20\textsuperscript{th} March 2012

The Directors
Armour Energy Limited
Level 5, 60 Edward Street
Brisbane
Queensland, 4000

Dear Sirs,

\textbf{Independent Expert's Report for Armour Energy Limited}

\textbf{1. Introduction}

Pursuant to your request, MBA Petroleum Consultants Pty Ltd (MBA) has prepared an Independent Expert's Report for inclusion in the replacement prospectus to be dated on or about 20 March 2012 for the initial public offering (IPO) of shares in Armour energy Limited (Armour) on the ASX.

MBA has conducted the following:

\begin{itemize}
  \item[a)] Reviewed the exploration permits held by Armour and detail the work commitments;
  \item[b)] Discussed the application permits made by Armour in the Northern Territory (NT) and Queensland (Qld);
  \item[c)] Provided a summary of the regional setting and petroleum system in the McArthur Basin in the NT and the Northern Lawn Hill Platform in Qld;
  \item[d)] Described and commented on the current and planned exploration activities of Armour, and
  \item[e)] Provided a Prospective Resource assessment for the conventional and unconventional plays in EP 171 and EP 176 in the NT.
\end{itemize}
Table of Contents

1. Introduction .................................................................................................................. 1
2. Permits and Applications for Permits Held by Armour ............................................. 4
3. Summary ....................................................................................................................... 4
4. McARTHUR BASIN .................................................................................................... 7
   4.1 Regional Geology .................................................................................................... 7
   4.2 Previous Exploration ............................................................................................. 8
   4.3 Petroleum System ................................................................................................. 9
       4.3.1 Hydrocarbon Charge ...................................................................................... 9
       4.3.2 Conventional Reservoirs .............................................................................. 10
       4.3.3 Seals .............................................................................................................. 10
       4.3.4 Conventional Leads ...................................................................................... 10
   4.4 Armour’s Northern Territory Permits ..................................................................... 11
       4.4.1 EP 171 .......................................................................................................... 11
       4.4.2 EP 176 .......................................................................................................... 13
   4.5 Prospective Resource Estimation EP 171 and EP 176 ............................................ 14
5. Recent NT Applications ............................................................................................... 16
   5.2 Overview ................................................................................................................ 16
   5.2.1 Exploration History .......................................................................................... 17
       5.2.2 Applications EP (A) 173, 174, 190, 193, 194 and northern EP (A) 192 .... 17
       5.2.3 Applications EP (A), 177 178, 179 and southern 191 ................................ 18
       5.2.4 Applications EP (A) 192, 195, 172 and eastern 179 ....................................... 18
   5.3 Permit Summary ..................................................................................................... 19
   6.1 Regional Geology .................................................................................................. 19
   6.2 Previous Exploration ........................................................................................... 20
   6.3 Hydrocarbon System ............................................................................................ 20
   6.4 ATPA 1087P ......................................................................................................... 21
   6.5 Prospective Resource Estimation ATPA 1087P ..................................................... 21
7. Statements .................................................................................................................... 22
   7.1 Limitations ............................................................................................................ 22
   7.2 Sources of Information ......................................................................................... 22
   7.3 Declaration ............................................................................................................. 22
7.4 Qualifications of the Authors ................................................................. 23
8 References .............................................................................................. 24
9 Glossary and Definitions ......................................................................... 25

List of Figures

Figure 1 Exploration Permits and Applications ........................................... 28
Figure 2 Structure and Location McArthur Basin ....................................... 29
Figure 3 Stratigraphic Table McArthur Basin ............................................. 30
Figure 4 McArthur Basin Prospect, Well and Seismic Location Map .......... 31
Figure 5 Cross Section of McArthur Basin ................................................ 32
Figure 6 Barney Creek Formation Unconventional Play Map .................. 33
Figure 7 EP 171 Location and Infrastructure Map ...................................... 34
Figure 8 EP 176 Location and Infrastructure Map ...................................... 35
Figure 9 ATPA 1087P Location and Infrastructure Map ......................... 36
Figure 10 Stratigraphic Table of the McNamara Group, Northern Lawn Hill Platform ....................... 37
Figure 11 Geologic cross section of the Lawn Supersequence .................... 38
2. Permits and Applications for Permits Held by Armour

A listing of the two permits awarded to Armour and the fourteen applications made by Armour is included in Table 1 and their locations are shown in Figure 1. Armour is the operator of both awarded permits and will be operator for all the permits that are under application. Armour is the sole participant in both permits and all applications listed. Armour has secured exclusive rights over 13 EPAs located in the Northern Territory and is also the preferred tenderer for one ATPA in Queensland.

<table>
<thead>
<tr>
<th>Asset</th>
<th>Status</th>
<th>Licence Grant Date</th>
<th>Licence Area (Approx, km²)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP 171</td>
<td>Permit</td>
<td>29th June 2011</td>
<td>3,472.7</td>
<td>GRANTED</td>
</tr>
<tr>
<td>EP 176</td>
<td>Permit</td>
<td>29th June 2011</td>
<td>8,031.7</td>
<td>GRANTED</td>
</tr>
<tr>
<td>EPA172</td>
<td>Application</td>
<td>29th June 2011</td>
<td>7,067.5</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA173</td>
<td>Application</td>
<td></td>
<td>2,917.5</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA174</td>
<td>Application</td>
<td></td>
<td>4,339.9</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA177</td>
<td>Application</td>
<td></td>
<td>15,938.8</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA178</td>
<td>Application</td>
<td></td>
<td>15,689</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA179</td>
<td>Application</td>
<td></td>
<td>16,108</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA180</td>
<td>Application</td>
<td></td>
<td>12,820.7</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA181</td>
<td>Application</td>
<td></td>
<td>15,245.7</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA182</td>
<td>Application</td>
<td></td>
<td>9,487.2</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA183</td>
<td>Application</td>
<td></td>
<td>1,348</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA184</td>
<td>Application</td>
<td></td>
<td>2,341.7</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA185</td>
<td>Application</td>
<td></td>
<td>3,317.2</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>EPA186</td>
<td>Application</td>
<td></td>
<td>741.9</td>
<td>Exclusive Rights</td>
</tr>
<tr>
<td>ATPA 1087P</td>
<td>Application</td>
<td></td>
<td>7,138.1</td>
<td>Preferred Tenderer</td>
</tr>
</tbody>
</table>

The permit applications for EP 171 and 176 were the first to progress through Native Title negotiations to completed agreements and are for a 5 year term. Considerable work has been carried out on the two applications over this period including compliance issues and cultural heritage clearance. Similar work is now being conducted for the latest round of applications.

3. Summary

Armour has established a portfolio of two granted petroleum permits and thirteen EPAs (petroleum permit applications) in the north east corner of the Northern Territory (NT) and ATPA 1087P petroleum permit application in Queensland (QLD) (Figure 1 and Table 1). Armour holds a 100% interest in all of its granted permits and permit applications.

The permits and permit applications are all abutting each other and effectively lock up the region around the two granted permits EP 171 and 176 located in the Batten Fault Zone of the McArthur Basin and extend further to the south and east covering an area of 126,006km². These areas include a proven hydrocarbon system and a range of conventional and unconventional hydrocarbon play types.

The Batten Trough, which covers less than 15% of the area of all permits, has a mean Prospective Resource of 18.8TCF of gas and 1985MMbbls of associated liquids. Additional conventional and unconventional plays in the application areas are currently being mapped in
the areas surrounding the Batten Fault Zone and in the adjacent Georgina and South Nicholson Basin.

Armour’s acreage lies close to existing pipeline infrastructure which is connected to local mining markets and export markets through Darwin. There are a number of identified opportunities to supply regional mines with gas following successful exploration and appraisal activities, and utilising existing infrastructure.

Armour has secured exclusive rights over thirteen EPA’s in the Northern Territory, regulated by the NT Department of Resources - Minerals and Energy, and is also the preferred tenderer for one ATPA in Queensland, regulated by the QLD Department of Mines and Energy.

The exploration permits include the:

- McArthur Basin, NT – two granted permits 11,504.4km², and
- McArthur, Georgina and South Nicholson Basins, NT – thirteen applications totalling 107,363.1km² in area; and
- Northern Lawn Hill Platform, Qld – preferred tenderer - one permit application being 7,138.1km² in area

The Northern Territory applications remain significantly underexplored for both conventional oil and gas and unconventional Shale Gas assets. Previous exploration and resource development within the NT has identified reserves of oil and gas to the south within the Amadeus Basin, also an ancient marine basin, and to the west in the Precambrian aged Beetaloo Basin.

