7. INDEPENDENT MARKET RESEARCH REPORT

PROVIDENCE STRATEGIC PARTNERS SDN BHD
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Date: 30 JUN 2023

The Board of Directors
KEYFIELD INTERNATIONAL BERHAD
Unit 30-01, Level 30, Tower A
Vertical Business Suite, Avenue 3
Bangsar South
No. 8, Jalan Kerinchi
59200 Kuala Lumpur, Malaysia.

Dear Sirs,

Independent Market Research ("IMR") Report on the Accommodation Vessel Chartering Market in Malaysia, particularly on the Accommodation Work Boat ("AWB") Chartering Market in Malaysia in relation to the Proposed Listing of KEYFIELD INTERNATIONAL BERHAD (referred to as "the Company")

PROVIDENCE STRATEGIC PARTNERS SDN BHD ("**PROVIDENCE**") has prepared this IMR report on the Accommodation Vessel Chartering Market in Malaysia, particularly on the AWB Chartering Market in Malaysia for inclusion in the Prospectus of the Company.

PROVIDENCE has taken prudent measures to ensure reporting accuracy and completeness by adopting an independent and objective view of these industries within the confines of secondary statistics, primary research and evolving industry dynamics. We believe that this IMR report presents a balanced view of the industry within the limitations of, among others, secondary statistics and primary research, and may not necessarily reflect the performance of individual companies in the industry. It also does not purport to be exhaustive.

For and on behalf of PROVIDENCE:

MELISSA LIM

EXECUTIVE DIRECTOR

About PROVIDENCE STRATEGIC PARTNERS SDN BHD:

PROVIDENCE is an independent research and consulting firm based in Petaling Jaya, Selangor, Malaysia. Since our inception in 2017, PROVIDENCE has been involved in the preparation of independent market research reports for capital market exercises. Our reports aim to provide an independent assessment of industry dynamics, encompassing aspects such as industry performance, demand and supply conditions, competitive landscape and government regulations.

About MELISSA LIM:

Melissa Lim is the Executive Director of PROVIDENCE. She has more than 10 years of experience in market research for capital market exercises. Melissa Lim holds a Bachelor of Commerce (Double major in Marketing and Management) from Murdoch University, Australia.

7. INDEPENDENT MARKET RESEARCH REPORT *(Cont'd)*

PROVIDENCE STRATEGIC PARTNERS

Keyfield International Berhad and its subsidiaries (collectively referred to as "**Keyfield Group**") is principally involved in the chartering of own and third-party accommodation vessels and provision of related onboard services such as accommodation, catering, housekeeping, laundry and medical support services. As at June 2023, Keyfield Group owns 10 accommodation vessels, of which 7 are AWBs, 2 are smaller accommodation vessels and 1 is an accommodation work barge. As such, this IMR report focuses on ***The AWB Chartering Market in Malaysia***. This IMR report also covers an ***Overview of The Accommodation Work Barge and Anchor Handling Tug Supply ("AHTS") and Platform Supply Vessel ("PSV")*** **Chartering Market in Malaysia** as Keyfield Group is presently involved in the chartering of accommodation work barge and intends to expand into the AHTS and PSV chartering market in Malaysia. In addition, the IMR covers an ***Overview of The Upstream Oil and Gas Industry in Malaysia*** as this is the key end-user industry to the AWB Chartering Market in Malaysia.

1 OVERVIEW OF OFFSHORE SUPPORT VESSELS AND ACCOMMODATION VESSELS

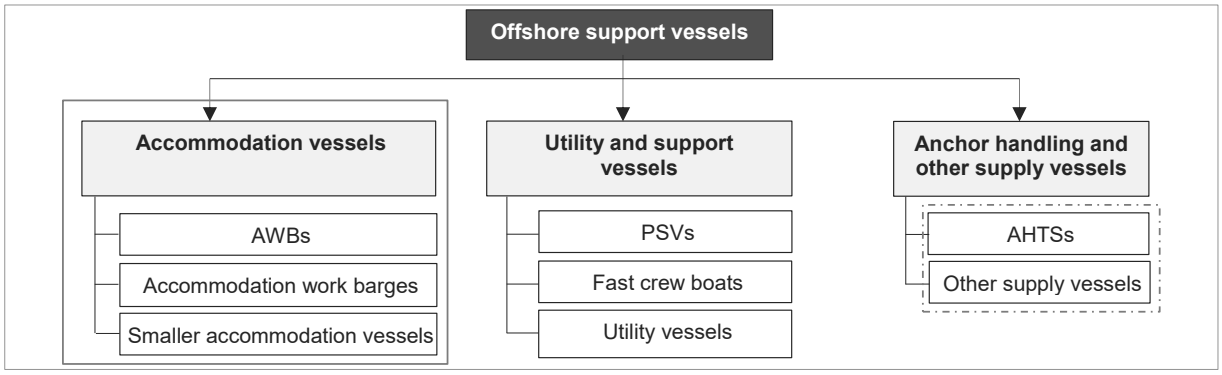
Offshore support vessels comprise all ships, boats and barges which are specially designed to perform specific offshore operational activities for the upstream oil and gas industry.

There are generally 3 categories of offshore support vessels, i.e.:

(i) **Accommodation vessels** – mainly include AWBs and accommodation work barges, which are used to provide accommodation and onboard amenities, as well as to transport cargoes, fuel and fresh water, offshore equipment and materials that are used onboard the accommodation vessels, and in carrying out offshore oil and gas activities. Some smaller vessels, i.e. utility and support vessels and anchor handling and other supply vessels may also be utilised as accommodation vessels;

(ii) **Utility and support vessels** – include PSVs, fast crew boats and utility vessels, which are used to transport large volumes of provisions, cargoes and equipment to/from offshore oil and gas platforms, as well as transport offshore personnel and crew members; and

(iii) **Anchor handling and other supply vessels** – include AHTSs and other supply vessels, which are used for towing rigs and vessels to a location, and mooring and unmooring of vessels.



Notes:

(i) ▭ denotes the main segment in which Keyfield Group is principally involved

(ii) ▭ Denotes the segment in which Keyfield Group intends to expand

(iii) The abovementioned list of offshore support vessels may not be exhaustive

Source: PROVIDENCE

Keyfield Group is principally involved in the chartering of accommodation vessels, particularly AWBs, and provision of onboard services.

