ECONOMIC ASSESSMENT:

UNITED STATES MARINE CORPS ROTATIONAL PRESENCE PHASE 1 (ROTATIONS OF 200-250 US MARINES INTO THE NORTHERN TERRITORY)

Report for the Department of Defence Force Posture Review Implementation Team

Noetic Solutions Pty Limited
ABN 87 098 132 024
August 2012
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EXECUTIVE SUMMARY

1. Noetic Solutions Pty Limited (Noetic) was contracted by the Australian Department of Defence (Defence) Force Posture Review Implementation Team to undertake an independent, impartial assessment of the potential social and economic effects of an initial rotational presence of up to 250 United States Marine Corps (USMC) personnel in the Northern Territory (NT) over the period 2012 and 2013. This report presents the findings of the economic assessment.

2. Our main finding is that there will be a small and positive increase in economic activity in the NT caused by the temporary addition of the initial USMC rotational presence.

3. Against the terms of references (see Annex A) our assessment of a rotational presence of up to 250 Marines within the Northern Territory economy is that:
   a. There will be additional direct expenditure in the NT economy of around $1.8 million in 2012, increasing to $2.3 million in 2013, or $3.96 million in present value terms, due to the initial rotational presence. The value added to the NT economy from the additional expenditure will be approximately $3.3 million, while the total value added effect of the expenditure in Australia is estimated at $7.4 million. The bulk of the effect in the NT should be retained in the Top End region surrounding Robertson Barracks.
   b. The industries most likely to be affected by the initial rotational presence are those which support basic living, the recreational economy and Defence activity. These industries include transportation, retail trade, food and beverage services and sport and recreation providers. The assessment demonstrates that there are nine directly impacted statistical sectors, and these have indirect linkages across all 111 available Input-Output industries.
   c. During the initial rotational presence there are likely to be very minor Government revenue and expenditure impacts. Based on our expectations and feedback there will be minimal additional consumption taxation and fee collection, no call for new programmatic expenditures and some reallocations of existing government resources to deal with marginal issues linked with the rotational presence (such as advice to government, police services and consumption of recreational facilities).
   d. Defence will be administratively and financially affected during the initial rotational presence. Administratively they will be accountable for organising the Australian contribution to the initial rotational presence and negotiations about potential future rotations. Financially, there has been some internal reallocation of personnel to implement the rotational presence in the Department, and among personnel at Robertson Barracks. Several details are being negotiated on the attribution of costs associated from the initial rotational presence impact on Robertson Barracks.
   e. We have not received feedback or found evidence to suggest the initial rotational presence will have a material impact on the operations of other Australian Government departments. There may be similar minor internal reallocation of personnel to consider issues on the rotational presence.
   f. We have not directly estimated the number of jobs likely to be created as our primary analysis has been of output and value added, not expected employment creation. Based on the small impact Noetic do not believe that the additional activity is likely to create additional employment. There are rules of thumb that suggest certain levels of production support a level of employment in an economy. For Australia, the rule of thumb based on Input-Output tables is that $1m in annual production supports around 4 full time equivalent (FTE) jobs. Using this rule of thumb, and drawing...
on the output effects estimated in this assessment, it could be claimed that the rotational presence might support up to 8 FTE from the direct expenditure and 32 FTE indirectly, per annum.

4. The longer term will see a different rotational presence with a larger scale, expanded scope and different fundamental structure with a 2500 person Marine Air Ground Task Force (MAGTF). If this materialises there will be a different set of impacts due to the different form of the MAGTF compared to a rifle company. This is beyond our brief to assess and is subject to ongoing negotiations between Australia and the US. However our assessment of the type of personnel and equipment that might accompany a MAGTF leads us to observe that such a presence is likely to have a larger economic effect than the initial rotational presence, will impact across more sectors and will compete in a constrained marketplace.

5. The initial rotational presence will not have any great impact on skills within the Northern Territory; however a larger scale rotational presence could have an impact on skills, depending on purchasing and contracting arrangements and competing interests.

6. The short and long term effects need to be considered in light of the activity already occurring in the NT. As the rotational presence moves from a small rotational force that we believe can be absorbed in existing capacity, to a potentially larger more complex scale, growth in activity across the North in other sectors is likely to present price and skills challenges.

7. This summary is drawn from a number of findings elaborated upon in the report, including:
   a. While we note that there is no agreed transition planning for a MAGTF scale rotation, the economic context for the intended future state suggests that an early definition of the scope and timing of what is proposed will assist with economy wide planning for any potential changes.
   b. The Marines will spend around $1.1 million in 2012 and $1.4 million in 2013 of their income during the rotational presence including around $0.8-1 million from allowances and $0.3-0.4 million of private incomes.
   c. Based on our assumptions and methodology it is likely the Marines would spend around $55 per week on basic consumables while living at Robertson Barracks. We assume these would be purchased within the regions of Litchfield, Palmerston and perhaps Darwin.
   d. The direct impact on barracks that will leak into the local economy with the information we have to date will be approximately $0.71 million in 2012 and $0.91 million in 2013. Subject to ongoing negotiations, the financial costs are likely to be paid for by the USMC.
   e. The assessed direct economic activity in the NT attributable to the initial presence over 2012 and 2013 is around $3.96 million. This should generate additional economic output of $16.1 million, of which $7.4 million is value adding activity. Of the value added activity approximately $3.3 million will occur in the NT, of which $3.2 million will be in the Top End.