The Precambrian aged Beetaloo Basin to the west of Armour’s acreage is currently being explored by Falcon Oil & Gas Australia, which has reported a Prospective Resource within the Beetaloo Basin of 18 billion barrels of oil and 63TCF of gas over a 30,000 km² Shale Gas play in the Kyalla Shale and Velkerri Shale. The Hess Corporation recently farmed into this acreage for a 62.5% stake.

Within the McArthur Basin, there are numerous oil and gas indications in wells, and the existence of favourable source rock and hydrocarbon trapping mechanisms have been identified. One mineral well blew out and flared gas demonstrating the existence of an active petroleum system. In addition numerous mineral wells have also been drilled in the area providing important stratigraphic and lithological information for the geological interpretation of plays and resource estimates.

Prospective Resources for the Batten Fault Zone area of the McArthur Basin and the Lawn Supersequence of the Lawn Hill Formation have been determined by MBA under separate cover and a summary of this work is included as part of this report. For these purposes, Prospective Resources are defined based on the Society of Petroleum Engineers Petroleum Resources Management System (SPE PRMS) 2007 guidelines. Under this classification they are currently undiscovered and as such carry significant exploration risk.

The unconventional Barney Creek Shale Gas play has a potential for a mean Prospective Resource of 18.6 TCF of gas and 1962MMbbls of associated liquids within EP 171 and EP 176. Of this there is potentially 11.3 TCF of gas and 1258MMbbl of associated liquids in EP 171 and 7.3TCF and 703MMbbl of associated liquids in EP 176 (Table 2). The unconventional Lawn Hill Supersequence of the Lawn Hill Formation in ATPA 1087P, Queensland, has a potential for a mean Prospective Resource of 22.5 TCF of gas and 242.4 MMbbls of associated liquids.
The Prospective Resource assessed for the eight conventional leads range from between 6.2BCF and 62BCF of gas and 0.1MMbbls and 7.4MMbbls of associated liquids, from the smallest to the largest lead. The identified conventional leads have a combined potential for a mean Prospective Resource of 209BCF of gas and 23.6MMbbls of associated liquids within EP 171 and EP 176 (Table 2), with 187BCF and 21MMbbl of associated liquids in Permit EP 171 and 22BCF of gas and 2.6MMbbl of associated liquids in EP 176. (Table 2).

There are no petroleum resources attributed currently to the areas of the McArthur Basin outside the Batten Fault Zone or to the adjacent Georgina Basin, or Carpentaria Basin. However, work is underway to describe several additional unconventional plays in these areas.

**Table 2: Prospective Resource Estimate Summary for Permits EP 171, EP 176 and ATPA 1087P**

<table>
<thead>
<tr>
<th>Area</th>
<th>Gas (Bcf)</th>
<th>Condensate (MMbbl)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P90</td>
<td>P50</td>
</tr>
<tr>
<td><strong>EP 171</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry gas area</td>
<td>28.4</td>
<td>93.6</td>
</tr>
<tr>
<td>Wet gas area</td>
<td>2,299.4</td>
<td>7,784.4</td>
</tr>
<tr>
<td>Mean Total</td>
<td>11,259.5</td>
<td></td>
</tr>
<tr>
<td><strong>EP 176</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry gas area</td>
<td>275.9</td>
<td>835.9</td>
</tr>
<tr>
<td>Wet gas area</td>
<td>1,197.1</td>
<td>4,256.7</td>
</tr>
<tr>
<td>Mean Total</td>
<td>7,291.0</td>
<td></td>
</tr>
<tr>
<td><strong>ATPA 1087P</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry gas area</td>
<td>9,374.1</td>
<td>18,600.7</td>
</tr>
<tr>
<td>Mean Total</td>
<td>22,521.9</td>
<td></td>
</tr>
<tr>
<td><strong>Combined Mean Totals</strong></td>
<td>41,072.4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area</th>
<th>Gas (Bcf)</th>
<th>Condensate (MMbbl)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P90</td>
<td>P50</td>
</tr>
<tr>
<td><strong>EP 171</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abner</td>
<td>13.5</td>
<td>42.3</td>
</tr>
<tr>
<td>Glyde River</td>
<td>1.4</td>
<td>7.4</td>
</tr>
<tr>
<td>Kilgour</td>
<td>17.4</td>
<td>50.9</td>
</tr>
<tr>
<td>Kilgour South</td>
<td>3.2</td>
<td>9.0</td>
</tr>
<tr>
<td>Dunganniminnie East</td>
<td>6.9</td>
<td>20.5</td>
</tr>
<tr>
<td>Dunganniminnie West</td>
<td>7.4</td>
<td>22.1</td>
</tr>
<tr>
<td>Mean Total</td>
<td>187.0</td>
<td></td>
</tr>
<tr>
<td><strong>EP 176</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cow Lagoon East</td>
<td>1.9</td>
<td>5.2</td>
</tr>
<tr>
<td>Cow Lagoon West</td>
<td>4.4</td>
<td>13.0</td>
</tr>
<tr>
<td>Mean Total</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td><strong>Combined Mean Totals</strong></td>
<td>209.0</td>
<td></td>
</tr>
</tbody>
</table>

The volumes calculated for the Barney Creek Formation underlie a surface area of approximately 2,710km². The Prospective Resource is expressed as a P50 average of 4.8 billion cubic feet of gas per square kilometre (BCF/km²) and 0.44 million barrels of liquids (oil
equivalent). These estimates are comparable to the North American plays and fall within the midrange of observed data on key geological parameters for selected North American analogues.

Armour has outlined a 2D seismic program of approximately 65 kilometres in EP 171 to be acquired in early 2012. It will be a part of the 165km seismic acquisition programme planned for 2012 and 2013. The seismic will be used to high grade leads to prospect status and provide additional information on the distribution of the Barney Creek Formation Shale Gas play.

An aggressive exploration programme has been designed for EP 171 and 176 for the 2012 and 2013 calendar years. Armour has budgeted approximately A$ 30 million dollars to be spent on drilling up to 12 wells, acquiring 165km of 2D seismic data, potential field data and providing an integrated interpretation to refine exploration and drilling targets. The wells will target conventional dolomite and sandstone reservoirs, and will have the dual objective of testing the Shale Gas potential. The wells have been designed to test for hydrocarbons in the most cost efficient manner by drilling with air and the programme has maximized the chances of intersecting high gas flow rates from fractures by drilling high angle laterals as appraisal wells. Cores will also be taken from selected wells.

4. McARTHUR BASIN

4.1 Regional Geology

The McArthur Basin covers an area of approximately 180,000km² in a north-northeast trend from the Queensland-Northern Territory border. It overlies the eastern edge of the North Australian Craton (Figure 2). The McArthur Basin is divided geographically and tectonically into the southern and northern McArthur Basin, bisected by the east-west trending Urapunga Fault Zone. The permits lie in the southern McArthur Basin (Rawlings, 2004).

The majority of the current basin evolution models (promote extensional tectonics Plumb 1979, Etheridge and Wall 1994, Rogers 1996). In these models specific fault orientations acted as normal or growth structures and others acted as accommodation or transfer structures during the various stages of the McArthur Basin formation (Rawlings, 1999).

The southern McArthur Basin contains middle Proterozoic flat lying to gently folded sedimentary rocks (Jackson et al., 1988). These are approximately 12km thick and have been deposited in a shallow to deep water environment that was dominated by the north-trending half grabens of the Batten Fault Zone (Pegum, D.M, 1997) (Figure 2).

The structure of the Batten Trough is dominated by the Batten Fault Zone, an intensely faulted north trending zone 50km wide, through the eastern part of the Basin (Jackson et al., 1988). In this area of the southern McArthur Basin, the Batten Fault Zone is flanked by the Bauhinia Shelf to the west and Wearyan Shelf to the east. The fault zones are characterised by an increase in deformation, faulting and steepness of dips, when compared to the adjacent shelves (Rawlings, 2002). The Batten Fault Zone contains an increased thickness of preserved sedimentary section (10-12 km) compared with the marginal shelves (4-5 km).

Thickening of units within the Batten Fault Zone is interpreted to be constrained to specific sedimentary intervals deposited within intracontinental ‘rift’ structures (Plumb and Wellman, 1987). Thickness changes appear to be greatest in the McArthur Group, which is estimated to thicken to 4000m in the Batten Fault Zone (Rawlings, 2004).
Adjacent to the margin of the Batten Fault Zone is the Glyde Sub-basin, a fault-bounded depocentre. Within the Glyde sub-basin a very thick sequence of below-wave-base carbonaceous siltstone of the Barney Creek Formation was deposited and is regarded as the main hydrocarbon source rock, (Davidson et al, 1993).