Uses of offshore support vessels in the upstream oil and gas industry

In general, a typical offshore oilfield project will undergo the following stages:

(i) **Exploration and appraisal** – The lifecycle of an oilfield project typically begins with this stage where offshore oil and gas platforms are constructed at identified sites and drilling operations are performed to seek and map oil and gas reserves;

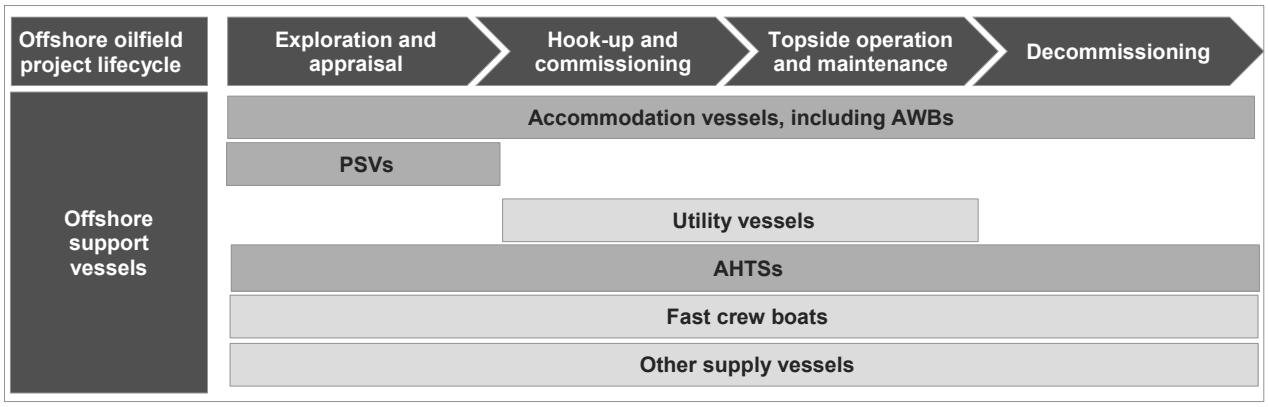
(ii) **Hook-up and commissioning** – Once it has been determined that the identified site is viable, offshore oil and gas platforms undergo major modifications in order to accommodate the full topside operation process. Satellite offshore oil and gas platforms surrounding the main offshore oil and gas platform may also be constructed;

(iii) **Topside operation and maintenance, and well services** – During this stage, the offshore oil and gas platform is in constant operation so that crude oil/ natural gas can be extracted from the oilfield site, and equipment and infrastructure have to consistently undergo periodic maintenance. Well services are also performed to remove sludge from the wells and related piping; and

7. INDEPENDENT MARKET RESEARCH REPORT *(Cont'd)*

(iv) **Decommissioning** – Once it is no longer cost-effective to extract from the oilfield site as the oil and gas reserves at the oilfield site are too low, the oilfield site is decommissioned and returned to its original state.

As the purposes of the abovementioned offshore support vessels are different, these offshore support vessels are typically used in different stages of an offshore oilfield project lifecycle, as seen below:



Notes:

(i) The abovementioned chart refers to the stages where the particular type of vessel is typically hired

(ii) Denotes the type of vessels that Keyfield Group presently charters and intends to charter

Source: PROVIDENCE

Accommodation vessels, including AWBs, are generally required throughout the entire lifecycle of an offshore oilfield project, to provide accommodation and onboard amenities as well as to transport cargoes, fuel and fresh water, offshore equipment and materials. AHTSs are also required throughout the entire lifecycle of an offshore oilfield project as AHTSs are used to tow rigs and vessels to a location, and moor and unmoor vessels. PSVs are used to transport and store equipment and consumables to the offshore oil and gas platforms and are most needed at the exploration and appraisal stage.

Fast crew boats are typically used to transport offshore personnel and crew members while supply vessels are used to transport supplies and personnel to and from the offshore oil and gas platforms. Meanwhile, utility vessels are used to transport provisions, cargoes and equipment as well as transport offshore personnel.

Although the primary purpose of AWBs and accommodation work barges are similar, AWBs differ from accommodation work barges based on the following key features:

AWB	Accommodation work barge	Description on differences in features
Self-propelled	Not self-propelled	AWBs do not need to be towed using anchor handling vessels and as such, chartering an AWB would cost less for the petroleum arrangement contractors ("**PACs**") and/or their contractors, as compared to chartering both accommodation work barge and anchor handling vessels; and) In the case of unpredictable conditions (such as weather), AWBs can be pulled off from the platform due to their self-propelling feature and hence the safety of the offshore oil and gas platforms will be protected, as opposed to accommodation work barges which would need to be towed.
Sufficient accommodation facilities for 239 persons-on-board or less	Sufficient accommodation facilities for more than 240 persons-on-board	AWBs will be more cost-effective to hire throughout the entire lifecycle for offshore oilfield projects which only require accommodation facilities for less than 240 persons-on-board throughout the entire offshore oilfield project stages.
Workable deck space of less than 1,000 square metres ("**sqm**")	More than 1,000 sqm of workable deck space	Accommodation work barges will be more suitable for charterers that require a larger workable deck space to store offshore equipment and materials, and for offshore personnel to perform minor fabrication works.

As such, AWBs and accommodation work barges have different features and thus, cater for different types of chartering contracts in terms of number of persons-on-board. It is also important to note that smaller accommodation vessels are typically other types of smaller vessels (such as AHTS, PSV or supply vessels) that have been converted to enable accommodation and onboard amenities. Thus, the market size for the chartering of smaller accommodation vessel cannot be determined.

As Keyfield Group is principally involved in the chartering of accommodation vessels, particularly AWBs, in Malaysia, this IMR report will focus on the AWB chartering market in Malaysia.