8. Our report also makes a range of observations that may be helpful for the Implementation Team, and which have assisted in shaping our report, including:
   a. There is no agreed plan of action for the period beyond 2013 up to 2016-17. This makes consideration of potential future support requirements and identification of impacts difficult.
   b. To provide a meaningful valuation of the likely impact of a MAGTF scale rotation, or to improve the values in this assessment, a more defined scope of the likely structure and components of the force should be developed and used.
c. To obtain a better understanding of this activity (day to day spend) for a larger scale evaluation, a survey of Marines in either the first or second rotation could be conducted to improve the assumed level of change

d. The impact on barracks would be improved with more appropriate costs and expenditures

e. Some form of communiqué between the USMC and ADF should be formed to articulate the types of training that will be engaged in over the course of the initial and longer term rotations to assist with defining the productivity and non-monetary benefits to be expected from the rotational presence

f. To be meaningful any assessment of the potential economic effect of a MAGTF requires further details about the scale, scope and expected locations of what is proposed

g. In any assessment of the longer term impacts, the future state of the NT economy needs careful consideration to ensure an appropriate baseline is established. That is, it may be necessary to build a baseline first using current statistics and future known investment prior to analysing a counterfactual built around the impact of an enlarged USMC rotational presence

h. It would be prudent to ensure key stakeholders remain appraised of developments in planning so there are no surprises at future implementation stages

9. This assessment relies upon a range of technical and behavioural assumptions, and draws some conclusions based upon our expertise. Interested readers can review the primary technical and general assumptions in Annex B and C. Where judgements are made, these are highlighted throughout the report.
INTRODUCTION

Background

1. In November 2011 the Prime Minister of Australia and the President of the United States of America (US or USA) announced “two new force posture initiatives that will significantly enhance defence cooperation between Australia and the United States.”\(^1\)

2. The initial force posture initiative is “…the deployment of US Marines to Darwin and Northern Australia, for around six months at a time, where they will conduct exercises and training on a rotational basis with the Australian Defence Force.”\(^2\) The deployments will be up to 250 USMC personnel and occur in 2012 and 2013. The intent in the coming years is to establish a rotational presence of up to 2500 persons in a Marine Air Ground Task Force (MAGTF).

3. The leaders also agreed to “…closer cooperation between the Royal Australian Air Force (RAAF) and the US Air Force (USAF) that will result in increased rotations of US aircraft through northern Australia.”\(^3\)

4. The first rotational presence of around 200 US Marine Corps (USMC) personnel arrived in Darwin on 3 April 2012.\(^4\)

5. The Australian Department of Defence (Defence) has constituted an Implementation Team to progress action on the rotational presence.

6. Noetic Solutions Pty Ltd (Noetic) has been commissioned by the Defence Implementation Team to undertake an independent, impartial assessment of the potential social and economic impacts of the presence of USMC personnel in the NT (the initial rotational presence).

Aim

7. The aim of this report is to provide an economic assessment of the USMC initial rotational presence on the NT economy.

Scope

8. The scope of this assessment is limited to:
   a. Terms of Reference set by the Implementation Team, which are available at Annex A
   b. the agreed level of commitment between the Australian and United States Governments
   c. the time frames and data sources available to the review

9. The enhanced cooperation between the RAAF and USAF is outside the scope of this economic assessment.

10. The assessment report draws upon the results of desktop analysis, a preliminary issues paper provided to stakeholders and feedback from stakeholders. A copy of the issues paper is provided at Annex E. The

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\(^1\) Prime Minister of Australia (Prime Minister), President of the USA (President) 2011 “Australia-United Stated Force Posture Initiatives”, Joint Press Release issued 16 November 2011.
\(^2\) Ibid
\(^3\) Ibid
\(^4\) Prime Minister, Minister for Defence, Chief Minister of the Northern Territory 2012, “United States Marine Corps personnel begin first rotational deployment to Northern Australia”, Joint Press Release issued 3 April 2012.
assessment provides technical details of the measurements used to make our assessment and we highlight particular findings and observations.

11. Noetic understands that the agreed level of commitment between the Australian and US Governments is for the first two years of the rotational presence (2012 and 2013) only. Our study has focussed on this initial presence. Our assessment has not assessed the value of what is not currently committed. Our research has been guided by the potential for expansion of the rotational presence to a rotational force equivalent to a MAGTF of up to 2500 personnel, in line with public announcements on intended future arrangements. However our discussions have considered and identified, but not assessed, potential longer term economic effects.

12. Our time frame for the review is defined by our agreement with the Implementation Team. The data we have access to for the technical calculations is entirely secondary.

Structural Overview

13. The report is divided into five sections.
   a. The first section outlines the rotational presence in general
   b. The second provides the wider NT economic context for our assessment
   c. The third outlines the impacts of the presence we have estimated for the NT economy
   d. The fourth section presents our assessment
   e. The fifth section discusses our findings

14. Annexes to the report provide the technical background, assumptions and some additional material for the assessment.

THE ROTATIONAL PRESENCE

15. To assist in understanding the rotational presence we characterise two dimensions based on the public announcements. The first is the agreed two year company sized rotations in 2012 and 2013. The second is a potential MAGTF sized rotational presence which may be fully implemented around 2016-17. We note that there may be different scales or elements to the rotational presence in the interceding years, and that no details on those years are currently available and are subject to agreement between the Australian and US government.

The initial two years

16. For each of the years 2012 and 2013 one company of Marines will be rotated through the Robertson Barracks in the Litchfield Shire of the NT. A company in the USMC consists of up to 250 personnel. When not on training or other mission related activity the Marines will live only at Robertson Barracks, in existing accommodation facilities. The Marines will not be accompanied by their family.

17. The type of company to be deployed in the rotation initially will be a Rifle Company. A Rifle Company consists largely of infantry personnel.