The primary conventional reservoirs are shown on Figure 3 and include the Coxco Dolomite. The primary source rock, seal and Shale Gas play is the Barney Creek Formation.

4.2 Previous Exploration

Numerous geological studies have been carried out by exploration and mining companies in the in and around the Armour permits, with numerous wells intersecting the Barney Creek Formation, including:

- Carpentaria Exploration Co. Pty Ltd was active in the McArthur Basin from 1955, carrying out detailed mapping in the Batten Fault Zone.
- AO Australia Pty Ltd mapped and drilled the Barney Creek Formation in the area northwest of the Batten Fault Zone between 1976 and 1980.
- Shell Company of Australia Limited, Metals Division, drilled and analysed bedrock samples on the northern extension of the Batten Fault Zone in the late 1970s and early 1980s.
- Amoco Minerals Australia and CRA Exploration undertook base-metal exploration west of the Emu Fault zone drilling numerous wells up to 1000m deep during the 1970’s and 1980’s.
- BHP minerals undertook a comprehensive shallow drilling campaign in the Batten region during the 1980’s.

Amoco International commenced a petroleum exploration program with stratigraphic studies, geophysical surveys and drilling in 1981 and 1982. The 1981 field program was intended to identify, describe and sample potential source and reservoir rock horizons and to gain insights into stratigraphy and structure of the southern McArthur Basin. The majority of the wells were drilled to a maximum depth of 60 metres. The 1982 drilling program consisted of eight stratigraphic coreholes of between 200-600m depth, four of which are within Armour’s permits (Figure 4). A summary of these wells are as follows:

- 82-5: drilled the Lynott Formation of the Upper McArthur Group to a Total Depth (TD) of 455m to test its source-rock and reservoir potential.
- 82-6: intersected the Looking Glass Formation, the Stretton Sandstone, the Yalco Formation and the Donnegan Member of the Upper McArthur Group to its programmed depth of 300 metres.
- 82-7: was drilled to 494 metres depth in the Abner Range area to retest a previous BMR mineral well (Bauhinia Downs 4) which encountered bitumen in the Looking Glass Formation of the Upper McArthur Group. 82-7 tested the source and reservoir potential of the upper McArthur Group.
- 82-8: was drilled to test the source-rock potential of the Velkerri and Corcoran Formations and the reservoir potential of the Bessie Creek Sandstone of the Roper Group. The well was abandoned at 221 metres due to drilling problems.

These wells were designed as shallow stratigraphic tests and none intersected the Barney Creek Formation or the Coxco Dolomite of the Lower McArthur Group.

The largest seismic survey within Armour’s permits was conducted in October-November 2002 by Geoscience Australia. 130km of 2D was acquired. This included the regional traverse lines
02GA-BT1 and 02GA-BT2 through the southern McArthur Basin and the Batten Fault Zone (Rawlings, 2004) (Figure 4). In 1992 M.I.M. Petroleum Exploration Pty. Ltd. acquired 33km of 2D mini-sosie seismic over the Kilgour and Kilgour South structures, however providing limited data, due to poor seismic quality.

During 1979 and 1980 the Amoco Minerals and the Kennecott Exploration (Australia) Joint Venture drilled 9 shallow wells (Glyde River (GR) 1-9) of 200 to 1000 metres depth in the Glyde region, searching for silver-lead-zinc mineralisation within the Barney Creek Formation. A subsequent joint venture between Amoco and Shell during 1981 and 1982 drilled two more wells to 700 and 470 metres depth in the Glyde region (GR10 and GR11). Ten of these eleven wells unequivocally intersected Barney Creek Formation sediments. A gas flow was encountered whilst air-drilling the Coxco Dolomite in the Glyde River-9 (GR9) well. This flow subsequently ignited.

### 4.3 Petroleum System

Thick potential petroleum source rocks exist in the McArthur Basin. Three formations with significant organic-rich intervals have been identified in the McArthur Group. These include the Barney Creek, Yalco and Lynott Formations (Figure 3). The organic-rich intervals of the Barney Creek Formation are considered to be high-quality marine source rocks in terms of TOC, kerogen type and hydrocarbon yield (Crick et al. 1988). It has been seen that the Barney Creek Formation is early oil mature and even wet gas mature at, or close to surface in some areas. This is a result of deeper depth of burial in the past and un-roofing by erosion resulting in the mature rocks being at the surface today.

#### 4.3.1 Hydrocarbon Charge

An active petroleum system is evident in the southern McArthur Basin. The Barney Creek Formation is considered to be the primary source rock. It is an ancient formation, interpreted to be marine. The organic rich shale within the formation has an average TOC of 2% considered to be adequate for a source rock. The majority of the formation has been or is within the thermal maturity window for hydrocarbon generation.

Several hydrocarbon shows of both live oil and gas have been observed within and surrounding Armour permit areas (Figure 4). These hydrocarbon shows are included in Table 3:

<table>
<thead>
<tr>
<th>Table 3 Hydrocarbon Shows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Well</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>82-5</td>
</tr>
<tr>
<td>82-6</td>
</tr>
<tr>
<td>82-7</td>
</tr>
<tr>
<td>Mineral Wells</td>
</tr>
<tr>
<td>GR 3</td>
</tr>
<tr>
<td>GR 9</td>
</tr>
<tr>
<td>GR 9</td>
</tr>
</tbody>
</table>

These shows demonstrate previously active hydrocarbon generation and migration, combined with preservation of hydrocarbon traps demonstrated by the Glyde River-9 well.
4.3.2 Conventional Reservoirs

Within the conventional leads, the Coxco Dolomite is considered by Armour to be the most prospective conventional reservoir within EP 171 and 176. This initial assessment is based on live gas and oil shows in the GR9 well and the Coxco Dolomite being overlain by the Barney Creek Formation. The Coxco Dolomite has good reservoir potential due to the likelihood of secondary vuggy porosity development and karstification (Jackson et al. 1988).

Other potential reservoirs have been identified in siliciclastic and carbonate formations. Good reservoir potential exists in the Balbirini Dolomite, Looking Glass Formation, Stretton Sandstone, Yalco Formation, Barney Creek Formation, and in the Reward, Coxco, and Teena Dolomites (Amoco, 1982).

4.3.3 Seals

The Barney Creek Formation is extensive and up to 400m thick. Data from the GR 9 well proved it to be an effective top seal to the gas pool encountered in that well. It is expected to form a good seal both laterally and across faults. This formation will form the main seal for the conventional traps to be targeted by Armour.

Other suitable seal lithologies overlying the reservoir formations are evident in the McArthur Group. Regional seals of the McArthur Group include potential seals of the Caranbirini Member of the Lynott Formation, the Barney Creek Formation and quite possibly others. Evaporites of the Balbirini Dolomite of the Nathan Group have potential to seal the upper sandstones of the McArthur Group.

4.3.4 Conventional Leads

There are eight leads (Figures 7 and 8) recognised in EP 171 and EP 176 with areal extents of between 4 and 24km$^2$. Prospective Resource calculations made are summarised in Section 9.

Four of these eight leads have been identified by petroleum and minerals explorers in EP 171 and EP 176 using surface geology maps. The Abner, Kilgour, and Kilgour South leads are structural closures and the Glyde River Trend is a fault closed trap. A geologic cross section transects the Kilgour and Abner anticlines (Figure 5).

Armour has defined four new four-way dip closed leads on surface geology mapping. These are Cow Lagoon East and Cow Lagoon West, both located northwest of Caranbirini, and Dunganminnie East and Dunganminnie West, both located to the southwest of Abner Range (Figures 7 and 8).

Armour intends to acquire new seismic in late 2011 or early 2012 over some of the leads to more accurately predict the drilling location of the target structures. The conventional plays will form the main initial targets for drilling, which is planned for 2012 and 2013.