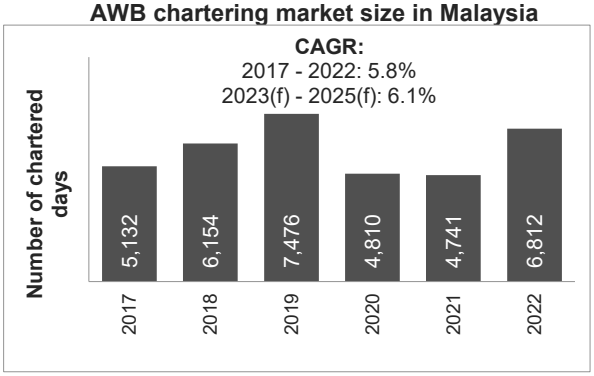
2 THE AWB CHARTERING MARKET IN MALAYSIA

MARKET SIZE, PERFORMANCE AND GROWTH

As at June 2023, there were 42 Malaysian-flagged AWBs registered with the Marine Department Malaysia and the average age of these AWBs was 10 years.[1] All of these AWBs are chartered and used by PACs' main contractors and/or other offshore vessel support owners. Although there are AWB owners and charterers which own foreign-flagged AWBs, the foreign-flagged AWBs rarely operate in Malaysian waters.

As such, the AWB chartering market size in Malaysia can be measured based on the total number of days per annum that Malaysian-flagged AWBs are chartered. This takes into account the number of days the Malaysian-flagged AWBs were not chartered and/or underwent annual inspection by the respective IACS and special surveys (including dry docking activities), and scheduled maintenance.

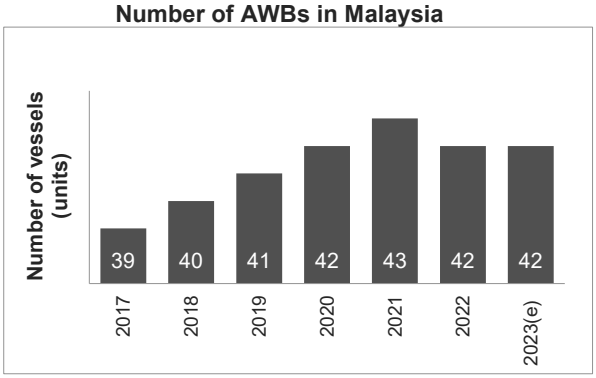
AWB chartering market size in Malaysia



Notes:
(i) Market size is based on number of chartered days of Malaysian-flagged AWBs registered with the Marine Department Malaysia
(ii) (f) - forecast

Source: Marine Department Malaysia, Vessels Value, PROVIDENCE

Number of AWBs in Malaysia



Notes:
(i) The above AWBs refer to Malaysian-flagged AWBs registered with the Marine Department Malaysia
(ii) (e) – estimate as at June 2023

Source: Marine Department Malaysia, PROVIDENCE

The growth of the AWB chartering market size in Malaysia generally correlates with average crude oil prices, as the capital expenditure of PACs on explorations on and commissioning of new offshore oil and gas platforms is influenced by crude oil prices.

In tandem with the growth in Brent crude oil prices and capital expenditure of PACs in Malaysia (as elaborated in Chapter 4 of this IMR report) between 2017 and 2019 of 7.4% and 17.6% respectively, the AWB chartering market size in Malaysia illustrated a healthy compound annual growth rate ("**CAGR**") of 20.7% during the period. The AWB chartering market size in Malaysia grew, in terms of total number of chartered days, from 5,132 days per annum in 2017 to 7,476 days per annum in 2019. As a result of the Coronavirus Disease 2019 ("**COVID-19**") pandemic which resulted in operational disruptions, the AWB chartering market size in Malaysia declined to 4,810 days per annum in 2020 and 4,741 days per annum in 2021. The operational disruptions were caused by postponements of offshore oilfield projects for exploration, operation and maintenance, and well services particularly in 2020 and 2021 as standard operating procedures were put in place to curb the pandemic and occurrences of COVID-19 incidences. This was in line with a fall in Brent crude oil prices of 33.9% between 2019 and 2020, and a decline in capital expenditures by PACs in Malaysia of 36.2% between 2019 and 2021. Nevertheless, as Brent crude oil prices and PAC's capital expenditures in Malaysia grew significantly between 2021 and 2022 by 41.8% and 64.3% respectively, the AWB chartering market size in Malaysia grew by 43.7% between 2021 and 2022, to 6,812 days per annum in 2022. This growth was in line with the industry's recovery from the impact of the slowdown of oil and gas activities due to the COVID-19 pandemic. Overall, the AWB chartering market size registered a CAGR of 5.8% between 2017 and 2022.

Moving forward, PROVIDENCE forecasts that the AWB chartering market size in Malaysia will register a CAGR of 6.1% between 2023 and 2025, from an estimated 7,430 days per annum in 2023 to 8,367 days per annum in 2025.[2]

[1] Source: Marine Department Malaysia.
[2] PROVIDENCE's growth forecast is based on their proprietary forecasting model that takes into account historical growth performance, demand drivers and restraints, industry risks and challenges as well as industry trends.

7. INDEPENDENT MARKET RESEARCH REPORT *(Cont'd)*

DEMAND CONDITIONS: KEY GROWTH DRIVERS

Constant demand for oil and gas will continuously require offshore personnel to undertake production, maintenance and repair activities on active offshore oil and gas platforms, thereby creating constant demand for AWBs

There is constant demand for oil and gas as oil and gas products are used in various sectors such as transportation fuel, industrial fuel, for electricity generation as well as in the production of fertilisers, pesticides, and a wide range of industrial products including plastics and polymers, textiles, paints and dyes. Between 2010 and 2021, the global demand for crude oil increased from 31.6 billion barrels to 34.3 billion barrels, whereas the global demand for natural gas increased from 2,718,002 kilotonnes of oil equivalent ("**ktoe**") to 3,472,250 ktoe.[3] In Malaysia, the demand for crude oil and condensates grew from 24.4 million barrels in 2010 to 25.3 million barrels in 2020, while demand for natural gas grew from 6,254 ktoe to 16,631 ktoe over the same period.[4]

As there is constant demand for oil and gas products, offshore oilfield activities are continuous throughout the entire lifecycle of an offshore project to produce oil and gas products, even during periods where Petroliam Nasional Berhad ("**PETRONAS**") and PACs cut back on capital expenditure to perform exploration and appraisal, and hook-up and commissioning of new offshore oil and gas platforms. Active offshore oil and gas platforms require constant maintenance, repair and upgrade works to maintain the offshore oil and gas platform's optimal operational efficiency and productivity. More manpower is typically required during this stage and thus, AWBs will be required to provide safe and comfortable accommodation for these offshore personnel during these stages.