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5 The Prime Minister and President announced “the intent in coming years is to establish a rotational presence of up to a 2500 person Marine Air Ground Task Force”.
18. The rotations will be for a period of six months, typically aligned to the NT dry season.

19. The first company-sized rotation of approximately 200 USMC personnel arrived in Darwin on 3 April 2012. This initial rotation is currently expected to depart Australia to return to Hawaii in late September 2012. It is expected that the next company sized rotation, of approximately 250 personnel, will arrive in Australia around March-April 2013. This 2013 rotation would be similar in nature to the 2012 rotation.

20. There will be no supporting heavy equipment, vehicles or aircraft deployed with the initial rotational presence.

21. Over the six month period, the Marines are expected to undertake bilateral training in Australia with the Australian Defence Force, participate in exercises, undertake unilateral training in Australia and engage with countries in the region. The type of training activity is likely to be platoon level manoeuvre and live fire training.

22. Noetic understand that the Marines will spend the bulk of their time on active duty in NT training areas and ranges, in particular the Mount Bundy and Kangaroo Flats Training areas.

23. We understand that while on rotation the US Marines will:
   a. Be on active duty for a substantial proportion of time in each working day
   b. Be on 'Liberty', effectively free-time, during the non-active duty time. Note that while on rotation Marines will have a controlled program of Liberty
   c. Bring all necessary military equipment and consumables, mostly firearms and ammunition. This does not extend to personal consumable items

24. Similarly, we understand that while on rotation most US Marines will not:
   a. Be off-barracks without a 'Liberty Buddy'
   b. Be permitted to stay off-Barracks
   c. Initially require specific mechanised equipment


26. The SOFA grants Australia exclusive jurisdiction for alleged offences against Australian law but not US law; and exclusive jurisdiction to US military authorities for alleged offences against US law but not Australian law. Where the alleged office is a crime against both Australian and US law then there is concurrent jurisdiction. The SOFA will apply to the USMC personnel in northern Australia.

**Longer term intent**

27. The press release announcing the rotational presence outlines an intent “...in coming years is to establish a rotational presence of up to a 2500 person Marine Air Ground Task Force.” The way in which this may or may not progress is subject to ongoing negotiation and is beyond the scope of this assessment.

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6 Prime Minister and President, 16 November 2011.
28. One of the key pieces of feedback received during stakeholder consultations was that the timing, scale
and scope of the potential MAGTF deployment would be critical information to form an appropriate view of
the longer term impact of the rotational presence. To that end, this report provides some additional detail
and observations that should assist in framing the dialogue and future analysis.

29. In summary, if the intent of the two Governments’ is met, it is useful to understand that a MAGTF is a
basic building block of the USMC and has a specific structure, which includes a Command Element, a
Ground Combat Element, an Aviation Combat Element and a Logistics Combat Element.

30. Noetic understand that in addition to personnel a MAGTF would include support equipment. This would
include for example “wheeled vehicles, artillery pieces, light armoured vehicles and aircraft”.

31. Further details around what a MAGTF may look like are included under the Long Term Effects of
Additional Marines component of the Impact discussion of this assessment.

32. In the event a rotational MAGTF is agreed, the implementation is likely to be phased in over a longer time
frame. Noetic understand that MAGTF rotations would not occur before 2016-17.

33. No further details are relevant to our assessment in relation to the potential MAGTF rotational presence
until the precise nature of cooperation is announced by Government.

Observation: There is no agreed plan of action for the period beyond 2013 up to 2016-17. This makes
consideration of potential future support requirements and identification of impacts difficult.

THE NORTHERN ECONOMY

34. Understanding the NT economy is necessary to understand the potential economic effect of the rotational
presence. Generally, the NT has a small economy, relative to the Australian economy, which is diversified
across agriculture, mining, mineral exploration, tourism, Defence and as a port for trade into Asia.

35. As noted the initial presence will be located primarily at the Robertson Barracks. This defines the
statistical geography for our assessment. The regions in scope are Darwin (City and Suburbs), Litchfield
and Palmerston statistical areas. Australia and NT wide effects are also likely; however these specific
regions will be most directly impacted.

36. An observation made during consultations was that the NT economy is cyclical with a hyperactive dry
season and a relatively slow wet season. The rotational presence will occur in the dry season.

People

37. In order to provide a demographic context for the potentially affected regions we have combined recent
population and labour force data with 2006 and 2011 Census regional data. These are separated into a
population category and ‘employment, income and training’ category. The data for the population
component is based on 2011 Census, and compared to the 2006 Census. In the employment, income
and training category only the income and median age data are provided in the 2011 Census first release.
This means employment data are based on 2006 Census.

38. For comparisons we have built the same datasets for the NT and Australia. Table 1 provides the
demographic picture.

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7 Smith, The Hon. S, 2012 “United States Marine Corps personnel begin first rotational deployment to Northern Australia”,
Joint Press Release from Prime Minister, Minister for Defence and Chief Minister of the Northern Territory, 3 April 2012.
39. The population data suggests that the region has grown much faster than the NT between the Censuses, and faster than Australia as a whole. All parts of the region have grown faster than the national average. The region exceeds 50 per cent of the entire NT population, and is less than one per cent of the national population. Darwin and Litchfield have close median ages compared to the national median, whereas Palmerston is much younger. The median age for Palmerston is closest to the median age of the USMC.

40. Aboriginal and Torres Strait Islanders make up significantly more of the regional population than is the case for Australia, but account for substantially less than when compared to the NT population.

41. Individual, household and family incomes in the region all comfortably exceed the levels reported for the NT and Australia.