4.3.5 Unconventional Shale Gas Plays

Shale Gas is trapped in fine-grained rocks where the gas is stored by adsorption onto the organic-rich components as well as within micro-pores. Rock types included in this definition of Shale Gas plays are organic-rich shales, mudrocks, siltstone, limestones, dolomites and very fine-grained sandstones. Some Shale Gas plays have vast fracture patterns that can store significant amounts of free gas and act as a migration conduit for production of gas from the reservoir to the wellbore. These can all be considered as source rocks. Usually, a Shale Gas reservoir is a hydrocarbon source rock that has been subjected to temperatures above 150 °C.
The Barney Creek Formation is currently considered to be the most prospective unconventional Shale Gas play in the southern McArthur Basin. The formation is regionally extensive and thick (commonly over 150m) with significant TOC concentration and an oil-prone organic matter type. The Barney Creek Formation is oil mature at the surface and predicted to be wet-gas mature from 350m to 2400m and dry-gas mature where it is over 2400m deep (Figure 6). The Shale Gas play has a finely interbedded nature with high dolomitic and silt components providing favourable conditions for large volumes of gas to be held in pore spaces. These rocks are likely to be well suited to massive fracture stimulation, the primary method used in completing production wells.

Armour will explore the Barney Creek Formation within the wet-gas window and hopes to encounter high liquids content in the gas stream. This is the more favoured thermal maturity now being developed in North America, with liquids providing considerable additional economic benefit.

Armour will acquire new seismic in late 2011 or early 2012 and part of this will be aimed at better defining the Barney Creek Formation play. Future wells will be designed to include a sampling program to obtain gas and reservoir information on the formation.

4.4 Armour’s Northern Territory Permits

4.4.1 EP 171

EP 171 was granted to Armour on 29th June 2011 for a five year term. The actual work planned over the first three years is included in Table 4. The work commitments are included in Table 5. The proposed forward work program materially exceeds the cost and scope of exploration envisaged under commitments to the government, with the full five year commitments being expected to be fulfilled through the two year program.

In the first permit year, Armour plans to acquire 65km of 2D seismic. This will be followed by an extensive drilling programme of five wells in the 2012 calendar year and further four wells in the 2013 calendar year. Some of these wells will be horizontal and one multi-stage fracking well is planned for 2012 and a second one in 2013. The locations of the 2012 seismic and proposed wells are shown in Figure 7. There are a number of well locations which are being considered and the final well locations to be chosen will depend on the results of the seismic data planned for acquisition in early 2012.

Drilling locations at Kilgour, Kilgour South, Abner, and Glyde will be located to test both the conventional oil and gas potential of the Reward and Coxco Dolomite and the Shale Gas potential of the Barney Creek Formation.

The wells are planned to be fully cored through the Barney Creek Formation. The purpose of this is to allow gas desorption measurements to be made on the cores, leading to an understanding of the gas content and gas quality of the Shale Gas play. Other important information on the porosity, permeability and rock strength, thermal maturity and TOC will be obtained.

The exploration program in 2013 will depend on the results of the work to be undertaken in 2012. However, it is likely to include further drilling, seismic acquisition, acquisition of potential field data and integrated geological and geophysical studies.
### Table 4 EP 171 Planned Work Program for 2012 and 2013

<table>
<thead>
<tr>
<th>PERMIT</th>
<th>AWARD DATE</th>
<th>CALENDAR YEAR</th>
<th>PLANNED PROGRAM</th>
<th>INDICATIVE EXPENDITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP 171</td>
<td>29th June 2011</td>
<td>2012*</td>
<td>Seismic acquisition of 65 km Five wells, cored and tested Geological mapping and geophysical interpretation Hydraulic Fracture Stimulation</td>
<td>$11.1 million</td>
</tr>
<tr>
<td>McArthur Basin Northern Territory</td>
<td>2013</td>
<td></td>
<td>Seismic acquisition of 50 km Four wells Hydraulic Fracture Stimulation</td>
<td>$11.7 million</td>
</tr>
</tbody>
</table>

### Table 5 EP 171 Permit Details and Work Commitments

<table>
<thead>
<tr>
<th>PERMIT</th>
<th>AWARD DATE</th>
<th>LICENCE YEAR</th>
<th>COMMITTED PROGRAM</th>
<th>INDICATIVE EXPENDITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP 171</td>
<td>29th June 2011</td>
<td>Year 1*</td>
<td>Geological mapping and geophysical interpretation</td>
<td>$80,000</td>
</tr>
<tr>
<td>McArthur Basin Northern Territory</td>
<td>Year 2</td>
<td></td>
<td>Core drilling (at least one), stratigraphic and core fracturing studies</td>
<td>$200,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Year 3 Exploration percussion drilling</td>
<td>$250,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Year 4 Follow up drilling</td>
<td>$600,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Year 5 Further drilling appraisal and prefeasibility studies</td>
<td>$600,000</td>
</tr>
</tbody>
</table>

*First year work commitment for geological and geophysical mapping have been already met
4.4.2 EP 176

EP 176 was awarded to Armour on the 29th of June 2011 for a five year term. The actual work planned to be carried out over the first three years is included in Table 6. The work commitments are included in Table 7.

During 2012, Armour plans to drill three wells in the permit. The location of the wells are shown in Figure 8. The targeted prospect, Cow Lagoon, has been identified based on surface mapping and seismic interpretation on the 2002 seismic line 02GA-BT1.

The well will be located primarily to test the conventional gas potential of the Coxco Dolomite and secondarily the Shale Gas potential of the Barney Creek Formation.

The exploration program in 2013 will depend on the results of the work to be undertaken in 2012. However, it is likely to include further drilling, hydraulic fracture stimulation, seismic acquisition, acquisition of potential field data and integrated geological and geophysical studies.

<table>
<thead>
<tr>
<th>PERMIT</th>
<th>AWARD DATE</th>
<th>CALENDAR YEAR</th>
<th>PLANNED PROGRAM</th>
<th>INDICATIVE EXPENDITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP 176</td>
<td>29th June 2011</td>
<td>2012*</td>
<td>Three wells cored and tested</td>
<td>$6.1 million</td>
</tr>
<tr>
<td>McArthur Basin Northern Territory</td>
<td>2013</td>
<td>Seismic acquisition of 50km</td>
<td>$0.7 million</td>
<td></td>
</tr>
</tbody>
</table>
Table 7 EP 176 Permit Details and Work Commitments

<table>
<thead>
<tr>
<th>PERMIT</th>
<th>AWARD DATE</th>
<th>LICENCE YEAR</th>
<th>COMMITTED PROGRAM</th>
<th>INDICATIVE EXPENDITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP 176</td>
<td>29th June 2011</td>
<td>Year 1*</td>
<td>Geological mapping and geophysical interpretation</td>
<td>$80,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McArthur Basin Northern Territory</td>
<td>Year 2</td>
<td></td>
<td>Core drilling, stratigraphic and core fracturing studies</td>
<td>$300,000</td>
</tr>
<tr>
<td></td>
<td>Year 3</td>
<td></td>
<td>Exploration drilling</td>
<td>$800,000</td>
</tr>
<tr>
<td></td>
<td>Year 4</td>
<td></td>
<td>Exploration drilling</td>
<td>$2,600,000</td>
</tr>
<tr>
<td></td>
<td>Year 5</td>
<td></td>
<td>Geophysical and Geological review</td>
<td>$3,300,000</td>
</tr>
</tbody>
</table>

*First year work commitment for geological and geophysical interpretation has been already met.

4.5 Prospective Resource Estimation EP 171 and EP 176

MBA has determined the Prospective Resource for the Barney Creek unconventional Shale Gas play and for the conventional Reward and Coxco Dolomite reservoirs in leads within EP 171 and EP 176. A Prospective Resource Estimate breakdown for each permit is shown in Tables 8 and 9.

For the purposes of this report, Prospective Resources are defined as per the Society of Petroleum Engineers Petroleum Resources Management System (SPE PRMS) 2007 guidelines which state:

"Prospective Resources are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects. Prospective Resources have both an associated chance of discovery and a chance of development. Prospective Resources are further subdivided in accordance with the level of certainty associated with recoverable estimates assuming their discovery and development and may be subclassified based on project maturity."

Prospective Resources under this classification are as yet undiscovered and as such carry significant exploration risk.

The conventional Prospective Resources were determined for the Reward and Coxco Dolomites. Reservoir parameters were derived from a variety of sources in the reports of the wells drilled in the McArthur Basin.

The Prospective Resource Estimate for the conventional prospects is shown in Table 8.
Table 8 Conventional Prospective Resources for the Reward and Coxco Dolomite within EP 171 and 176.