For instance, although lower volumes of oil and gas products were consumed in 2020 as many businesses were halted or restricted from operating due to the national lockdown policies implemented to curb the COVID-19 pandemic, existing offshore oil and gas platforms were still in production to meet existing demand, although there was generally less exploration, hook-up and commissioning activities for new offshore oil and gas platforms. As offshore personnel are still required to operate and maintain these active offshore oil and gas platforms, there was demand for AWBs to provide accommodation for these offshore personnel. The Russia-Ukraine war has led to a shortage in crude oil supply which has caused a rise in crude oil prices. This could result in increased offshore oilfield activities in other parts of the world (such as in Southeast Asia) to fulfil the supply-demand gap, which would benefit the AWB chartering market in Malaysia.

Lower number of AWBs relative to the number of active offshore oil and gas platforms in Malaysia indicates potential for growth for the AWB chartering market

As at December 2022, there were 451 active offshore oil and gas platforms in Malaysia.[5] In comparison, as at June 2023, there were 42 registered Malaysian-flagged AWBs in Malaysia, which is significantly lower than the number of active offshore oil and gas platforms in the country. Although 1 AWB may provide accommodation for offshore personnel working on several offshore oil and gas platforms situated adjacent to one another, the number of AWBs is significantly lower than the number of offshore oil and gas platforms.

Major offshore oil and gas platforms typically have lodging facilities that can house offshore personnel, while surrounding satellite offshore oil and gas platforms do not have lodging facilities. Despite this, these lodging facilities on major offshore oil and gas platforms may not be sufficient to accommodate all of the offshore personnel working on the platform and satellite offshore oil and gas platforms. Thus, this indicates potential for growth of the AWB chartering market in Malaysia as more AWBs will need to be chartered to support these active offshore oil and gas platforms in Malaysia.

Benefits of AWBs will support the AWB chartering market

AWBs can provide accommodation and various onboard amenities and services for offshore personnel as well as transport cargoes, fuel, fresh water, food provisions, equipment, pipes and spare parts. As AWBs are positioned within close proximity to the offshore oil and gas platform or connected to the offshore oil and gas platform via a gangway (which is a passageway between the AWBs and the offshore oil and gas platform), time taken for offshore personnel to travel to the offshore oil and gas platform will be reduced. AWBs thus provide the advantage of maximising working time and increasing operational efficiency.

Furthermore, AWBs also have cranes to lift and transport heavy equipment and pipes to/from the offshore oil and gas platform, large workable deck space for storage of equipment, pipes and spare parts, large fuel tank for use onboard the AWBs and to supply to other offshore support vessels, and fresh water generator and sanitiser. These equipment and facilities are crucial in enabling offshore personnel to carry out various offshore oilfield activities. Having these equipment and facilities onboard also reduces the number of AWBs needed to transport and store fuel, fresh water, equipment, pipes and spare parts and thus, this will reduce costs.

As PACs and main contractors are more aware of the abovementioned benefits which AWBs offer in terms of cost and operational efficiencies, this will continue to support the growth of AWB chartering market.

[3] Source: BP Plc.
[4] Source: Energy Commission of Malaysia. Latest publicly available information is as at 2020.
[5] Source: PETRONAS Integrated Report 2022.

Younger and advanced AWBs will lead to an increase in utilisation of AWBs

Younger AWBs are typically equipped with modern accommodation, facilities and amenities and equipment which comply with the latest requirements by PETRONAS, PACs and regulators such as the International Labour Organisation (ILO), International Maritime Organisation (IMO) and International Association of Classification Societies (IACS) (such as Bureau Veritas (BV), Registro Italiano Navale (RINA) and American Bureau of Shipping (ABS)). This increases the appeal of chartering younger AWBs compared to older AWBs.

Under all PACs' tender requirement, an AWB shall be not more than 25 years old, subject to the vessel having undergone a major refurbishment upon reaching 15 years. In addition, PETRONAS had also announced in March 2021 that it has opened tender for new offshore support vessels (such as utility and support vessels, and anchor handling and other supply vessels) to replace the existing fleet of offshore support vessels of which 60.0% are at least 11 years old.[6] The newly opened tender suggests that PETRONAS also favours younger offshore support vessels.

Furthermore, younger AWBs have lower maintenance and operating costs as they tend to have less occurrences of breakdowns and are also more fuel-efficient. This would lead to lower operating costs as compared to older AWBs. Lower occurrences of breakdowns will also increase the utilisation of younger AWBs as there will be less downtime.

AWBs which are equipped with newer dynamic positioning ("**DP**") systems, namely DP2 or DP3 systems, can operate in deepwater environments which have harsher weather conditions. AWBs equipped with DP2 or DP3 systems can also operate over seabeds which are congested (typically with oil and gas piping) as these vessels do not need anchors to be moored. This allows AWBs equipped with DP2 or DP3 systems to operate in different types of offshore oilfield sites as compared to AWBs using 4-point mooring systems which are more suitable for shallow waters.

Long-term growth in number of offshore oil and gas platforms will create demand for AWBs

As of December 2022, there are 451 active offshore oil and gas platforms, an increase compared to 353 active offshore oil and gas platforms as of March 2018.[7] According to PETRONAS, within 2023, there will be at least 7 new oil and gas development projects in Malaysia and 3 new structural installations on existing oil and gas development projects, with another 11 oil and gas development projects under review (refer to **Chapter 4 – The Upstream Oil and Gas Industry in Malaysia** for further details).[8] The commissioning of these additional offshore oil and gas platforms will require more offshore personnel to be placed at these offshore oilfield sites, thus creating increased demand for AWBs. Furthermore, PETRONAS announced that they are expecting to double their number of ships fuelled by liquified natural gas ("**LNG**") from 400 vessels to over 1,000 vessels, further depicting the positive future prospects of the oil and gas industry in Malaysia.[9]

Although the growth in explorations, appraisals, installations and commissioning of new offshore oil and gas platforms was hampered in 2020 as a result of the COVID-19 pandemic, these offshore oilfield activities have resumed since 2022. The long-term growth in number of offshore oil and gas platforms is expected to create demand for AWBs in the future, thus benefiting the AWB chartering market in Malaysia.