42. There is a perception that the distribution of incomes in the relevant areas is a better measure than perhaps a mean or a median as reported above. While there is likely to be local knowledge around this issue, Figure 1 demonstrates the proportion of families by weekly family income in the areas measured in the 2011 Census. The local data are compared to the NT and Australian proportions.

43. We note that the regions do have a higher proportion of higher income earners, but equally the Figure demonstrates that the regions have a lower proportion of lower income earners on average.

44. The level of education varies by region. At the regional level there are relatively more persons trained to all undergraduate levels compared to the NT. All post graduate study and all but certificate level training proportions at the national level are lower in the region compared to the NT and national proportions.

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8 We note that updated employment and training data will not be available until the second release census in October 2012, which can be incorporated into future economic assessments.
45. The region has much higher proportions of full time employment than the nation and Territory, with a relatively lower labour force. Labour force disengagement measured by being 'not in the labour force' has been lower across the region than either in Australia or the NT.

46. We note that as at March 2011 the labour force within the three regions of interest was 77,125 persons, of whom 1,502 are unemployed. In the same period this unemployment rate of 1.95 per cent compares to a rate of 3.4 per cent across the Northern Territory.\(^9\)

47. One issue raised during consultations was the type of unemployment experienced in the NT, and how that might act as a capacity constraint for additional activity.

48. For the 40 Statistical Local Areas that make up the three statistical regions, as at March 2011, the maximum unemployment rate was 20 per cent and the minimum was 0.8 per cent. The median and the mode is 1.8 per cent, while the mean is 2.3 per cent.\(^10\) By contrast the Aboriginal and Torres Strait Islander NT community experienced an unemployment rate of 7.4 per cent with a participation rate of 43.6 per cent.\(^11\) What these data demonstrate is that there is the potential for additional labour supply across the region, albeit not enormous capacity.

49. We note the short term impact on labour supply of the initial rotational presence will be fairly minimal, and should realistically utilise any underlying capacity within the sectors of impact. In the longer term, if a MAGTF scale rotation relies upon the broader economy for the supply of goods and services, a real concern for industry, the community and the NT and other affected Governments should be where any additional labour, particularly skilled labour, is likely to be sourced.

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\(^9\) ABS 2011e.
\(^10\) Ibid.
\(^11\) ABS 2011d.
Industry

50. We have reviewed two forms of income to identify the important sectors in the region. The first is the relative industry factor income for the NT\textsuperscript{12}, and the relative importance of industries within the region based upon employment data.

51. Total factor income in the NT represents around 1.3 per cent of the total national factor income. As at June 2011 it measured around $16 billion. In Figure 2 the proportion of each sectors contribution to total factor income is compared for Australia and the NT.

Figure 2: Total factor income in the NT and Australia economy (June 2011, Current Prices)

52. Unsurprisingly the dominant sectors are mining and construction. All sectors where the relative share in the NT exceeds the relative share of Australia include:

a. Agriculture, forestry & fishing
b. Mining
c. Construction
d. Rental, hiring & real estate services
e. Public administration & safety
f. Arts & recreation services

\textsuperscript{12} Factor income is the sum of payments to employees and the returns to businesses. It is a short hand representation of income in the economy.
53. Tourism is a special case as it traverses a range of industries, and as a sector is a critical contributor to the NT economy. When measured as a sector the NT Treasury estimate that in 2010-11 approximately 10,972 people are employed in tourism, or 9 per cent of Territory resident employment, and that the sector contributed 4.8 per cent of the Territory’s gross state product (GSP). \(^{13}\)

54. To estimate the important industries from an employment perspective we have constructed location quotients for each region and compared those to the quotients for Australia at large, and the NT. The interpretation of a location quotient is that if the value is greater than one, that industry is more important to the region than the comparison area. Figure 3 illustrates the location quotients for the region against the NT and Australia.

**Figure 3: Relative employment intensity within the region (2006)**

Source: Noetic calculations from Basic Community Profiles in ABS Census 2006

55. Compared to the NT, the region has strong representation in:

a. Wholesale trade
b. Transport, postal & warehousing
c. Information media & telecommunications
d. Financial & insurance services
e. Rental, hiring & real estate services

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\(^{13}\) NT Government 2012b, pp 153-156.
f. Professional, scientific & technical services  

g. Administrative & support services  

h. Arts & recreation services

56. Compared to Australia, the Region has a stronger representation in:

a. Mining  
b. Public administration & safety, most likely due to Defence  
c. Education & training  
d. Arts & recreation services

57. These details assist in determining the likely areas of impact from the presence and whether the economy offers the kinds of goods and services that our assumptions expect will be purchased.

58. What we take from these data is that at a local scale industries exist and are strong for the areas of likely impact in the short term. In the longer term the strength of particular industries in the region, compared to the Australian economy, may generate competition for resources that may be required for the expansion of the Marine rotational presence.

**Defence as an industry**

59. Defence is a substantial contributor to the NT economy. The NT hosts RAAF Base Darwin, Larrakeyah Defence Precinct, Defence Establish Berrimah, Robertson Barracks and RAAF Base Tindal. In addition there are large Defence training facilities in the Bradshaw Field Training Area, Mount Bundy Training Area, Delamere Range Facility and the Kangaroo Flats Training Area. The NT also hosts the Joint Defence Facility Pine Gap.