<table>
<thead>
<tr>
<th>Lead</th>
<th>Areal Closure (km²)</th>
<th>Gas Mean Volume (BCF)</th>
<th>Condensate Mean Volume (MBO)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>EP 171</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abner</td>
<td>12</td>
<td>51.8</td>
<td>6.0</td>
</tr>
<tr>
<td>Glyde River</td>
<td>22</td>
<td>10.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Kilgour</td>
<td>24</td>
<td>61.9</td>
<td>7.4</td>
</tr>
<tr>
<td>Kilgour South</td>
<td>4</td>
<td>10.7</td>
<td>1.3</td>
</tr>
<tr>
<td>Dunganminnie East</td>
<td>10.2</td>
<td>25.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Dunganminnie West</td>
<td>10.8</td>
<td>27.4</td>
<td>3.2</td>
</tr>
<tr>
<td>EP 176</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cow Lagoon East</td>
<td>3.9</td>
<td>6.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Cow Lagoon West</td>
<td>11.1</td>
<td>15.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Combined Total Mean</td>
<td></td>
<td>209</td>
<td>23.6</td>
</tr>
</tbody>
</table>

The unconventional Prospective Resource was estimated through a depth map on the top of the Barney Creek Formation, constructed by Ausmec Geoscience using data from mineral wells and surface geology, combined with an estimate of the thermal maturity to divide the Shale Gas play into dry gas and wet gas play areas (Figure 6).

A range of reservoir attributes used in the Prospective Resource calculations was based on existing core analysis and correlation with analogues of similar Shale Gas resources in North America. The Prospective Resource Estimate was calculated using a probabilistic method and is shown in Table 9.

Table 9 Shale Gas Prospective Resources Within EP 171 and 176 - Batten Fault Zone.

<table>
<thead>
<tr>
<th>Play Area</th>
<th>Gas Mean Volume (BCF)</th>
<th>Condensate Mean Volume (MBO)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>EP 171</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry Gas</td>
<td>133.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Wet Gas</td>
<td>11,126.0</td>
<td>1256.7</td>
</tr>
<tr>
<td>EP 176</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry Gas</td>
<td>1,189.0</td>
<td>13.7</td>
</tr>
<tr>
<td>Wet Gas</td>
<td>6,102.0</td>
<td>689.6</td>
</tr>
<tr>
<td>Combined Total Mean</td>
<td>18,550.5</td>
<td>1961.5</td>
</tr>
</tbody>
</table>

A comparison of the Barney Creek Formation Shale Gas play with the major North American Shale Gas plays can be seen in Tables 10 and 11. The North American estimates were published in an Intek Inc. document prepared for the US Department of Energy in 2010. The top line shows the Barney Creek Formation Shale Gas play and compares the P50 Prospective Gas Resource for the combined wet gas and dry gas play areas. The Barney Creek Formation Shale Gas play has a potential for a P50 Prospective Resource of 13.0 TCF of gas and 1.2 MMbbls of associated liquids within EP 171 and EP 176.

The P50 volumes were used in conjunction with the P50 area to calculate Prospective Resource per km² of 4.8 BCF/km² and 0.44 MMbbl/km² for the Barney Creek Formation Shale Gas play. These estimates are comparable to the North American plays and fall within the midrange of the
analogues (Tables 11). The above comparison suggests the Prospective Gas Resource estimate for the Barney Creek Formation unconventional Shale Gas play to be realistic, for the current, early phase of the exploration.

Table 10 Shale Gas Play Property Comparison Between US Examples and This Study.

<table>
<thead>
<tr>
<th>Play</th>
<th>Depth (m)</th>
<th>Maturity (VRo)</th>
<th>TOC (Wt %)</th>
<th>Thickness (m)</th>
<th>Porosity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barney Creek Formation</td>
<td>700-2400</td>
<td>0.8-2.0</td>
<td>2-6</td>
<td>140-200</td>
<td>8-14</td>
</tr>
<tr>
<td>Lawn Supersequence</td>
<td>300-1900</td>
<td>0.8-2.5</td>
<td>0.07-7</td>
<td>245</td>
<td>7-11</td>
</tr>
<tr>
<td>Antrim</td>
<td>182-670</td>
<td>0.4-0.6</td>
<td>1-20</td>
<td>21-36</td>
<td>2-10</td>
</tr>
<tr>
<td>Barnett</td>
<td>1980-2590</td>
<td>2.2</td>
<td>3-8</td>
<td>30-182</td>
<td>1-6</td>
</tr>
<tr>
<td>Fayetteville</td>
<td>304-2130</td>
<td>1.5-4.0</td>
<td>4-9.5</td>
<td>6-60</td>
<td>2-8</td>
</tr>
<tr>
<td>Haynesville</td>
<td>3200-4110</td>
<td>na</td>
<td>3-5</td>
<td>60-91</td>
<td>8-9</td>
</tr>
<tr>
<td>Woodford</td>
<td>1830-3350</td>
<td>1.1-3.0</td>
<td>3-10</td>
<td>36-67</td>
<td>8-9</td>
</tr>
</tbody>
</table>

Table 11 Barney Creek Formation and Lawn Supersequence Total P50 Prospective Gas Resource in Comparison with North American Shale Gas Play Technical Recoverable Resource.

<table>
<thead>
<tr>
<th>Play</th>
<th>area (km²)</th>
<th>(TCF)</th>
<th>(BBO)</th>
<th>BCF/km²</th>
<th>MBO/km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawn Supersequence (P50 recoverable)</td>
<td>5779</td>
<td>18.7</td>
<td>0.189</td>
<td>3.24</td>
<td>0.03</td>
</tr>
<tr>
<td>Barney Ck Fm (P50 recoverable)</td>
<td>2710</td>
<td>13.0</td>
<td>1.2</td>
<td>4.80</td>
<td>0.44</td>
</tr>
<tr>
<td>Haynesville (active)</td>
<td>9257</td>
<td>53.3</td>
<td>5.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bakken (active)</td>
<td>16892</td>
<td>3.59</td>
<td>0.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antrim (active)</td>
<td>31080</td>
<td>19.93</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marcellus (active)</td>
<td>27511</td>
<td>177.9</td>
<td>6.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marcellus (undeveloped)</td>
<td>218262</td>
<td>232.44</td>
<td>1.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford (Dry Gas Zone)</td>
<td>518</td>
<td>4.38</td>
<td>8.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford (Condensate Zone)</td>
<td>2305</td>
<td>16.43</td>
<td>7.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford (Oil Zone)</td>
<td>5783</td>
<td>3.35</td>
<td>0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagle Ford (total)</td>
<td>8607</td>
<td>20.81</td>
<td>3.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fayetteville (Western)</td>
<td>12950</td>
<td>4.64</td>
<td>0.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fayetteville (Eastern)</td>
<td>10360</td>
<td>27.32</td>
<td>2.64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is a combined mean Prospective Resource of 18.8TCF of gas and 1985MMbbl of associated liquids within the unconventional and conventional plays across both permits. Of this there is 11.5TCF of gas and 1279MMbbl of associated liquids in EP 171 and 7.3TCF and 706 MMbbl of associated liquids in Permit EP 176.

5 Recent NT Applications

5.2 Overview

Armour’s Northern Territory application acreage covers a 107,363km² area over the McArthur, South Nicholson and Georgina Basins. The presently identified Shale Gas reservoirs are in the Middle Cambrian shale and Anthony Lagoon Formation in the Georgina Basin, the Lawn Hill Formation and Fickling Group in the South Nicholson Basin, the Barney Creek Formation shale in the southern McArthur Basin, and the Wollogorang Formation of the Tawallah Group in the
eastern part of the McArthur Basin. The distribution, maturity and resource potential of these plays are not known at present. Additional conventional and unconventional plays might exist, as the underexplored nature presents opportunities to identify new plays. The next sections discuss the exploration history and potential based on subregions and permits herein that fall within the same potential play areas.

5.2 Exploration History

5.2.1 Applications EP (A) 193, 196, western EP (A) 190 and northern EP (A) 191

These applications surround Permits EP 171 and EP 176 where the Barney Creek Formation is the primary target for a Shale Gas play. The Southern McArthur Basin covers these permits with the Barney Creek Formation interpreted to extend over the region. Within northern EP (A) 176, Shell Company of Australia Ltd and MIM Exploration Pty Ltd drilled numerous mineral boreholes between 1979 and 1993 in their search for copper, lead, zinc and iron deposits. Many of these boreholes intersected Barney Creek Formation sediments and Lynott Formation sediments. This is a possible northern extension to the EP 176 Barney Creek Formation Shale Gas play where the sediments can be found at sufficient depths of burial to be both mature and not degraded by biodegradation. This play exists in parts of EP (A) 193.

