expertise
 - Trades bridging programs
 - Training certification standards
 - Education/training best practices
 - Technology training
- HR metrics - develop benchmarking data (likely to be subsumed by sector definition)
- *[NOTE: this item was determined to be inappropriate for themes]* HR strategies - determine the types of strategies that may have been tried and tested and appropriate for the sector (e.g., research best practices)
- Partnership opportunities - determine what types of partnership opportunities are available
- Continued sector collaboration - further investigation into sector engagement and partnership options
- Marine specialization and trades bridging should also look at marine specialization and skill development for professionals (e.g., engineers).
- Phase 2 theme to add to interim report - "knowledge transfer" (e.g., in ship repair, estimation is a crucial skill that may be lost as the older generation moves on).

Key Themes for Interim/Final Phase 1 Reports and TOR:

- In order of interest/importance:
 - i. Sector definition (including some analysis of industry cycles where appropriate)
 - ii. Education/training
 - iii. Employee attraction (Employee attraction should not only focus on youth and workers from other sectors in the Province and Canada, but also on foreign skilled workers that can supplement the labour force, such as crane operators from the US)
 - iv. Employee retention
- Sector definition, in all of its components ranging from composition to retirement projections, is the most important theme that needs to be pursued in Phase 2 – LMI Study. Given the breadth of the industrial marine sector with its six subsectors, this will make sector definition especially important in determining relevant and accurate findings in the LMI Study.
- If sector definition is pursued, overlap between sectors needs to be clearly understood.
- "Boom and bust" cycles do not impact all sub-sectors (e.g., ocean, science and technology).
- Employee attraction – A suggested case study, in the context of attracting youth to the industry, was the Parkland Marine Academy at Parkland Secondary School in North Saanich, BC.
- It was noted that some of the other Phase 2 Themes might fall out of the prioritized activities.

BC Industrial Marine Sector Phase 1 - Sector Engagement Project

- The use of co-op students from post-secondary institutions was considered directly relevant to the Ocean Science & Technology and Marine Professional sub-sectors yet also had support in the other four sub-sectors. This should be explored in the LMI Study.
- Trades bridging programs through the use of endorsements on existing approved trades qualifications or other learning/training initiatives that allow workers to branch into the industrial marine sector from other sectors in the economy, are needed to enhance the labour force in the industrial marine sector. This should be explored in the LMI Study.
- The use of 'Marine Academies' in the K-12 school system is a way of drawing youth into the industrial marine sector. A good example is the Parkland Marine Academy at Parkland Secondary School in North Saanich, BC. This should be explored in the LMI Study.
- The 'Transfer of Knowledge' from the older retiring demographic to the younger labour force should be considered in the LMI Study. An example of 'Estimating for Ship Repair' was given where new curriculum was developed to establish formal training in this skill set as previously this skill had only been taught by word of mouth and on-the-job experience.
- Certification of trades, professions and safety and other qualifications across provinces should be looked at in the LMI Study.
- The use of on-line learning to bolster technological training and incremental training required by the labour force should be explored by the LMI Study.
- HR Strategies follow the conduct of Labour Market Information Research and do not in themselves constitute a 'theme' going into the LMI Study. HR Strategies are informed and identified by the LMI Study and flow from the LMI Study.
- The LMI Study needs to focus on the future labour needs and challenges as opposed to what they are at the present moment. Thus, the LMI Study needs to project/forecast into the future using specific timeframes but not exceeding 10 years as information is somewhat questionable after that time period.
- Mentorship of small and medium sized enterprises (SME) by large corporations might be something that could be considered in developing skills in the labour forces of the SME.

Sector Information/Estimates:

- In terms of sources of information that could assist the LMI Study, in the area of Ocean Sciences & Technology, a Camosun College study (2011) as well as on-line sources identifying a BC cluster of Ocean Science & Technology companies and organizations could provide useful information. In the area of Small Craft Marine, it is estimated that there are approximately 2,000 people directly employed in the sub-sector, however; this would need to be verified through primary and secondary research. In the area of Marine Industrial Services, sources of information could come from Worksafe BC that tracks man-hours in 4 sub-sectors as well as two large unions (one being Local 2404 Pile Drivers) that employ workers in this sub-sector. For Marine Professionals, it is estimated that there are about 200 naval architects and marine engineers in the Province as well as that many again involved in software design around marine applications. This would need to be verified through primary and secondary research.
- The majority of those working in the Ocean Sciences & Technology sub-sector have a post-secondary education and approximately 40% of those have a post-graduate degree.