60. The economic contribution of just the base footprint was estimated at $805 million of economic value added in the NT economy, and the bases support up to 11,100 NT jobs.\(^{14}\)

61. The NT is host to approximately 10 per cent of all Australian Defence Force (ADF) personnel, and 6 per cent of the total Australian Government Defence spend.\(^{15}\)

62. Defence activities that are material to the assessment include the range of large scale exercises undertaken within the Territory. The NT Treasury identify in 2011-12 that there have been six major exercises\(^{16}\), and Defence report two others which occurred in 2010\(^{17}\). Table 2 summarises the exercises.

63. There is a clear and strong baseline of Defence activity in the NT. This means structural adjustment to accommodate additional Defence type personnel and activities should not be an issue. We have assumed as part of our assessment that the training exercises will remain relatively constant. That is, the presence will not add additional major exercises.

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\(^{14}\) KPMG econTECH 2010, p 8.  
^{15} NT Government 2012b, p 181.  
Table 2: Defence exercises occurring in and around the NT

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<tr>
<td>TALISMAN SABRE</td>
<td>An Australian/US biennial exercise to improve combat readiness</td>
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<tr>
<td>CASSOWARY</td>
<td>An Australian/Indonesian interoperability exercise focussed on naval warfare</td>
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<tr>
<td>ARNHEM THUNDER</td>
<td>An RAAF annual exercise to practice offensive counter-air operations</td>
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<tr>
<td>MATILDA</td>
<td>A combined tactical skills and inter-operability exercise with the Army and Singapore Armed Forces</td>
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<tr>
<td>GOLD EAGLE</td>
<td>A bilateral tactical skills and inter-operability exercise conducted between the Australian Army 1st Brigade and United States Marine Corps</td>
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<tr>
<td>PREDATORS WALK</td>
<td>Dry and live firing manoeuvres for the 1st Brigade</td>
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<tr>
<td>PITCH BLACK</td>
<td>A biennial RAAF exercise at Tindal and RAAF Base Darwin which simulates offensive counter air and defensive counter air combat with several international air forces invited to attend, including the United States</td>
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<tr>
<td>KAKADU</td>
<td>RAN maritime warfare simulation off Darwin involving ships and aircraft from Thailand, Singapore, New Zealand and Japan aimed at interoperability in multilateral operations</td>
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Longer term capacity issues across the northern frontier

64. The NT sits in a rapidly growing part of Australia, in conjunction with parts of Queensland and Western Australia. There are significant potential and actual major investments occurring in this northern frontier of Australia which may demonstrably affect the nature or structure of the economies they occur within.

65. This is important to understand as the investments will be unfolding over the same time period that the Marines will be engaged in the NT economy. These investments will individually place pressure on the capacity of the NT and other northern economies in terms of labour availability and pricing and access to resources more broadly and collectively affect the market in which the Marines will be entering.

66. A relatively minor matter is the Department of Immigration and Citizenship (DIAC) has been expanding facilities within the NT to house persons who arrive in Australia against current migration laws. These facilities are providing jobs in the NT, and we understand they are placing pressure on parts of the economy such as short term accommodation and the labour market. This is based on anecdotal evidence.

67. The most frequently highlighted issue during consultations was the upcoming increase in capital expenditure that is going to take place within the NT, and more broadly across the Northern regions of NT, Western Australia and Queensland. The most frequently cited example was the agreed $34 billion for the construction of the Ichthys Project, a major natural gas processing facility being delivered by Inpex, will place pressure on the NT economy from 2012 until around 2017-18 (the construction phase).

68. In addition to the Inpex project, the Queensland Government estimates that there is $66 billion in new investment likely to occur over the next 10 years in LNG facilities in that State. These projects will compete for similar labour force and capital investors.

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69. Beyond this immediate program there are major drivers of activity that are expected in the near and medium term. In the NT for example the NT Treasury have estimated that in 2012-13 there will be a 10.6 per cent jump in production across minerals, energy and manufacturing; following a 4.7 per cent increase in just mineral and energy production in 2010-11.

70. There are hundreds of millions of dollars worth of potential projects in the mining sector, and potentially in excess of an additional $1 billion in new energy projects. As a major contributor to the NT economy, with mining accounting for 17.4 per cent of Gross Territory Product, growth in the sector will be a major reason for long term prosperity in the NT, but will also add complexity to the market.

71. In the aggregate the Bureau of Resources and Energy Economics (BREE) have estimates that as at April 2012 there are 98 projects underway with capital expenditures of $261 billion across Australia, backed also by exploration expenditures of $6.4 billion. To understand the context the value of new capital expenditures in the mining industry grew from 2009-10 to 2010-11 by 29 per cent to reach $52 billion. Of the total $261 billion, the NT accounts for close to $35 billion (the Inpex project), Queensland accounts for $75 billion and Western Australia accounts for $135 billion.

72. Map 1, produced by BREE, provides a picture of the wider capital investment occurring across Australia and we would note the northern frontier in particular. This map refers to the Inpex project, and places it in some context.

73. What this context means is that the USMC initial rotational presence may individually contribute little in the short term to overall economic activity in a relative sense, however, no matter what scale of presence is agreed the Marines will face issues that are driven by a supercharged market environment, particularly where Defence, the Marines and the mining and other companies go head to head in the market place. For example, in the shorter term it may mean that indirect requirements (accommodation for visitors, food prices, availability of short term transport for example) may not be met due to constrained or highly utilised markets.

74. Addressing these issues is beyond the scope of this report and Defence’s remit, and Noetic observe that there is a major piece of work which is looking at Australia’s place in the ‘Asian Century’ being delivered by Dr Ken Henry. This piece of work will form a crucial input to understanding the longer term capacity constraints for the northern frontier and how they will affect the long term planning of the NT Government and other projects such as the Marines rotations.