Within application EP (A) 191, live oil shows were reported in carbonaceous mudstones between 549 - 569m and 612 - 616m depth or mineral borehole GSD 7 drilled by BHP Minerals Pty Ltd. This was initially reported as being within the McDermott Formation of the Tawallah Group. However, there is little information on this formation and it may be a new play within the Tawallah Group.

BHP Minerals Pty Ltd also explored the Wallhallow area in 1995, which is now within EP (A) 191. The annual report for this project describes the Roper Group sediments within their exploration acreage. The Roper Group overlies the McArthur Group, therefore the Barney Creek Formation may be buried below the Roper Group sediments in this area and possibly extend the Barney Creek Formation Shale Gas play to the south of EP 171 and into EP (A) 190 and 191. It also may exists within parts of EP (A) 193.

5.2.2 Applications EP (A) 173, 174, 190, 193, 194 and northern EP (A) 192

In 2005 Conarco Minerals Pty Ltd (Conarco) in association with Core Coal (NT) Pty Ltd, drilled three wells CMR001 and CMR003 within the Armour’s EP (A) 174 acreage and CMR002 within EP (A) 190. Their intent was to explore for coal reported in a 1992 water bore, located near Manangoora Station, about 60km east of Borroloola. They drilled three shallow wells up to 103 metres. CMR002 and CMR003 wells intersected black to grey carbonaceous rock between 35 and 51 metres depth within a “Tertiary/Mesozoic” succession. Samples from these carbonaceous horizons were analysed for organic, inorganic and Total Organic Carbon (TOC). Content which ranged from 0.04% to 0.64%, with most over 0.2%.

In 1991 CRA Exploration Pty Ltd drilled a shallow mineral hole, DD91HC1, which is located at the southern-eastern margin of EP (A) 190. Between 278 and 322 metres, the well intersected grey to black carbonaceous dolostone, dolosiltstone and shale of the Wollogorang Formation. This indication of carbonaceous matter within this formation suggests potential for a hydrocarbon play within the Tawallah Group, should there be sufficient TOC and thermal maturity.
Also in 1991, CRA Exploration Pty Ltd, as managers of the Running Creek Farm-In and Joint Venture drilled a number of shallow percussion holes, and two deeper cored holes (<350m depth) in search of ‘Redbank-style’ cupriferous breccia bodies. The two cored holes: DD91 RC18 and DD91 CCK1, located within the eastern EP (A) 190 block intersected upper Tawallah Group sediments of the Gold Creek Volcanics, the Wollogorang Formation and the Settlement Creek Volcanics. The DD91 RC18 hole encountered dark grey to black carbonaceous dolosiltstone, carbonaceous mudstones with bituminous nodules between 235 and 280 metres. The DD91 CCK1 well encountered similar lithologies between about 91 and 100 metres. This description of carbonaceous, bituminous facies within the Wollogorang Formation implies a possible source rock deeper within the Batten Fault Zone than previously considered and also, further out on the eastern flank where the McNamara Group appears to be absent.

5.2.3 Applications EP (A), 177 178, 179 and southern 191

These permit applications lie within the Georgina and South Nicholson Basin (Figure 1) and are largely under explored with very little well and seismic data. Four petroleum wells were drilled in the area with several water bores and mineral boreholes providing what little geological control is available. Two of the four wells have available data and these are Frewena 1 in EP (A) 178 and Brunette Downs 1 in EP (A) 179. These wells indicate a possible Cambrian play that with further evaluation may prove to be prospective similar to the Arthur Creek Formation in the Southern Georgina Basin.

Brunette Downs 1 drilled to a depth of 622 metres into northern Georgina Basin sediments. The well penetrated 320 metres of lower Middle Cambrian carbonates and 302 metres of Cambrian or upper Proterozoic sandstone, siltstone and shale. The carbonate section contained water-filled, cavernous limestone zones. From 430 metres to total depth, lower to lower-Middle Cambrian or upper Proterozoic shale was encountered, the lower section of which comprised thin dark brown to black, micaceous shale interbedded with green shale. This could potentially be an organic rich shale sequence, though this needs further exploration and study to be confirmed.

Vuggy carbonates and sandstones in Frewena 1 were confirmed to have porosity and permeability, though the report neglected to mention anything more specific. Complete loss of air return was encountered whilst drilling, before surface casing was set and a continuous flow of water of about 3800 litres per hour was produced subsequently. This indicates the presence of porous and permeable strata in this location, though it is unclear as to which formation or formations they are from, or whether they are from fractures. Algal remains have been reported in the Anthony Lagoon beds in the Anthony Lagoon Formation. These indicate deposition in an environment favourable for hydrocarbon generation.

Should the Anthony Lagoon Formation contain sufficient thickness, Total Organic Carbon (TOC) concentration, and sufficient maturity, it could prove a prospective source kitchen or Shale Gas play within Armour’s acreage. The presence of the bituminous members indicates that these sediments have reached thermal maturity in the past and that exploration should focus on areas where the depth to target and structuring is favourable for the preservation of a hydrocarbon accumulation.

5.2.4 Applications EP (A) 192, 195, 172 and eastern 179

At present no well information is available in this region. The Lawn Supersequence of the Lawn Hill Formation is being targeted as a Shale Gas play within Permit ATPA 1087P in Queensland (Figure 1 and 9). Based on surface geology maps, seismic interpretation and magnetic data, this
The play has been interpreted to extend into the Northern Territory permits EP (A) 195 and 172 with a possible extension as far west as eastern EP (A) 179 and south western EP (A) 192.

The Fickling Group of the South Nicholson Basin also extends into this area and is prospective for conventional hydrocarbon accumulations. These plays were targeted within the Queensland permit ATPA 1087P by Comalco (now part of Rio Tinto Alcan) in the early 1990s.

5.3 Permit Summary

Armour has secured exclusive rights over thirteen EPA’s located in the Northern Territory. Applications for EP (A) 172, 173, 174, 177, 178, 179, 190, 191, 192, 193, 194, 195, 196 were made during 2010 for a five year term.

These applications have been lodged to ensure that, if the exploration effort in EP 171 and EP 176 over the next 12 months proves successful in defining prospectivity in the plays discussed, then Armour has the option to secure the adjacent acreage for both conventional and Shale Gas plays in the region.

Both conventional and unconventional plays exists in the region. The NT permits under application cover 107,363.1 km² over the McArthur, Georgina and South Nicholson Basin and are largely in an underexplored area. Potential for multiple Shale Gas reservoirs has been identified. The exploration programme in these permits will be focused on identifying and evaluating unconventional and conventional plays.

MBA is not aware of the size of the work commitments Armour has made in its applications. As Armour has secured exclusive rights over these permit applications, the commitment is obviously acceptable to the government. Should the exploration program in the current permits be unsuccessful, then Armour has the option of not accepting the permits.


6.1 Regional Geology

ATPA 1087P is located in the western onshore part of the Gulf of Carpentaria extending from Burketown to the Northern Territory border (Figure 9). The area consists of the Carpentaria Basin, South Nicholson Basin and Northern Lawn Hill Platform (NLHP), an extension of the Isa Super Basin. The age of the sediments in this area ranges from the Paleoproterozoic to Mesoproterozoic McNamara Group sediments to the younger overlying Mesoproterozoic Carpentaria Basin cover.

The permit area can be split into two areas, East and West, where two plays have been identified for future exploration.

The eastern area comprises the McNamara Group sediments deposited in a synclinal extension of the Isa Super Basin. This is then overlain by the sediments of the Carpentaria Basin (Figure 10).

The western part of the permit area is made up of a southerly dipping gentle slope with the McNamara Group sediments thickening and deepening to the south towards the Elizabeth Creek Fault Zone, while thinning and shallowing to the north onto the Murphy Inlier.
6.2 Previous Exploration

Previous exploration in the area includes 2D seismic acquired between 1989 and 1991 (Figure 9). Several wells have been drilled in and around the permit with 6 wells within the boundary and 6 wells within 40km of the permit boundary. The exploration and resource development within the permit has targeted conventional oil and gas within the Wide Supersequence of the Lawn Hill Formation, within the Isa Superbasin, an ancient marine basin.

The Queensland Permit ATPA 1087P remains underexplored for both conventional oil and gas and significantly underexplored for unconventional Shale Gas plays.