Despite the increase in number of offshore oil and gas platforms, approximately 56.0% of Malaysia's active offshore oil and gas platforms are operating beyond their design life and 18.0% have been operating for over 40 years.[10] This could lead to an increase in decommissioning of offshore oil and gas platforms in the future. Decommissioning of offshore oil and gas platforms involves the plugging of wells and severing of well casings, cleaning and removing of pipes, and removal of offshore oil platforms to ensure that there are no debris or potential obstructions. It is a complex process that could take between 2 and 10 years to complete. As AWBs are also required during the decommissioning of offshore oil and gas platforms, this also poses an opportunity for the AWB chartering market in Malaysia.

SUPPLY CONDITIONS AND DEPENDENCIES

Availability of AWBs to carry out the provision of chartering services

Typically, active AWBs in Malaysia are owned and/or operated by Malaysia-owned or -operated companies. This is due to the PETRONAS approved license requirements for offshore support vessel services, as well as Malaysia cabotage policy under Section 65KA of the Merchant Shipping Ordinance 1952, as elaborated below. As at June 2023, there are 42 Malaysian-flagged AWBs that are registered with the Marine Department Malaysia. Both the PETRONAS licence and Malaysia cabotage policy also serve as a barrier to entry for potential new entrants and limit the participation of overseas companies.

Availability of labour to carry out the provision of AWB chartering services

AWBs will be staffed with crew members to operate AWBs, provide housekeeping and cleaning services, repair and maintenance works (which includes replacement of spare parts, conducting annual surveys to ensure that the vessel has sufficiently met the conditions of class retainment and mechanisms, device and installations are operational, as well as undertaking intermediate and special surveys), catering services and medical support services. Access to crew

[6] Source: Theedgemarkets.com (15 February 2021). "Petronas invites bids for building of 16 OSVs".
[7] Source: PETRONAS Integrated Report 2022.
[8] Source: PETRONAS Activity Outlook 2023-2025.
[9] Source: The Star (9 September 2020). "LNG-fuelled tankers to more than double by 2030 – Petronas exec".
[10] Source: PETRONAS Activity Outlook 2021-2023.

members with relevant experience, expertise and qualifications to carry out these tasks are crucial in the provision of AWB chartering. To meet the charterer's requirements, these crew members must also pass the necessary medical examinations (by the Marine Department Malaysia and PACs) and basic offshore safety induction and emergency training (BOSIET) course. Some of these crew members are also required to hold a valid Certificate of Competency qualification to prove that they are qualified to undertake their assigned tasks.

PRODUCT / SERVICE SUBSTITUTION AND RELIANCE AND VULNERABILITY TO IMPORTS

AWBs may be substituted with onshore accommodation or lodging facilities on main offshore oil and gas platforms. Onshore accommodations are typically located further away from the offshore oil and gas platform, thus increasing travel time to and from the offshore oil and gas platform which may be further affected by bad or extreme weather conditions. As a result, daily working hours are reduced, contributing to lower operational efficiency. Meanwhile, lodging facilities on offshore oil and gas platforms may not be sufficient to accommodate all of the offshore personnel working on the platform and surrounding / connecting offshore oil and gas platforms. Also, these lodging facilities typically are not able to accommodate all offshore personnel involved during certain offshore oilfield stages where more manpower is required such as during topside maintenance and repair.

KEY LAWS AND REGULATIONS

Petroleum Development Act 1974

Under the Petroleum Development Act 1974, PETRONAS is conferred the entire ownership and rights for exploration and production of Malaysia's petroleum resources. This Act also allows PETRONAS to issue licenses to any contractors to commence and continue any business or service pertaining to petroleum activities. Companies intending to participate in tenders given by PETRONAS must apply for and obtain license from PETRONAS. As the provision of AWB chartering services fall under offshore support vessel services, AWB owners are required to obtain a license from PETRONAS.

Cabotage policy

The cabotage policy in Malaysia was introduced in 1980, when the Merchant Shipping Ordinance 1952 was amended and the Domestic Shipping Licence Board was established. This policy prohibits non-Malaysian ships from engaging in domestic shipping activities (which refers to the use of vessels to provide services (other than fishing); or the shipment of passenger or goods within Malaysia or from Malaysia to the exclusive economic zone). Foreign vessels are only permitted to carry on domestic shipping activities in Malaysia if no Malaysian-owned vessels are able to meet the needs of the oil and gas industry in Malaysia.

This policy protects Malaysian-owned companies involved in domestic shipping. Thus, Malaysian-owned AWB providing chartering services for personnel working on offshore oil and gas platforms in Malaysia waters are given priority over foreign AWBs.

COMPETITIVE OVERVIEW

The AWB chartering market comprises companies that are involved in the provision of chartering of AWBs.

PROVIDENCE has identified 14 industry players on the basis that they:

- are involved in chartering of AWBs in Malaysia to serve the upstream oil and gas industry; and
- own at least 1 AWB that is registered with the Marine Department Malaysia (Malaysian-flagged).

Some of these industry players may also be involved, or have related companies that are involved in the chartering of accommodation work barges. Although some companies may utilise other smaller vessels such as AHTSs or PSVs as accommodation vessels, it is difficult to determine the usage of such vessels as accommodation vessels. As such, this is not disclosed in the IMR report. These identified industry players[(i)(ii)] are as detailed below:

Company name	Number of AWBs	Number of accommoda-tion barges	Average age of AWBs as at 2023[(iii)]	Owns and operates other types of offshore support vessel / Involved in other businesses	Latest financial year end	Revenue (RM '000)	Profit After Tax (RM '000)
Ajang Shipping Sdn Bhd	3	-	15	-	N/A[(iv)]	N/A[(iv)]	N/A[(iv)]
Subsidiaries of Alam Maritim Resources Berhad[(v)]							
Alam Maritim (M) Sdn Bhd	2	2	15	✓	30 June 2022	83,497[(vii)]	(169,048)[(vii)]
Alam Radiance (L) Inc					N/A[(x)]	N/A[(x)]	N/A[(x)]
Subsidiary of Carimin Petroleum Berhad[(v)]	1	-	8	✓	30 June 2022	22,276[(vii)]	(7,137)[(vii)]