Finding: While we note that there is no agreed transition planning for a MAGTF scale rotation, the economic context for the intended future state suggests that an early definition of the scope and timing of what is proposed will assist with economy wide planning for any potential changes.

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19 NT Government 2012b, pp 114, 116, 126, 128 and 129.
Map 1: Location of significant capital investment

Source: BREE 2012
THE IMPACT OF THE INITIAL ROTATIONAL PRESENCE

75. The premise of the assessment is to establish what will occur in the NT economy that is additional to activity that would otherwise occur that can be specifically attributed to the rotational presence of the USMC in the years 2012 and 2013, as defined under ‘understanding the rotational presence’.

76. To make the assessment Noetic have reviewed direct and indirect activity which may occur in the NT and Australia more broadly. In addition, due to the strength of feedback we received about the future, we have included consideration of potential longer term impacts from the intended pathway for the rotational presence.

77. We note that during the consultation phase we learned that there was unlikely to be any significant change in the day-to-day operations of the Australian Defence Force to respond to the presence. This means we are assuming there is no additional economic impact from the ADF from the rotational presence. Notwithstanding this, there may be some limited internal resource allocation or minor financial adjustments within Defence that may offer marginal uplift in the NT at the expense of another location in Australia which is discussed later under the assessment component.

78. In effect the characteristics of the rotational presence are a short term temporary addition of a small number of persons to an existing Barracks who will perform a particular task operating under a system of rules and procedures.

Direct Effects

79. The way in which we have characterised the direct effect is to understand the shape of the presence, assess the potential purchasing power of the rotational force, consider the likely expenditures out of the purchasing power and review the potential injection of resources from the USMC.

80. Our initial research suggests that the rotational nature of the presence, with no permanent population effects, makes the likely effect similar to those which might occur with an increase in tourism or fly-in fly-out labour. What this means is that the direct effects will depend entirely upon what the Marines do and do not do while on rotation as well as the additional demand they place upon the Robertson Barracks establishment.

The shape of the presence

81. The 200-250 personnel will be organised in a Marine Corps Rifle Company.

82. A Rifle Company has a typical structure that is informed by a Table of Organisation and Equipment. This gives a relatively well defined picture of what the likely composition of the rotational force will be in a purely technical sense. Figure 4 presents elements of a typical USMC Rifle Company including the platoon and support dimensions, and gives a sense of the military equipment they may bring with them.

83. While the Figure is illustrative of a technically correct company, there are other elements which may be added depending on the particular mission. For example, with the first rotation there is a forward command element and some additional supervisor functionality adding in excess of 20 personnel.

84. Rather than use precise numbers and structures, we utilise the implied proportions from the technical structure and assume a force size of 200 in 2012 and 250 in 2013 to make our calculations. The effect of this assumption is presented in Annex C. We note that in future assessments, considering much larger scale deployment, precise structures would be useful to derive more accurate direct effect calculations.
85. The summary demographic detail of Marines assists in understanding what the company might look like. As at December 2011, 62 per cent of Marines were under 25 years of age, 21 per cent were under the age of 21, 48.9 per cent are married and 93.15 per cent are male. The key observation is that the demographic profile of all Marines suggests that the company sized rotation will include mostly younger men, a proportion of whom have marital commitments, and the structure suggests most would be at or around the E4 (Corporal) or E5 (Sergeant) rank or below.

Observation: To provide a meaningful valuation of the likely impact of a MAGTF scale rotation, or to improve the values in this assessment, a more defined scope of the likely structure and components of the force should be developed and used.

Capacity to contribute to the economy

86. The capacity to generate economic activity from this rotational force depends upon the resources that Marines have at their disposal.

87. As a temporary rotational force we have assumed the Marines will not be bringing any personal assets, and they will not be purchasing major personal assets while on deployment. By asset we mean furniture, cars, larger audiovisual equipment or general items you would typically find in a household.

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21 For the ranks listed ‘O’ refers to an officer level Marine, whereas ‘E’ is an enlisted Marine. For both O and E, 1 is the lowest level (Second Lieutenant or Private, respectively). The O levels go to O-10 (General). The E levels go to E-9 (Sergeant Major of the Marine Corps). For a taxonomy of ranks see: [http://www.nrotcatlantamarines.org/rank-structure.html](http://www.nrotcatlantamarines.org/rank-structure.html) for example.

22 Marine Corps Community Services (MCCS) 2011, various pages.
88. We are assuming that some activity will be derived from the expenditure of income earned by Marines while at Robertson.

89. We have reviewed the pay structure that is typically available to US Marines, and clarified the likely payments with the USMC for the first rotation. While on deployment we understand that a Marine is likely to receive basic pay on a monthly basis, a Basic Allowance for Subsistence (BAFS) on a monthly basis and a per diem payment to compensate for living outside of the Continental US (POCUS).

90. For the purposes of this assessment we have excluded any potential income from hardship pay, imminent danger pay, dislocation allowance, sea pay, cost of living adjustments, travel related payments and Basic Allowance for Housing. These are excluded because they have no Darwin location code or relevance to the nature of the deployment.

91. This is a layer of data which will change with each rotation, as income and benefits are linked to some combination of rank, years of experience and location of deployment. We have provided a description of the assumptions used to select a combination for this assessment in Annex C.

92. The illustrative US$ values for six months of pay and benefits for the ranks that we have calculated for the first rotation are reported in Table 3.