6.3 Hydrocarbon System

Armour has identified potential Shale Gas plays in the Wide and Lawn Supersequences of the Lawn Hill Formation and within the River Supersequence of the Riversleigh Sandstone, both of which are members of the McNamara Group (Figure 10). High gas levels were observed while drilling these formations in the Argyle Creek 1, Desert Creek 1, Egilabria 1 and Beamesbrook 1 wells. In all four of these wells (Figure 11), the Lawn and River Supersequences contain stratigraphic sections with sufficient TOC to have valid source rock potential and have reached a level of thermal maturity to be mature for gas generation and expulsion. The high level of maturity observed in the River Super Sequence within the Desert Creek 1 and Argyle Creek 1 wells indicate a dry gas province with little liquid content expected within the Shale Gas play. Though MBA is currently calculating a Prospective Resource based on a dry gas model, there is some evidence for a wet gas play in parts of the permit when considering the variability of thermal maturity data in relation to depth.

The Lawn Supersequence of the Lawn Hill Formation is being targeted as a Shale Gas play within Permit ATPA 1087P in Queensland. The Lawn Supersequence consists of three main lithotypes described below.

Lithotype 1: Carbonaceous Siltstone lithotype

The Carbonaceous Siltstone lithotype consists of dark grey to black, carbonaceous siltstone that is micaceous in part, locally argillaceous and arenaceous, pyritic in part, calcareous in part, sub-blocky to blocky, moderately soft to moderately hard, moderately fissile, silicified in part with thin calcite veins and veinlets. This lithotype is likely to contain up to 10% limestone and/or sandstone.

Lithotype 2: Carbonaceous Silty Mudstone

The Carbonaceous Silty Mudstone lithotype consists of brownish grey to black carbonaceous to very carbonaceous mudstone that is fissile to sub-fissile, siliceous in part, micaceous in part and silty in part with minor claystone and trace pyrite. This lithotype is likely to contain up to 10% sandstone.

Lithotype 3: Mixed

This lithotype is a thickly to thinly bedded alternating sequence of lithotypes 1 and 2 on a scale too small to be effectively sub-divided. For the purposes of the prospective resource calculations this type was split 50:50 between lithotypes 1 and 2.

This play is likely to extend into the Permit applications held by Armour within the Northern Territory. These applications include EP (A) 192, 195, 172 and eastern 179.
There is also potential for conventional accumulations along the western part of the basin for example, within sandstone and conglomerate reservoirs of the Wide Supersequence, with hydrocarbon charge coming from the aforementioned source rocks. These have been targeted by the wells previously drilled in the area, however to date, no commercial discovery has been made. Conventional plays include structural and stratigraphic traps along the flank of the basin as sands pinch out onto the Murphy Inlier.

6.4 ATPA 1087P

An application for ATPA 1087P was made on the 27 September 2010 for an initial four year term.

Armour has identified a potential Shale Gas play within the Lawn Supersequences of the Lawn Hill Formation which is a member of the McNamara Group (Figure 10). Early exploration will include detailed studies of existing data. MBA has calculated under a separate report a resource assessment of the Shale Gas potential of the permit.

MBA is not aware of the size of the work commitments Armour has made in its application. As they are the preferred tenderer on this application, the commitment is obviously acceptable to the government. Should the exploration program in the current permits be unsuccessful, then Armour has the option of not accepting the permit on offer.

6.5 Prospective Resource Estimation ATPA 1087P

MBA has determined the Prospective Resource for the unconventional Shale Gas play of the Lawn Supersequence of the Lawn Hill Formation in ATPA 1087P. A Prospective Resource estimate is shown in Table 12.

The unconventional Prospective Resources were determined for the Lawn Supersequence of the Lawn Hill Formation. Reservoir parameters were derived from a variety of sources in the reports of the wells drilled in the Northern Lawn Hill Platform.

The unconventional Prospective Resource was estimated through a depth map on the top of the Lawn Supersequence interpreted from seismic and well data (Figure 9), combined with an estimate of the thermal maturity to calculate the area for the Shale Gas play.

A range of reservoir attributes used in the Prospective Resource calculations was based on existing core analysis and correlation with analogues of similar Shale Gas resources in North America. The Prospective Resource Estimate was calculated using a probabilistic method and is shown in Table 12.

<table>
<thead>
<tr>
<th>Play Area</th>
<th>Gas Mean Volume (BCF)</th>
<th>Condensate Mean Volume (MMbbl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Gas</td>
<td>22,521.9</td>
<td>242.4</td>
</tr>
</tbody>
</table>

A comparison of the Lawn Supersequence Shale Gas play with the major North American Shale Gas plays and the Barney Creek Formation Shale Gas play can be seen in Tables 10 and 11. The North American estimates were published in an Intek Inc. document prepared for the US Department of Energy in 2010. The Lawn Supersequence Shale Gas play has a potential for a
P50 Prospective Resource of 18.7 TCF compared to the Barney Creek Formation Shale Gas play of 13.0 TCF of gas.

The P50 volumes were used in conjunction with the P50 area to calculate Prospective Resource per km$^2$ of 3.24 BCF/km$^2$ for the Lawn Supersequence compared to 4.8 BCF/km$^2$ for the Barney Creek Formation Shale Gas play. These estimates are comparable to the North American plays and fall within the midrange of the analogues (Table 11). The above comparison suggests the Prospective Gas Resource Estimate for the Lawn Supersequence unconventional Shale Gas play to be realistic for the current, early phase of the exploration.

There is a combined mean Prospective Resource of 22.5 TCF of gas and 242 MMbbl of associated liquids within the Lawn Supersequence unconventional Shale Gas play.

7 Statements

7.1 Limitations
MBA has primarily relied on data supplied by Armour and the NT Government. This information consisted of seismic data, well completion reports, geological and geochemical studies, interpreted technical studies and other technical reports. These were compiled and written by various industry and government bodies. The material was reviewed for its quality and validity and was considered to be acceptable. It is believed that the information received from Armour is both reliable and complete and there is no reason to believe that any material facts have been withheld. However, no warranty can be given that this review has analysed all of the matters, which a more extensive examination might reveal. The opinions and statements in this report are made in good faith and in the belief that such opinions and statements are not misleading.

7.2 Sources of Information
The information on which this IER is based includes: Information obtained from Armour in regards to work programs and permit applications. Existing well completion, seismic survey and other geological reports. These have been written by operators in the basins, government scientists, consultants, contractors and Armour directors and management. Well logs from existing open file wells and open file seismic data. Correspondence from the Northern Territory Government regarding the awarding of the permits and the agreed work commitments.

7.3 Declaration
MBA has not had and, at the date of this report, does not have any relationship with Armour or its subsidiary companies that could be regarded as capable of affecting MBA’s ability to provide an unbiased opinion in relation to this report. A fee will be received for the preparation of this report and this is not contingent on the outcome of Armour’s admission to trading on ASX. MBA will receive no other benefit for the preparation of the report. The authors do not have any pecuniary or other interest which could be regarded as capable of affecting their ability to provide an unbiased opinion in relation to this report. Advance copies of this report were provided to the Directors of Armour and minor changes were made as a consequence. There have been no material changes made to the report. MBA confirms that there has been no material change of circumstances or available information that we are aware of since this report was compiled and we are not aware of any significant matters arising from our evaluation that are not covered by this report which might be of a material nature with respect to the proposed admission.

MBA has given and not withdrawn its written consent to the inclusion of this report in the Prospectus for the IPO in the form and context in which this report appears.
7.4 Qualifications of the Authors

Wal Muir
Wal Muir has a B.Sc. (Hons) degree from the University of New South Wales (1978) with a double major in Geology, a major in Pure Mathematics and Honours in Geophysics. He has a Master of Business Administration (1989) from the University of Queensland. Mr Muir has more than 30 years of experience in the petroleum exploration and production industry, both within Australia and overseas. Wal assisted in setting up MBA Petroleum Consultants in 2001, merging it with AWT in 2009. As a Technical Director of the AWT Group, he has undertaken projects for many clients in Australia and overseas. AWT is focussed on exploration, development, drilling and petroleum technology in the fields of Shale Gas, coal seam methane, conventional oil and gas and CO₂ storage sites. Wal is a member of the Australian Society of Exploration Geophysicists, Queensland Petroleum Exploration and is a Distinguished Member of the Petroleum Exploration Society of Australia (PESA). He has filled all the executive positions at PESA Queensland, and was Federal President of PESA from 1997 until 1999. Mr. Muir is an Adjunct Professor in Biogeosciences at the Queensland University of Technology.