3. Action Items/Next Steps

- Contractor to revise and update Interim Report for Phase 1 and submit to ABCMI
- Contractor to flesh out content for Phase 2 approach and to develop a TOR for Phase 2.
- Contractor to include the above in a draft Final Report for Phase 1 to be ready for review by members of the Governance Committee prior to the next meeting.
- Occupations not currently listed against the industrial marine sector and its six sub-sectors, that should be included, should be passed to the Governance Committee Chair and to the Contractor.

4. Next Meeting

- Governance Committee to meet in Vancouver (location TBD) on September 15, 2016.

Adjournment:

Meeting was adjourned at roughly 1:00 P.M. PDT

Meeting Minutes – September 15, 2016
Held at Vancouver Pile Driving
20 Brooksbank Avenue, Vancouver BC V7J 2B8

Second Governance Committee meeting to discuss Phase 1 project Interim Report, Terms of Reference, and Phase 2 RFP held on September 15, 2016 in person and by conference call, commencing at approximately 10:00 A.M. PDT

Present were:

- Alex Rueben (Chair) - Industrial Marine Training & Applied Research Centre, ABCMI Board
- Campbell Black - Blackline Marine
- Gary Hamata - Vancouver Pile Driving
- Steve Baker - Seaspan Victoria Shipyards
- Bruce Kempling - Ocean Pacific Marine
- Rollie Webb - Robert Allan Ltd.
- Ray Brougham - Prototype Equipment Design
- Des Rogers - Federal Government Dockyard Trades & Labour Council
- David Fissel - ASL Environmental Sciences Inc.
- Ryan Nicoll - Dynamic Systems Analysis Ltd.
- Leann Collins - ABCMI
- Shauna Collister - BC Government
- Rob Malatest (Contractor Lead) - Malatest
- Michelle Riddle – Malatest

Absent:

- Bill Jackson – Schneider Electric
- Robert Lewis-Manning – Chamber of Shipping of BC
- Ron Wickett – Machinists, Fitters & Helpers Industrial Union, Local No. 3
- Laurie Holland-Therrien - BCIT
- Marcus Ewert-Johns - BC Alliance for Manufacturing

Minutes submitted by: Alex Rueben and Michelle Riddle

2. Agenda

- 1. Introductions** - The Chair invited all attendees to introduce themselves and provide an overview of their role in the context of the BC industrial marine sector.
- 2. Review of Interim Report** – The Contractor Lead provided a high level overview of the contents of the report (themes and labour market issues). The floor was opened for questions and feedback including receiving confirmation that the proper job occupations for all sub-sectors are listed in the terms of reference.

3. **Review of the Terms of Reference** – The Governance Committee collectively reviewed the terms of reference, provided feedback on errors or omissions, and discussed what feedback be incorporated into the document.
4. **Request for Proposals (RFP) for a Phase 2 Labour Market Information Project** – The Contractor Lead provided an overview of the methodological approach outlined in the RFP. The floor was opened to members of the Governance Committee to provide input and feedback to be incorporated into the RFP.
5. **Wrap-up and Next Steps** – The Chair, assisted by the Contractor Lead, provided an overview of the next steps for the Governance Committee and the sector.
 - a. Finalization of Phase 1 Final Report and appended TOR
 - b. Development of Phase 2 Contract
 - c. Refinement and issuance of RFP (vendor selection and Governance Committee involvement)

5. Topics Discussed

Interim Report Changes:

- Changes from David Fissel sent by email:
 - Page 7, point 1 - add Ocean Science and Technology report by Lacroix (2013) and change 2011 date for Camosun College study to 2009.
 - Page 8, point 2 - add co-op education and other types of internships used by Ocean Science and Technology and Marine Professional sub-sectors as a research point and as a case study option.
- The employer size categorization did not meet Governance Committee members expectations for employer size representation, particularly for medium and large size employers. It was suggested that a fourth category be added or that the BC government size categorization be used. It was also noted that the federal government defines a Small & Medium Sized Business (SMB) as an organization of up to 250 employees.
- Co-op education and internships should be added to identified themes under 'Education & Training' and should also be reflected in the TOR.