7. INDEPENDENT MARKET RESEARCH REPORT *(Cont'd)*

Carimin Marine Services Sdn Bhd							
Subsidiaries of Dayang Enterprise Holdings Berhad[v]							
DESB Marine Services Sdn Bhd	8	-	13	✓	31 December 2022	100,365[vii]	12,153[vii]
Perdana Petroleum Berhad[v]		5		✓	31 December 2022	169,313[viii]	11,385[vii]
Subsidiary of Icon Offshore Berhad[v] Icon Ship Management Sdn Bhd	2	-	9	✓	31 December 2021[vi]	131,673[vii]	(13,131)[vii]
Keyfield Group	**7**[ix]	**1**	**6**	-	**31 December 2022**	**236,204**	**49,851**
Subsidiary of Muhibbah Engineering (M) Berhad[v] Khas Jejaka Sdn Bhd	1	-	13	✓	31 December 2021[vi]	9,017[vii]	(3,508)[vii]
Michlyn Express Offshore (L) Berhad	1	-	1	-	N/A[x]	N/A[x]	N/A[x]
Subsidiaries of Petra Energy Berhad[v]							
Petra Resources Sdn Bhd	4	3	12		31 December 2021[vi]	233,256[vii]	5,109[vii]
Petra Marine Sdn Bhd				✓	31 December 2021[vi]	96,029[vii]	3,161[vii]
PJZ Marine Services Sdn Bhd	1	-	10	-	30 June 2020[vi]	0	(8,602)
Pristine Offshore Sdn Bhd	2	-	9	-	31 December 2021[vi]	3,776	(3,462)
Sapura Energy Berhad[v]	3	1	9	✓	31 January 2023	192,308[viii]	(3,175,527)[vii]
Subsidiaries of Shapadu Corporation Sdn Bhd							
Shapadu Marine Pte Ltd	2	-	8	✓	N/A[x]	N/A[x]	N/A[x]
Shapadu Teguh Pte Ltd					N/A[x]	N/A[x]	N/A[x]
Subsidiaries of Nam Cheong Limited[v]							
SKOSV Sdn Bhd	5	2	8		31 December 2022	357,157[vii]	4,574[vii]
SKOM Sdn Bhd				✓	31 December 2021[vi]	211,257[vii]	(3,232)[vii]

Notes:

(i) The list contains information based on publicly disclosed information on 26 June 2023
(ii) The list comprises AWBs that are registered with the Marine Department Malaysia
(iii) Average age of AWBs for each industry player was calculated based on the total age of all vessels and number of vessels the industry player has
(iv) Ajang Shipping Sdn Bhd is presently a private exempt company and financial information cannot be obtained
(v) The company is a public listed company or subsidiary of a public listed company
(vi) The latest financial year end of the company is based on the latest publicly available financial information extracted from the Companies Commission of Malaysia, and may not be the latest financial year end for the company
(vii) Financial information may include information from businesses not related to AWB chartering and related services
(viii) Segmental revenue information from offshore support vessel chartering, which may include revenues from chartering of other types of vessels not related to AWB and related services
(ix) Includes Grace, Lestari, Compassion, Commander, Falcon, Laguna Setia 1 and Laguna Setia 2. Does not include smaller accommodation vessels which are an AHTS and PSVs used for accommodation vessel chartering, i.e. Kindness and Helms 1.

(x) Alam Radiance (L) Inc, Michlyn Express Offshore (L) Berhad, Shapadu Marine Pte Ltd and Shapadu Teguh Pte Ltd are based in Labuan and thus, the financial information of these companies are not publicly available.

Source: Companies Commission of Malaysia, various company websites, PROVIDENCE

Market share

Based on the number of chartered days of AWBs that Keyfield Group owns and bareboat charters (where the AWB owner/disponent owner provides the AWB to Keyfield Group on a bareboat charter basis and Keyfield Group sources, recruits and manages all of the required crew members as well as sources for additional services and equipment, otherwise termed as Category 1) of the AWB chartering market size in Malaysia (which is measured by total number of days per annum Malaysian-flagged AWBs were chartered), Keyfield Group garnered the following market share:

Year	Total number of days per annum Malaysian-flagged AWBs were chartered	AWBs owned or bareboat chartered by Keyfield Group[(i)(ii)]	
		Total number of chartered days	Market share (%)
2021	4,741	766	16.2
2022	6,812	1,367	20.1

Notes:

(i) Excludes own and third-party vessels which are not AWBs, i.e. smaller accommodation vessels and accommodation work barges.

(ii) Keyfield Group's market share was based on the number of chartered days of AWBs that the Group owns and bareboat charters as these are the number of chartered days where Keyfield Group fully undertakes the provision of onboard services such as accommodation, catering, housekeeping, laundry and medical support services as well as ship management services.

Source: Vessels Value, Keyfield Group, PROVIDENCE

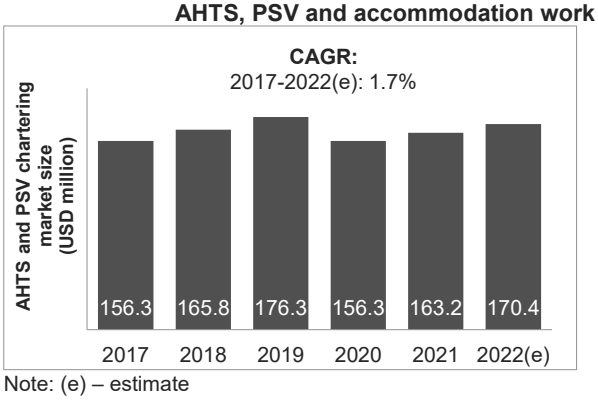
3 OVERVIEW OF THE ACCOMMODATION WORK BARGE, AHTS AND PSV CHARTERING MARKET IN MALAYSIA

An AHTS is a type of offshore support vessel which is used to tow rigs and vessels to a location, as well as to moor or unmoor vessels. The characteristics of an AHTS are that it has tugs and anchors, specially-designed crane(s) (otherwise known as winch(es)), to be attached to the rigs or vessels, and a powerful bollard pull compared to other vessels for the purpose of towing rigs and vessels. Meanwhile, PSVs are used to transport and store equipment and consumables to the offshore oil and gas platforms. PSVs typically have a large open deck area for storing, loading and offloading of supplies and equipment.

Accommodation work barge is a type of offshore support vessel which is used to provide accommodation for crew members working at an offshore oil and gas platform. As such, accommodation work barges have sufficient accommodation facilities for more than 240 persons-on-board and onboard amenities such as laundrette services and entertainment services.