Doug Barrenger
Doug Barrenger received a BSc degree (geology) from the Australian National University and a Graduate Diploma in Computing Science from the Queensland University of Technology. He has more than 35 years of experience in the petroleum industry and has undertaken all facets of geological work, from wellsite and operations geology to prospect evaluation, risk analysis, reserve assessment, basin analysis, portfolio valuation and project management for both operated permits and new-venture roles and for development and exploration projects. He has worked on all Australian petroleum basins, including coal seam gas, and has overseas experience in SE Asia and Italy as an employee and as a consultant and has written numerous Independent Expert Reports and acreage Valuations. Doug is a founding partner of MBA Petroleum Consultants, a member of the Petroleum Exploration Society of Australia and a twenty five-year, Active Member of the American Association of Petroleum Geologists (number 330431).

Beate Leitner
Beate Leitner received a B.Sc degree (physics), and M.Sc degree (geophysics) in Geophysics in Germany, and a PhD degree in Applied Geophysics from Oregon State University, USA. Beate has over 20 years experience in Applied Geophysics. In the last 13 years she has worked in oil and gas exploration, development, and production focusing on prospect evaluation and generation utilising seismic interpretation and integration of quantitative tools for DHI and AVO analysis. Beate’s experience includes onshore and offshore work in New Zealand, Vietnam, PNG and Australian basins. She has done the planning and QC of seismic acquisition, processing and inversion projects for various clients. Beate is a member of the Society of Exploration Geophysicist (SEG), the European Association of Geoscientist and Engineers (EAGE), the Petroleum Exploration Society of Australia (PESA) and the New Zealand Geoscience Society (NZGG). Beate is an Honorary Research Associate at Victoria University in Wellington, New Zealand and has lectured there as part of the Master in Petroleum Science program.

Wal Muir
Technical Director

MBA Petroleum Consultants Pty Ltd
8 References


Glossary and Definitions

Basin  A depression of large size, filled with sediment which is usually structural in origin
Bcf   Billion Cubic Feet (Gas)

Best Estimate
With respect to resource categorization, this is considered to be the best estimate of the quantity that will actually be recovered from the accumulation by the project. It is the most realistic assessment of recoverable quantities if only a single result were reported. If probabilistic methods are used, there should be at least a 50% probability (P50) that the quantities actually recovered will equal or exceed the best estimate.

boe  Barrels of oil equivalent. Natural gas is converted to barrels of oil equivalent using a ratio of 5,487 cubic feet of natural gas per one barrel of crude oil.
bopd  Barrels of oil per day

Condensate
A low-density liquid hydrocarbon phase that generally occurs in association with natural gas. Its presence as a liquid phase depends on temperature and pressure conditions in the reservoir allowing condensation of liquid from vapor (gas). It is usually the C3 to C10 component of the gas stream. Measurement is often reported as barrel/mmcf for example, 200 barrels of condensate/mmcf.

Contingent Resources
Those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations by application of development projects but which are not currently considered to be commercially recoverable due to one or more contingencies. Contingent Resources are a class of discovered recoverable resources.

1C  Denotes low estimate scenario of Contingent Resources
2C  Denotes best estimate scenario of Contingent Resources
2C  Denotes high estimate scenario of Contingent Resources

COS  Chance of Success

DST  Drill Stem Test. A procedure to determine the productive capacity, pressure, permeability or extent (or a combination of these) of a hydrocarbon reservoir.

Exploration
Prospecting for undiscovered petroleum.

Gas condensate
Hydrocarbon liquid dissolved in saturated natural gas that comes out of solution when the pressure drops below the dewpoint.

High Estimate
With respect to resource categorization, this is considered to be an optimistic estimate of the quantity that will actually be recovered from an accumulation by a project. If probabilistic methods are used, there should be at least a 10% probability (P10) that the quantities actually recovered will equal or exceed the high estimate.

Hydrocarbon
A naturally occurring organic compound comprising hydrogen and carbon. Hydrocarbons can be as simple as methane [CH\textsubscript{4}], though many are highly complex molecules, and can occur as gases, liquids or solids.

Hydrocarbon show
An indication of movable oil or gas in rock or fractures.

Improved Recovery
Improved Recovery is the extraction of additional petroleum, beyond Primary Recovery, from naturally occurring reservoirs by supplementing the natural forces in the reservoir. It includes waterflooding and gas injection for pressure maintenance, secondary processes, tertiary processes and any other means of supplementing natural reservoir
recovery processes. Improved recovery also includes thermal and chemical processes to improve the in-situ mobility of viscous forms of petroleum. (Also called Enhanced Recovery.)

**Lead**
A project associated with a potential accumulation that is currently poorly defined and requires more data acquisition and/or evaluation in order to be classified as a prospect. A project maturity sub-class that reflects the actions required to move a project toward commercial production.

**Live Oil**
A live oil show is observed oil within the rock formation that can move through the rock formation.

**Logs**
The measurement versus depth or time, or both, of one or more physical quantities in or around a well. Logs are measured downhole, and transmitted through a wireline to surface and recorded there.

**Low/Best/High Estimates**
The range of uncertainty reflects a reasonable range of estimated potentially recoverable volumes at varying degrees of uncertainty (using the cumulative scenario approach) for an individual accumulation or a project.

**Low Estimate**
With respect to resource categorization, this is considered to be a conservative estimate of the quantity that will actually be recovered from the accumulation by a project. If probabilistic methods are used, there should be at least a 90% probability (P90) that the quantities actually recovered will equal or exceed the low estimate.

<table>
<thead>
<tr>
<th>m</th>
<th>metre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ma</td>
<td>million ago (years)</td>
</tr>
<tr>
<td>mm</td>
<td>million</td>
</tr>
<tr>
<td>mKB</td>
<td>metres below the Kelly Bushing on the rig</td>
</tr>
<tr>
<td>MMbbl</td>
<td>Million Barrels Oil</td>
</tr>
<tr>
<td>MMcfd</td>
<td>million cubic feet a day</td>
</tr>
<tr>
<td>MBO</td>
<td>million barrels of oil</td>
</tr>
</tbody>
</table>

**OCM**
Oil cut mud. Drilling mud which has mixed with oil from the reservoir.

**Oil fluorescence**
An indication of the presence of oil in a rock sample due to fluorescence observed under ultraviolet light.

**Play**
A project associated with a prospective trend of potential leads, but which requires more data acquisition and/or evaluation in order to define specific leads. A project maturity sub-class that reflects the actions required to move a project toward commercial production.

**Pool**
An individual and separate accumulation of petroleum in a reservoir.

**Prospect**
A project associated with a potential accumulation that is sufficiently well defined to represent a viable drilling target. A project maturity sub-class that reflects the actions required to move a project toward commercial production.

**Prospective Resources**
Those quantities of petroleum which are estimated, as of a given date, to be potentially recoverable from undiscovered accumulations.

**P1 or 1P**
Proven category of a hydrocarbon volume

**P2**
Probable category of a hydrocarbon volume

**2P**
Proven plus Probable

**P3**
Possible category of a hydrocarbon volume
3P  Proven plus Probable plus Possible
P90  90% of the potential hydrocarbon volume is greater than this volume on a probabilistic distribution.
P50  50% of the potential hydrocarbon volume is greater than this volume on a probabilistic distribution.
P10  10% of the potential hydrocarbon volume is greater than this volume on a probabilistic distribution.

Reservoir
A subsurface rock formation containing an individual and separate natural accumulation of moveable petroleum that is confined by impermeable rocks/ formations and is characterized by a single-pressure system.

Resources
The term “resources” as used herein is intended to encompass all quantities of petroleum (recoverable and unrecoverable) naturally occurring on or within the Earth’s crust, discovered and undiscovered, plus those quantities already produced.

Risk
The probability of loss or failure. As “risk” is generally associated with the negative outcome, the term “chance” is preferred for general usage to describe the probability of a discrete event occurring.

TD
The total depth of the well. When a well has reached TD, no further drilling takes place.

TOC
Total Organic Carbon, being the amount of carbon bound in an organic compound. It is a measure of the richness of a source rock.
Figure 1 Exploration Permits and Applications
Figure 2 Structure and Location McArthur Basin
Figure 3 Stratigraphic Table McArthur Basin
Figure 4 McArthur Basin Prospect, Well and Seismic Location Map
Figure 5 Cross Section of McArthur Basin
Figure 6 Barney Creek Formation Unconventional Play Map
Figure 7 EP 171 Location and Infrastructure Map
Figure 8 EP 176 Location and Infrastructure Map
Figure 9 ATPA 1087P Location and Infrastructure Map
Figure 10 Stratigraphic Table of the McNamara Group, Northern Lawn Hill Platform (after Krassay et al. 2000)
Figure 11 Geologic cross section of the Lawn Supersequence