Changes to or Additions to Sub-sector NAIC/NOC Listing:

- Move Insulators (NOC 7293) and Crane Operators (NOC 7371) to Skilled/Trades under Shipbuilding and Repair
- Move Non-Destructive Testers and Inspection Technicians to Professional/Technical under Shipbuilding and Repair
- Add Fibreglass Repair and Fabrication (NOC??) to Small Craft Marine
- Add Marine Service Technician (NOC 7384) to Small Craft Marine

BC Industrial Marine Sector Phase 1 - Sector Engagement Project

- Add Marine Mechanical Technician (NOC 7384) to Small Craft Marine
- Add NAICS and NOCs provided by David Fissel under separate e-mail to Ocean Science and Technology (NAIC - 3345(12), NOC - 2121, 2132, 2133, 2173, 2255)
- Add Ocean Engineers to Ocean Science and Technology
- Add Hydrographic Surveyors to Professional/Technical under Marine Industrial Services
- Add Pile Driving (NOC 7371) to Skilled/Trades under Marine Industrial Services
- Add Welders (NOC 7237) to Skilled/Trades under Marine Industrial Services
- Add Crane Operators (NOC 7371) to Skilled/Trades under Marine Industrial Services
- Add Naval Architects and Marine Engineers to Marine Professional Services
- Add Coastal and Hydraulic Engineers to Marine Professional Services
- Under Shipbuilding and Repair, NOC 7532, Water Transport Deck and Engine Room Crew – identify which specific occupations are included in this study
- Under Small Craft Marine, NOC 2274, Engineer Officers, Water Transport – identify which specific occupations are included in this study
- Under Small Craft Marine, NOC 7532, Water Transport Deck and Engine Room Crew – identify which specific occupations are included in this study
- Under Marine Products, NOC 2274, Engineer Officers, Water Transport – identify which specific occupations are included in this study
- Under Ocean Science and Technology, NOC 2274, Engineer Officers, Water Transport – identify which specific occupations are included in this study
- Under Ocean Science and Technology, NOC 7532, Water Transport Deck and Engine Room Crew – identify which specific occupations are included in this study
- Under Marine Industrial Services, NOC 2274, Engineer Officers, Water Transport – identify which specific occupations are included in this study
- Under Marine Industrial Services, NOC 7532, Water Transport Deck and Engine Room Crew – identify which specific occupations are included in this study

Phase 2 RFP:

- The RFP will include the TOR as an appendix.
- The RFP will include the following additional research items:
 - Focus groups (in the range of 4 to 6) with secondary and post-secondary students to better understand sector attraction success, issues, and best practices.
 - Case studies with employers to highlight innovative or best practices with respect to training and retention for a total of 6 case studies (one for each sub-sector).
- Change the range of surveys to be collected to 400 to 600 and remove the word minimum.
- RFP will state that short-listed bidders will be expected make a formal presentation of their proposal to a selection panel that would include representatives from the BC Government to ensure conformance with government process and expectations.

Other:

- There is a need to have a separate NOC codes for the Marine Service Technician and the Marine Mechanical Technician. These occupations should be included in the Phase 2 Labour

Market Information project, and the creation of a separate NOC codes for these occupations may be a recommendation from the Phase 2 project.

6. Action Items/Next Steps

- Develop a Phase 1 Final Report based on the Interim Report and Governance Committee input.
- Finalize the Phase 2 RFP based on Governance Committee input, and set timelines for project completion to be between 6 months and 1 year.

Adjournment:

Meeting was adjourned at roughly 1:00 P.M. PDT



Association of
British Columbia
Marine Industries

**Appendix C1: Sector Engagement Outreach Documents (Backgrounder and
Introductory Letter)**

Backgrounder

ABCMI Overview

The industrial marine sector in British Columbia (BC) is broad and diverse with capacities and capabilities that are being noticed provincially, nationally, and around the globe. In order to further and represent the interests of the industrial marine sector and its supply chain, the **Association of British Columbia Marine Industries (ABCMI)** is working at effectively representing the interests of the broader industrial marine sector in BC. To this end, the ABCMI is undertaking to work with its partners and industry stakeholders to identify and prioritize key labour market issues facing the industrial marine sector.

Phase 1 Sector Engagement - Overview

The first phase in the Sector Labour Market Partnership Program is Sector Engagement.

The objectives of this Phase 1 Sector Engagement Project are to:

- Provide the sector with an opportunity to develop a broad-based partnership;
- Build clear consensus and direction on labour market issues to be addressed; and
- Establish a leadership and governance structure for any subsequent sector labour market partnership program phases.

Phase 1 activities are developed to provide a general overview of the size and breadth of the sector, but more importantly, to identify the key human resource challenges facing the sector, and to gauge whether support exists for further research/actions to address human resource issues. At the completion of Phase 1, the ABCMI will have information as to the key Human Resource (HR) issues facing the sector, and will be able to demonstrate industry support for more in-depth research to be conducted in a Labour Market Information Study that will constitute Phase 2 of the Sector Labour Market Partnership Program.