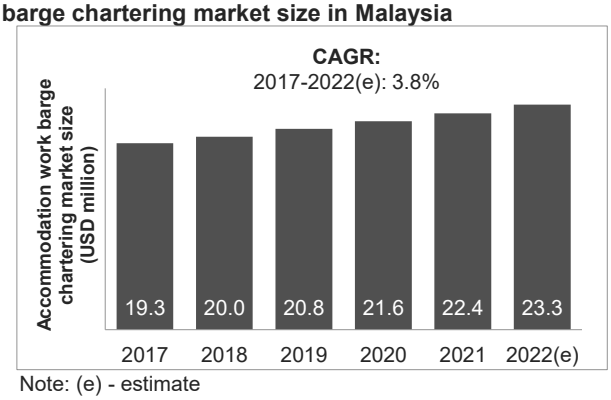
Between 2017 and 2022, the AHTS and PSV chartering market in Malaysia saw an overall growth, from an estimated USD156.3 million (RM672.2 million[11]) to an estimated USD170.4 million (RM706.4 million[11]), at a CAGR of 1.7%. Over the same period, the accommodation work barge market in Malaysia saw an overall growth, from USD19.3 million (RM83.0 million[11]) to an estimated USD23.3 million (RM96.6 million[11]), at a CAGR of 3.8%. The growth of the AHTS, PSV and accommodation work barge chartering markets from 2017 to 2022 has been mainly driven by the growth in capital expenditure of PACs from RM44.5 billion in 2017 to RM50.1 billion in 2022, which was in line with the increase in crude oil prices over the period (as illustrated in **Chapter 4 – The Upstream Oil and Gas Industry in Malaysia**).

AHTS, PSV and accommodation work barge chartering market size in Malaysia



Note: (e) – estimate

Source: PROVIDENCE



Note: (e) - estimate

Source: PROVIDENCE

[11] Source: Currency conversion from USD to RM is based on the average annual exchange rates published by Bank Negara Malaysia:
For 2017: USD1 = RM4.3008
For 2022, 2023 and 2025: USD1 = RM4.1456.

Moving forward, PROVIDENCE forecasts the AHTS and PSV chartering market size in Malaysia to grow from USD172.4 million (RM714.7 million[11]) in 2023 to USD177.1 million (RM734.2 million[11]) in 2025, registering a CAGR of 1.4%, while the accommodation work barge market to grow, from USD24.0 million (RM99.5 million[11]) to an estimated USD25.7 million (RM106.5 million[11]), at a CAGR of 3.5%.[12]

4 THE UPSTREAM OIL AND GAS INDUSTRY IN MALAYSIA

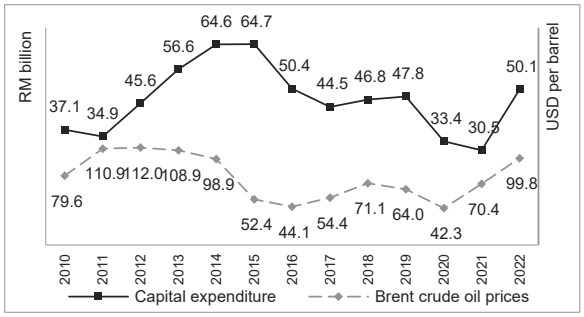
This chapter aims to assess the upstream oil and gas industry in Malaysia which is a key market Keyfield Group presently serves.

The upstream oil and gas industry refers to the exploration and production activities of crude oil and natural gas.

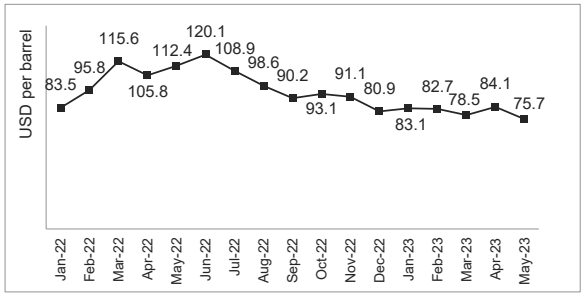
Crude oil and natural gas are products obtained from oilfield sites. Oilfield sites can be discovered offshore or onshore. Oil and gas are considered important resources globally as they are used as transportation fuel, industrial fuel, for electricity generation, as well as in the production of fertilisers, pesticides, and a wide range of industrial products including plastics and polymers, textiles, paints and dyes. As such, the oil and gas industry plays an important role in driving the global economy.

In Malaysia, the oil and gas reserves remained stable between 2010 and 2020. Malaysia's reserves of crude oil and condensates hovered between 4.5 billion barrels and 6.0 billion barrels, while reserves of natural gas in the country hovered between 75.3 trillion cubic feet ("**ft³**") and 100.7 trillion ft³. The production of crude oil and condensates in Malaysia was also stable as it hovered between 203.4 million barrels and 243.4 million barrels. Meanwhile, the production of natural gas in Malaysia grew slightly between 2010 to 2020 from 71,543 ktoe to 72,579 ktoe.[13]

Global average annual crude oil price and capital expenditure in Malaysia



Global average monthly crude oil price



Source: PETRONAS annual reports, International Monetary Fund

The capital expenditure of PACs is an indicator of the outlook of the upstream oil and gas industry. The PACs' capital expenditure determines the number of new explorations and commissioning of new offshore oil and gas platforms. This is because capital expenditure is influenced by crude oil prices, where falling crude oil prices typically result in capital expenditure reductions. Between 2010 and 2017, the average price of Brent crude oil decreased from USD79.6 per barrel to USD54.4 per barrel. The average price of Brent crude oil witnessed a sharp drop from USD98.9 per barrel in 2014 to USD52.4 per barrel in 2015, due to the strong USD and an oversupply of oil, which was exacerbated by the Organization of the Petroleum Exporting Countries' ("**OPEC**") stand on retaining production volume and the anticipation of Iran's return to the oil markets. The global oil market remained oversupplied in 2016, with crude oil prices further falling. As a result of the falling crude oil prices, there was a reduction in capital expenditure for the oil and gas upstream industry. Project deferment and reprioritisation measures were also taken, thus resulting in operating expenditure and manpower rationalisation exercises as oil and gas companies sought to maintain profitability. PETRONAS' capital expenditure increased from RM37.1 billion in 2010 to RM64.7 billion in 2015, but declined in 2016 to RM50.4 billion, then further declined to RM44.5 billion in 2017. In 2017, the average price of Brent crude oil increased to USD54.4 per barrel partly due to OPEC's decision to cut oil and gas output. The indication of an oil price recovery, led to renewed investment interest in upstream development works, where PETRONAS cautiously increased its capital expenditure to RM46.8 billion in 2018. In the following year, despite an increase in development projects in Malaysia, PETRONAS still remained cautious by allowing a slight increase of its capital expenditure to RM47.8 billion in the year.