**Table 3: Sample Pay and benefits to derive feasible income**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Type</th>
<th>Basic Pay</th>
<th>BAFS</th>
<th>POCUS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>E8</td>
<td>Master or First Sergeant</td>
<td>25,775</td>
<td>2,091</td>
<td>2,105</td>
<td>29,970</td>
</tr>
<tr>
<td>E7</td>
<td>Gunnery Sergeant</td>
<td>21,290</td>
<td>2,091</td>
<td>2,105</td>
<td>25,485</td>
</tr>
<tr>
<td>E6</td>
<td>Staff Sergeant</td>
<td>18,614</td>
<td>2,091</td>
<td>2,105</td>
<td>22,809</td>
</tr>
<tr>
<td>E5</td>
<td>Sergeant</td>
<td>16,409</td>
<td>2,091</td>
<td>2,105</td>
<td>20,605</td>
</tr>
<tr>
<td>E4</td>
<td>Corporal</td>
<td>13,661</td>
<td>2,091</td>
<td>2,105</td>
<td>17,856</td>
</tr>
<tr>
<td>E3</td>
<td>Lance Corporal</td>
<td>11,719</td>
<td>2,091</td>
<td>2,105</td>
<td>15,914</td>
</tr>
<tr>
<td>E2</td>
<td>Private 1st Class</td>
<td>10,028</td>
<td>2,091</td>
<td>2,105</td>
<td>14,223</td>
</tr>
<tr>
<td>E1</td>
<td>Private</td>
<td>8,946</td>
<td>2,091</td>
<td>2,105</td>
<td>13,141</td>
</tr>
<tr>
<td>O3</td>
<td>Captain</td>
<td>32,370</td>
<td>1,440</td>
<td>2,105</td>
<td>35,914</td>
</tr>
<tr>
<td>O2</td>
<td>First Lieutenant</td>
<td>25,870</td>
<td>1,440</td>
<td>2,105</td>
<td>29,414</td>
</tr>
<tr>
<td>O1</td>
<td>Second Lieutenant</td>
<td>20,679</td>
<td>1,440</td>
<td>2,105</td>
<td>24,223</td>
</tr>
</tbody>
</table>

Note: BAFS is ‘Basic Allowance for Subsistence’ and POCUS is ‘Per Diem payment to compensate for living outside the Continental US’.

93. We have modelled the second rotation with a small pay increase based on a reported 2012 pay increase, and have converted the values to Australian dollars based on the Reserve Bank and Australian Treasury technical exchange rate assumptions.

94. Our understanding is that the allowances are not taxable income in the US. Noetic also understand that the income component is not taxed in Australia, whereas they may be taxed in the US.

95. Based on our assumed structure for a typical rifle company, including a force size of 200 personnel in the first year and 250 personnel in the second year; assumptions about wages, exchange rates and income
growth, and an approximate rank structure the maximum feasible income available to all Marines over a 26 week period would be $3.3 million in 2012 and $4.2 million in 2013. Of these amounts the value of just the allowance components would be $0.8 million in 2012 and $1 million in 2013.

96. The total feasible income figures are sensitive to assumptions about force size, exchange rates and the pay point selection.

97. In this assessment the value of income we expect to be expended in the economy is all of the allowances plus around 12 per cent of earned income. The allowance proportion is based on consultations with USMC personnel. The proportion of income is drawn from an investigation of expenditures undertaken in Guam, where it was found that 12 per cent of income earned was spent in the Guam economy.23

Finding: The Marines will spend around $1.1 million in 2012 and $1.4 million in 2013 of their income during the rotational presence including around $0.8-1 million from allowances and $0.3-0.4 million of private incomes.

Day to Day Life

98. Noetic understands the Marines will typically purchase day-to-day consumables from within the NT. These are the types of goods that any individual might need for daily conveniences.

99. To estimate this component of activity, we have created a basket of goods from the Household Expenditure Survey (HES) to estimate what might be regular consumables given the age and typical requirements of an absence from home. As these are ‘regular’ items, we have priced these at the HES weekly values in $AU, adjusted for broad inflation and some feedback. The categories, weekly spend and the six month spend are summarised in columns 1 and 2 of Table 4.

100. No transport costs are included in this calculation as they are covered in the on barracks and Liberty leisure time calculations.

101. While the consumption of alcohol might be expected in this part of the assessment, we have assumed that alcohol can be a consumable as either a day-to-day item, or as a leisure time consumable. We have not included alcohol in the basic consumption bundle but have included it in the Liberty type expenditures.

102. The HES figures are inflated to 2012 values using consumer price growth over the period from 2009-10 to March Quarter 2012. The 2013 values are adjusted upward by 2.5 per cent as a proxy for likely inflation.

103. As a bundle of expenditure, this is likely to be conservative and there are some Marines who might not consume the bundle at the HES levels. For example, haircuts account for just $24 over a six month period, whereas stakeholder feedback suggests this is a regular area of expenditure for Marines. Similarly, dry cleaning amounts to $6.76 over six months; whereas feedback suggests Marines prefer to have their uniforms professional cleaned regularly. Not all Marines are likely to write letters, and we assume younger Marines are more likely to purchase sweets. Finally, the US Communicable Diseases Centre suggests only 19.3 per cent of all adults aged 18 years or older in the US smoke cigarettes.24

104. To make this HES bundle slightly more realistic, and to find an expenditure value we have made some assumptions about Marine behaviour:

a. 19.3 per cent will smoke cigarettes regularly

b. Only the married proportion of Marines is likely to use stationery and postage on a regular basis

24 CDC nd.
c. The proportion of Marines aged 25 or over purchase books and newspapers on a regular basis

d. Confectionery and cakes would be purchased by those Marines aged 25 years or less

e. Hair services will be consumed monthly by 75 per cent of the Marines at a cost of $20

f. Dry cleaning is around $20 per two week period

105. The assumptions are primarily guesswork, based around common prices and trying to reflect a more realistic level than the HES for those items.