R.A. Malatest & Associates Ltd. (Malatest), an independent research firm, has been contracted by the ABCMI to support the completion of the Phase 1 Sector Engagement Project. Malatest's role will be to complete a secondary data review, key informant interviews, and sector engagement sessions.

Phase 1 Sector Engagement - Participation

Sector stakeholders representing Shipbuilding, Refit and Repair, Small Craft Marine, Marine Products, Ocean Science and Technology, Marine Industrial Services, and Marine Professional Services will be invited to participate in **key informant interviews** or **sectoral engagement sessions** for the Phase 1 sector consultation part of the project. Additionally, a **Governance Committee** will be established with representatives from the marine industry sub-sectors, education and training, government, and other sector partners. Participation commitment levels and roles/responsibilities are outlined below.

Key Informant Interview Participation

- **Purpose:** provide insight into labour market issues facing the Marine Industry to be explored further in Phase 2 and to determine the level of support from stakeholders for the Phase 2 Labour Market Information project.
- **Participation Levels:** 10 interviews will be completed for Phase 1.
- **Time Commitment:** 45 to 60 minutes.
- **Communication:** interview participants will be contacted by ABCMI and Malatest through email or phone to schedule the interview. Interview participants will receive a copy of the interview questions prior to the interview.
- **Travel Requirements:** none. Interviews will be conducted by phone.

Sectoral Engagement Sessions (SES)

- **Purpose:** provide insight into labour market issues facing the Marine Industry to be explored further in Phase 2 and to determine the level of support from stakeholders for the Phase 2 Labour Market Information project.
- **Participation Levels:** 6 sessions (one for each sub-sector) with 5 to 6 participants will be held for Phase 1.
- **Time Commitment:** 2 hours plus travel time.
- **Communication:** SES participants will be contacted by ABCMI and Malatest through email or phone to book spots for the SES. SES participants will receive a copy of the discussion paper and agenda for the SES prior to the session as well as a reminder email the day prior to the session.
- **Travel Requirements:** venues for the SES will be arranged in Vancouver and Victoria. SES participants will need to make any travel arrangements required to attend the sessions. Teleconference options will also be provided for those who are not able to attend in person.

Governance Committee

- **Purpose:** establish a formal governance structure through which the partnership continues to provide guidance to future Marine Industry Sector Labour Market Partnership program phases.

The established Governance Committee would act as the formal steering committee that is representative of the Industrial Marine Industry.

- **Participation Levels:** 8 to 9 members representing BC's industrial marine sub-sectors, education/training, government, and other partners identified as having a complementary role with key labour market issues affecting the Marine Industry.
- **Time Commitment:** estimated to be a total of 4 hours for 2 meetings to be held in Phase 1 Sector Engagement. The two meetings will occur in the period June 15th to September 15th, 2016. The remainder of the commitment would be approximately 16 hours per year comprising 1 to 2 in-person meetings per phase, and document review/meeting preparation time.
- **Communication:** the Governance Committee will be established and coordinated through ABCMI email and telephone outreach. ABCMI will arrange in-person meetings.
- **Travel Requirements:** Some meetings may be held by teleconference. For in-person meetings, governance committee members will need to make any travel arrangements required to attend the meetings.

Why Participate in the Phase 1 Project?

The Phase 1 project is instrumental in creating a foundation to develop human resource and workforce strategies that are both relevant and valuable for the industrial marine sector. Stakeholder participation from all sub-sectors is crucial to establish a balanced understanding of actual workforce issues and needs facing the entire industrial marine sector. Stakeholder support for this project will help to result in a comprehensive workforce strategy that addresses the issues of labour shortages, skill shortages, education and training needs, and the aging workforce, among other labour market issues as they are uniquely affecting the industrial marine sector.

Contacts

For questions about participating in the Phase 1 project through key informant interviews or sectoral engagement sessions please contact:

Nick Palaj | 1-800-665-5848 x 419 | n.palaj@malatest.com

For questions about the Governance Committee, please contact:

Leann Collins | 778-265-5005 | leann@abcmi.ca



Association of British Columbia Marine Industries (ABCMI)
100 Maplebank Road, Victoria, BC V9A 4M1
778-265-5005
info@abcmi.ca

May 26, 2016

Dear Colleagues:

The **Association of British Columbia Marine Industries (ABCMI)** will work with its partners and industry stakeholders to identify and prioritize key labour market issues facing the industrial marine sector in a Phase 1 Sector Engagement project.

The purpose of this project is to bring together organizations within BC's industrial marine sector, to develop consultations that achieve clear consensus and direction on the key labour market issues that need to be addressed and to create a leadership and governance structure for subsequent work to address labour market challenges.