Crude oil prices dropped significantly in 2020, recording an average of USD42.3 per barrel in the year. This was largely due to the COVID-19 pandemic which affected demand for crude oil and caused storage spaces to be limited during the period. As a result, crude oil that could not be sold immediately to buyers had to be offloaded at lower prices due to storage limitations. Nevertheless, as the global economies gradually recovered from the COVID-19 pandemic, more

[12] PROVIDENCE's growth forecast is based on their proprietary forecasting model that takes into account historical growth performance, demand drivers and restraints, industry risks and challenges as well as industry trends.
[13] Source: Energy Commission of Malaysia. Latest available data as at 2020.

businesses resumed operations leading to a growth in consumption of oil. Since then, crude oil prices continued to rise to an average of USD70.4 per barrel in 2021 in line with the growth in consumption of crude oil.

As a result of the Russia-Ukraine war, Brent crude oil prices reached an average of USD120.1 per barrel in June 2022. The increase in crude oil prices was largely due to a shortage in crude oil in Europe as Russia is one of the world's largest producers of crude oil. Crude oil prices fell from July 2022 onwards due to lower demand for crude oil due to the "zero COVID" policy that was implemented in several major cities in China which led to restrictions in business activities and consequently lower demand for crude oil from China as well as tightening monetary policies in the United States which has led to reduced demand for all products, including crude oil from the country.

As of December 2021, there are 100 active PACs in Malaysia.[14] Overall, the number of active offshore oil and gas platforms in Malaysia grew from 353 as of March 2018 to 451 as of December 2022.[15] According to PETRONAS, in 2023, 96 wells are planned to be drilled under their Development, Appraisal and Exploration drilling programme. In addition, there will be at least 7 new oil and gas development projects in Malaysia including Jerun, Marjoram, Rosmari, Timi, Pegaga MRU, Kasawari (E11R-AA) and NMB Phase 4A, as well as 3 new structural installations on existing oil and gas development projects including Gumusut Kakap Phase 4, Kikeh Phase 3A and IBO Module 9, and another 11 oil and gas development projects under review.[16] Further, PETRONAS also plans to charter 26 rigs in 2023, compared to 20 rigs in 2022. Additionally, offshore support vessels are expected to improve in 2023, as 351 of them are expected to be chartered, a rise compared to 339 in 2022.[16] In 2022, PETRONAS has also signed a memorandum of understanding with Sabah Oil & Gas Development Corporation to build Sabah's first largest near-shore floating LNG facility. The facility is estimated to cost RM8.8 billion and is expected to be able to process minimum 2 million tonnes per year of LNG. Upon completion of the LNG facilities, PETRONAS' LNG production from floating LNG plants from 2.7 million tonnes per year to 4.7 million tonnes per year.[17]

PETRONAS estimates that its capital investment allocation over the next 5 years, i.e. between 2023 to 2027, is expected to be RM300.0 billion, which is 43% higher than the capital investment in the last 5 years i.e. between 2018 to 2022, of RM208.5 billion.[18] This is mainly as a result of scaling up investments in its core business of oil and gas in greenfield and brownfield oil and gas projects, investing in lowering emissions to reduce methane emissions from its natural gas operations by 50% by 2025 and limit operational greenhouse emissions to 49.5 million tonnes of carbon dioxide equivalent, as well as investing in new businesses that are sustainable such as renewable energy (such as solar and wind energy), hydrogen and biofuels.[18]

5 PROSPECTS AND OUTLOOK FOR KEYFIELD GROUP

The AWB chartering market in Malaysia has been growing at a CAGR of 5.8% between 2017 and 2022. Although the AWB chartering market in Malaysia has been growing at a CAGR of 20.7% between 2017 and 2019, the local AWB chartering market experienced a fall in market size due to the COVID-19 pandemic between 2020 and 2021. Nevertheless, the AWB chartering market size in Malaysia recovered and grew by 43.7% between 2021 and 2022. Moving forward, PROVIDENCE forecasts the AWB chartering market size in Malaysia to register a CAGR of 6.1% between 2023 and 2025. This is in line with the anticipated growth in the local upstream oil and gas industry, wherein PETRONAS estimates an increase in capital investment allocation from 2023 to 2027 years of 43% as compared to the last 5 years, i.e. 2018 to 2022.

As a key industry player in the AWB chartering market in Malaysia, Keyfield Group stands to benefit from the positive outlook of the AWB chartering market in Malaysia, which will be driven by the local upstream oil and gas industry. In this respect, the Group stands to benefit from the expansion of its fleet of vessels, as it will be able to capture the continuous demand from the local upstream oil and gas industry. In addition, the Group's plans to enhance its vessels' features and capabilities to reduce greenhouse gas emissions and/or be more environmentally sustainable are expected to further strengthen its position in securing new chartering contracts. This is because PETRONAS and PACs are increasingly making conscientious efforts to reduce carbon emissions and be more environmentally sustainable. In particular, PETRONAS has announced its intention to achieve net zero carbon emissions by 2050 and has been implementing initiatives to reduce greenhouse gas emissions and embark on new growth opportunities that are sustainable including renewable energy (such as solar and wind energy), hydrogen and biofuels. Keyfield Group also stands to benefit from the growing accommodation work barge chartering market in Malaysia as it has 1 accommodation work barge, as well as the continuous demand for AHTS and PSV chartering in Malaysia as the Group intends to expand into these markets.

[14] Source: PETRONAS Integrated Report 2022. Latest publicly available information is as at December 2021.
[15] Source: PETRONAS Integrated Report 2022.
[16] Source: PETRONAS Activity Outlook 2023-2025.
[17] Source: Energy Voice; 25 April 2022.
[18] Source: PETRONAS Integrated Report 2022