As part of the first phase of this project, marine industry stakeholders will be invited to participate in key informant interviews and sectoral engagement sessions. Interviews and engagement sessions will help provide insight into labour market issues facing the industrial marine industry today and into the future. These issues will be further explored in Phase 2 of the Sector Labour Market Partnership program (Labour Market Information) with support from stakeholders and the development of sector-based labour market strategies.

An independent research firm, R.A. Malatest & Associates Ltd. (Malatest) has been contracted to complete these interviews and engagement sessions. You may be contacted by Malatest over the next few weeks to ask for your participation in Phase 1 of the LMP project.

Your participation in this Project is completely voluntary however your input is invaluable. We ask that you consider becoming involved. Please do not hesitate to ask any questions.

Nick Palaj | 1-800-665-5848 x 419 | n.palaj@malatest.com

Thank you for your interest and support for this workforce development and sector strategy initiative.

Sincerely,

Mark Dixon,
President



Association of
British Columbia
Marine Industries

Appendix D1: Key Informant Interviews (Participation Levels and Interview Guide)

Key Informant Interview Participation by Organization and Sub-sector

Organization Name	Shipbuilding, refit, and repair	Small craft marine	Marine products	Ocean science and technology	Marine industrial services	Marine professional services	Total Participants
ASL Environmental				Primary			1
Blackline Marine Inc.		Primary				✓	1
Canadian Alberni Engineering	Primary	✓					1
Department of National Defense	Primary						2
Dynamic Systems Analysis Ltd.				✓		Primary	1
Fraser River Pile and Dredge	✓					Primary	1
Nanaimo Foundry and Engineering Works	Primary	✓	✓		✓	✓	1
Ocean Pacific Marine Store and Boatyard		✓	Primary	✓			1
Saab Technologies					✓	Primary	1
SNC Lavalin Logistics Inc.	✓	✓	✓			Primary	1
Total Primary	3	1	1	1	0	4	--
Total Secondary	2	4	2	2	2	2	--
Total	5	5	3	3	2	6	11

Key Informant Interview Guide Phase 1 Sector Engagement

Introduction

Thank you for agreeing to participate in this interview.

We are conducting this interview for the Association of British Columbia Marine Industries (ABCMI) and their project partners as part of the **Phase 1 Sector Engagement Project**. The purpose of this sector engagement project is to develop a better understanding of the labour market issues affecting the BC industrial marine sector at present and into the future. The information gathered for this project will be used to develop an approach for the Phase 2 Labour Market Information project that will explore key human resource issues identified in Phase 1. Phase 2 will help quantify workforce issues, such as training requirements, turn-over, retirement rates, and workforce size and composition.

The services of R.A. Malatest & Associates Ltd. (Malatest) have been retained by ABCMI to complete this Phase 1 project. The project consists of key informant interviews, sector engagement sessions, and a secondary data review.

We have asked you to participate in this interview to provide insight into matters that impact the industrial marine sector. Key informant interviews help provide context for interpreting statistical information and in-depth feedback to supplement information from other sources. The perspectives of all key informants will be summarized by Malatest; responses and comments will be presented so that they cannot be attributed to any individual. The results of all the research will be combined by Malatest and provided in a final report.

The interview should take about 45 to 60 minutes to complete.

Do you have any questions before we begin?

[Do not include in version for informants] I would like to record this interview for quality assurance purposes. Recordings will be used for reporting purposes only. They will not be shared with ABCMI, and they will be destroyed after the final report has been written. May I have your permission to proceed with recording?

Section A: Your Role in the Industrial Marine Sector

My first question has to do with the work you do and your role as it relates to the industrial marine sector. This will ensure that we ask appropriate questions and understand your responses based on your role.

1. Briefly, can you describe your role as it relates to the industrial marine sector? With which sub-sector(s) do you work?

Note: The BC industrial marine sector includes six sub-sectors defined as:

- i. **Shipbuilding, refit and repair** includes new construction, modernization, conversion, maintenance, in-service support, barge fabrication and repair and industrial fabrication.
 - ii. **Small craft marine** includes construction of all recreational, pleasure, and small commercial or government craft including rigid hull inflatables and submersibles. Also includes all boatyards, marine repair facilities, chandleries, and yacht brokerages and marinas that also do repair or maintenance.
 - iii. **Marine products** include all products that have a marine application and are used by companies in the industrial marine sector.
 - iv. **Ocean science and technology** includes research instrumentation, autonomous and piloted underwater vehicles, cabled observatories, “smart” buoys, marine acoustics, and marine renewable energy.
 - v. **Marine industrial services** includes repair of port and marina infrastructure, marine renewable energy infrastructure, commercial diving and remotely operated underwater vehicles, underwater repair and underwater surveys, dredging, and pile driving.
 - vi. **Marine professional services** include marine engineering, naval architecture, marine law, marine consulting, software development and sales, as well as education and training around industrial marine activities.
2. Are you involved in any sector development activities? If so, please describe these activities.

Section B: Labour Market Issues Affecting the BC Industrial Marine Sector

As previously mentioned, the Phase 1 sector engagement project is being conducted to identify human resource issues that need to be explored in more depth to determine the needs of the BC industrial marine sector and develop a comprehensive workforce strategy. The next section of questions asks about your opinion on human resource and workforce issues that need to be addressed.

3. What do you see as the major trends that will impact the BC industrial marine sector over the next 5 to 10 years (e.g., aging workforce, technological changes, employees re-entering the workforce)?

[PROBE] Are these trends particular to your sub-sector(s), or are they relevant to the entire BC industrial marine sector? Please explain.

4. Which of the following labour market issues do you think need to be explored by additional research into the BC industrial marine sector?

Labour Market Issue	Yes / No	Why does or doesn't this issue need to be explored?	How does/will this issue impact the industrial marine sector now and into the future?	Is this issue more relevant for particular sub-sectors or occupations? Please explain.
1. Workforce recruitment / attraction				
2. Workforce retention				
3. Education / training				
4. Succession planning				
5. Other				

5. Are there regional issues affecting the workforce (for your sub-sector(s) or for the BC industrial marine sector) within BC, from other provinces, and/or internationally? Please explain.

6. Are there any occupations that are difficult to hire for (in your sub-sector(s) or in the BC industrial marine sector) due to a shortage of qualified candidates?

[PROBE] To what extent is this related to lack of applicants or lack of skills/experience matching requirements for the position(s)?

7. What are the main education/training needs for the workforce in your sub-sector(s)?
[PROBE] Do you anticipate that education/training needs will change over the next five years? Please explain.
[PROBE] How have changes in technology affected training needs?

8. Are you aware of any challenges your sub-sector(s) faces in providing training to employees?

Section C: Interest in Phase 2 Labour Market Information Project

The next section is about future work toward developing human resource and workforce strategies for the BC industrial marine sector?

9. Do you think that the BC industrial marine sector should pursue a Phase 2 Labour Market Information project for the purpose of developing a comprehensive understanding of the size and composition of the BC industrial marine sector as well as human resource and workforce strategies to address industry stakeholders' workforce needs? Why or why not?

10. What challenges do you think the BC industrial marine sector would face in moving forward with a Phase 2 Labour Market Information project? How might those challenges be addressed?
[PROBE] Does your company work outside, or have operations the marine industrial sector?
If YES, [PROBE] How do you account for occupations that work specifically in the marine sector?

11. Would you or your organization be willing to participate in a potential Phase 2 Labour Market Information Project? Why or why not?

Section E: Demonstration of Phase 1 Outreach

12. Do we have your permission to include the name of your organization in an appendix to our interim and final reports to show levels of outreach for Phase 1? Your name will not be included, and your organization's name will not be connected to your responses. The documentation of your organization's participation in Phase 1 would be presented as follows:

# Participants	Organization
2	Organization One Name
1	Organization Two Name
1	Organization Three Name
3	Organization Four Name

Section E: Conclusion

13. Are there any documents, data, or reports that you know of on the industrial marine sector that may support the work being completed for this Phase 1 project?
14. Those are all of the questions I have for you. Thank you for your input today. Is there anything else that you would like to add about the BC industrial marine workforce?

**Appendix E1: Sector Engagement Sessions (Discussion Paper, Agenda, Handout,
and Participation)**

Phase 1 Sector Engagement Session Discussion Paper

Purpose of Engagement Sessions

You've been asked to participate in a sector engagement session to provide insight into matters that impact the industrial marine sector and your sub-sector(s).

The purpose of the engagement sessions is to:

- Provide an opportunity for representatives and participants in the sector to provide insight on the key labour market issues and trends impacting the sector;
- Build clear consensus and direction on labour market issues to be addressed; and
- Determine the level of need/support for a Phase 2 Labour Market Information Project.

Phase 1 Sector Engagement - Background Overview

The industrial marine sector in British Columbia (BC) is broad and diverse with capacities and capabilities that are being noticed provincially, nationally, and around the globe. In order to further and represent the interests of the industrial marine sector and its supply chain, the **Association of British Columbia Marine Industries (ABCMI)** is working at effectively representing the interests of the broader industrial marine sector in BC.

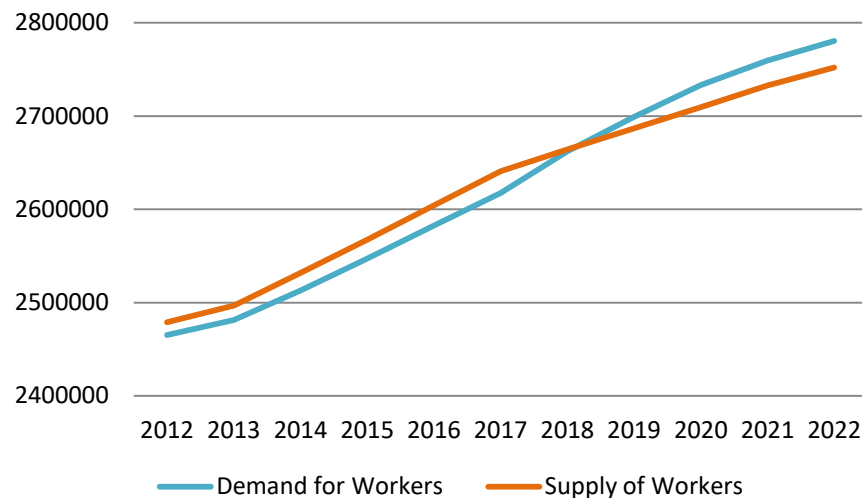
To this end, the ABCMI is undertaking to work with its partners and industry stakeholders to identify and prioritize key labour market issues facing the industrial marine sector. The Phase 1 Sector Engagement Project activities were developed to provide a general overview of the size and breadth of the sector, but more importantly, to identify the key human resource challenges facing the sector, and to gauge whether support exists for further research/actions to address human resource issues.

Workforce Challenges in British Columbia

While the industrial marine sector has its own unique workforce needs, it is also impacted by trends that affect employers, educators/trainers, and other labour market stakeholders in British Columbia. Along with the rest of Canada, BC is facing challenges resulting from an aging workforce. In the *British Columbia Labour Market Outlook: 2010-2020* published by the Ministry of Jobs, Tourism and Innovation, it was forecasted that almost **two-thirds** of job openings would be a result of retiring workers and

deaths.⁵ This workforce dynamic in BC puts demands on both employers and trainers in all sectors to build competencies in the current workforce and bring in new entrants to the BC labour market with the skills and experience that meet workforce demand.

Further to the issue of an aging workforce, the *2015/16 Annual Plan for British Columbia - Labour Market Development Agreement* shows that the demand for workers in BC will outstrip supply by 2019/2020.



Source: British Columbia 2022 Labour Market Outlook

Other workforce issues that will measurably affect the BC workforce or have direct implications for the industrial marine sector include:

- Developments related to liquid natural gas (LNG), such as pipeline development (competition for workforce) and shipping (demand of workforce);
- Regional focus of federal shipbuilding contracts (workforce competition and workforce growth);
- Workforce competition from other sectors (e.g., oil and gas sector) with high labour demands for industrial marine sector key occupations;
- Workforce competition from other regions (e.g., Alberta, eastern Canada); and
- Changes in labour force expectations related to practices in other sectors (e.g., high wage demands, preference for long periods of time off) or larger trends (e.g., multiple career changes in a lifetime rather than focused career progression).

⁵ *British Columbia Labour Market Outlook: 2010-2020*, Ministry of Jobs, Tourism and Innovation.

Why Do We Need This Project?

To address workforce issues facing the industrial marine sector now and in the future, an assessment of the sector's workforce needs (e.g., recruitment, training) and interest in developing workforce strategies/resources needs to be determined. Information gaps that could be addressed by a Phase 2 Labour Market Information Project include:

1. There is a lack of information that is specific to the industrial marine sector (i.e., there is no statistical data source that is specific to the sector or the information is too general).
2. The industrial marine sector covers multiple sectors and the level of overlap needs to be defined to understand shared labour pools.
3. Information that is available for some sub-sectors (e.g., Shipbuilding) is not directly applicable to other sub-sectors to help develop workforce strategies.
4. Marine-specific training needs for tradespersons and professionals do not meet the current demand for these occupations, and, as such, training requirements that address the needs of the industrial marine sector need to be established.
5. Labour market shifts are not sufficiently understood for employers and trainers to undertake detailed planning activities (e.g., succession planning, program planning) that will help to maintain and grow the capacity of the BC industrial marine sector.

Key Questions

Please consider the following questions for further discussion during the sector engagement session.

1. What are the major trends impacting the industrial marine sector's workforce?
2. Is there a need for more information about workforce recruitment, retention, education/training, succession planning, or other human resource issues?
3. Are there particular occupations or skill sets that are difficult to hire for?
4. Would you support a Phase 2 Labour Market Information Project? Why or why not?
5. What challenges would you anticipate for a Phase 2 Labour Market Information Project?

Date:	July [5 OR 7], 2016
Time:	[9:00 AM to 11:00 AM OR 1:00 PM to 3:00 PM PDT]
Meeting:	BC Industrial Marine Sector - Sector Engagement Session
Sub-sectors:	[Shipbuilding, Refit and Repair; Small Craft Marine; Marine Products; and Marine Industrial Services OR Ocean Science and Technology; and Marine Professional Services.]
Facilitator:	[Rob Malatest, President, R.A. Malatest & Associates Ltd. OR Michelle Riddle, Senior Analyst, R.A. Malatest & Associates Ltd.]
Location:	[Lonsdale Quay, 123 Carrie Cates Ct., Vancouver BC V7M 3K7 OR 858 Pandora Avenue, Victoria BC V8W 1P4]
Conference Line:	1-800-665-5848 ext. 5002

Discussion Items:

- 1. Project Introduction** - Leann (ABCMI)/Shauna (BC Gov) will explain the purpose of the Phase 1 Sector Engagement Project.
 - 2. BC Labour Market Issues Overview** - Rob/Michelle will provide an overview of the relevant labour market issues in BC as highlighted in the discussion paper
 - 3. Phase 2 Project Overview and Discussion** - Rob/Michelle will describe the purpose and elements of a Phase 2 Labour Market Information Project, and he will direct a discussion on information needs as related to specific labour force topics.
 - a. Labour demand
 - b. Labour supply
 - c. Education and training requirements
 - d. Specific HR Strategies (attraction, retention, succession planning, immigration, other)
 - e. Other
 - 4. Sector Support of Labour Market Information Project** - Session participants will be invited to share their thoughts on the need for a Phase 2 project and the degree to which they would be willing to participate in or support this work.
 - 5. Wrap-up and Next Steps** - Leann (ABCMI) will provide an overview of the next steps for the sector.
-

Please provide your name and the name of the organization you represent below.

Name: _____

Organization: _____

Key Questions:

6. Do you (or does your organization) support the BC Industrial Marine Sector in moving to a Phase 2 Labour Market Information Project?

- Yes
- No

7. In your opinion, what are the key issues that should be examined by a potential Phase 2 Labour Market Information Project? (Please provide your response in the space below and use the reverse side of this sheet if needed.)

[Continue to the reverse side.]



- 8. What kind of challenges would you anticipate for undertaking a Phase 2 Labour Market information Project?** (Please provide your response in the space below.)

Sector Engagement Session Participation by Organization and Sub-sector

Organization Name	Shipbuilding, refit, and repair	Small craft marine	Marine products	Ocean science and technology	Marine industrial services	Marine professional services	Total Participants
Advanced Subsea Services					Primary		1
Advantage Crane					Primary		1
Advantec Global	✓		Primary				1
Babcock Canada Inc.						Primary	1
BC Marine Service Industry and Industry Training Authority						Primary	1
BCIT						Primary	1
British Columbia Ferry Services Inc.	Primary						1
CFN Consultants						Primary	1
International Submarine Engineering Ltd.		Primary					1
McRae Electric Ltd.	Primary				✓		1
Monaro Marine		Primary					1
North Island College						Primary	1
North Vancouver Chamber of Commerce						Primary	1
Olympic Drives		Primary					1
OSI Maritime Systems						Primary	1
Port Metro Vancouver						Primary	1
Prototype Equipment Design	Primary			✓			1
RaceRocks3D				✓		Primary	1
Ralmax Group of Companies	Primary						1
Rockland Scientific					Primary		1
ROPOS				Primary		✓	1
Royal Roads University						Primary	1
Schneider Electric Canada Inc.						Primary	1
Seaspan/Victoria Shipyards	Primary	✓					1
Spearman		✓		Primary			1



Organization Name	Shipbuilding, refit, and repair	Small craft marine	Marine products	Ocean science and technology	Marine industrial services	Marine professional services	Total Participants
Enterprises							
Spectrum NDT Ltd.					✓	Primary	1
SSI			Primary				1
United Engineering	Primary						1
University of Victoria						Primary	2
Vancouver Island University						Primary	1
Vard Marine Inc.						Primary	2
Total Primary	6	3	2	2	3	15	-
Total Secondary	1	2	0	2	2	1	-
Total	7	5	2	4	5	16	33