Table 4: Basic consumption bundle per Marine ($, 2012)

<table>
<thead>
<tr>
<th>CONSUMABLE</th>
<th>WEEKLY</th>
<th>6 MONTHS</th>
<th>ADJUSTED 6 MONTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral hygiene products</td>
<td>1.46</td>
<td>37.96</td>
<td>37.96</td>
</tr>
<tr>
<td>Soap</td>
<td>0.75</td>
<td>19.5</td>
<td>19.5</td>
</tr>
<tr>
<td>Talcum powders and deodorants</td>
<td>0.95</td>
<td>24.7</td>
<td>24.7</td>
</tr>
<tr>
<td>Hair care products</td>
<td>1.06</td>
<td>27.56</td>
<td>82.68</td>
</tr>
<tr>
<td>Fragrances</td>
<td>1.13</td>
<td>29.38</td>
<td>29.38</td>
</tr>
<tr>
<td>Toiletries and cosmetics not elsewhere classified</td>
<td>5.21</td>
<td>135.46</td>
<td>135.46</td>
</tr>
<tr>
<td>Hair services (male)</td>
<td>0.92</td>
<td>23.92</td>
<td>120</td>
</tr>
<tr>
<td>Stationery equipment</td>
<td>4.28</td>
<td>111.28</td>
<td>111.28</td>
</tr>
<tr>
<td>Postal charges</td>
<td>1.76</td>
<td>45.76</td>
<td>45.76</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>12.08</td>
<td>314.08</td>
<td>314.08</td>
</tr>
<tr>
<td>Confectionery</td>
<td>10.25</td>
<td>266.5</td>
<td>266.5</td>
</tr>
<tr>
<td>Cakes, biscuits, puddings and related products</td>
<td>6.97</td>
<td>181.22</td>
<td>181.22</td>
</tr>
<tr>
<td>Fruit and vegetable juice</td>
<td>3.61</td>
<td>93.86</td>
<td>93.86</td>
</tr>
<tr>
<td>Books, newspapers, magazines and other printed material</td>
<td>11.71</td>
<td>304.46</td>
<td>304.46</td>
</tr>
<tr>
<td>Cash gifts, donations to churches, synagogues and related</td>
<td>1.91</td>
<td>49.66</td>
<td>49.66</td>
</tr>
<tr>
<td>Dry Cleaning and Laundering</td>
<td>0.26</td>
<td>6.76</td>
<td>240</td>
</tr>
<tr>
<td>Total</td>
<td>66.17</td>
<td>1,727.18</td>
<td>2,056.50</td>
</tr>
</tbody>
</table>

Note: Columns one ‘weekly’ and two ‘6 Months’ are actual HES levels. Column three ‘adjusted 6 months’ is the HES plus assumed adjustments. Hair service (male) and Postal charges have a relative standard error between 25 and 50 per cent. Fragrances and ‘cash gifts, donations to churches, synagogues and related both have relative standard errors exceeding 50 per cent. Source: ABS 6530.0 and Noetic Calculations

106. The net effect of these adjustments is that the average weekly spend will reduce to around $55.50 per Marine in 2012.

25 The adjusted column provides only the level of expenditure adjustments. Where the population is changed, for example in smoking, stationery, confectionary and cakes, those will not affect these expenditure levels, but the proportion of Marines spending at the stated level.
Finding: Based on our assumptions and methodology it is likely the Marines would spend around $55 per week on basic consumables while living at Robertson Barracks. We assume these would be purchased within the regions of Litchfield, Palmerston and perhaps Darwin.

Observation: To obtain a better understanding of this activity (day to day spend) for a larger scale economic assessment, a survey of Marines in either the first or second rotation could be conducted to improve the assumed level of change.

Liberty Activity

107. As we have noted the expected activity of the Marines is a combination of active duty and Liberty. Active duty will mostly be training activity on or off Robertson Barracks. Liberty can be ‘off duty’ but on barracks, or be the equivalent of free time to pursue leisure activities.

108. We have not estimated any particular additional consumption or economic activity for the ‘off duty’ but on barracks form of Liberty. It is assumed that this activity will be encapsulated in the day-to-day expenditures.

109. Some of the potential leisure time activities are curtailed by our understanding of the Liberty policy. As stated earlier, Marines will not be able to stay off barracks when on Liberty and we understand that the majority of younger Marines are unlikely to be able to be off barracks beyond midnight.

110. Based on stakeholder feedback we understand that the current rotation had been on Liberty for six in the first 45 days, and had an expectation of 10 days in the subsequent 45 days. If we use these as benchmarks, the proportion of days spent on Liberty has been 13 per cent and 22 per cent respectively. Based on discussions and research on practice, we have judged that an assumption of one day in seven, or two in 14, would reflect a likely Liberty pattern. This works out at 14 per cent, which sits inside the band of actual Liberty. By assuming this percentage we are suggesting that the Marines are likely to be on Liberty for 26 days of a 183 calendar day rotation. This is most likely a conservative assumption.

111. Because we have no primary evidence drawn from the current rotation, we need to rely upon previous research to estimate what might be done by Marines while on Liberty.

112. When it comes to recreational activity for a visiting force, the most reliable study undertaken in Australia we can find, with a similar set of issues and a specific Marine contingent, was undertaken by Central Queensland University (CQU) in relation to Central Queensland. We note the CQU study referred to shorter duration training exercises, however it reveals some activity which assists with understanding what might be expected during the Marines time in Darwin. 26

113. The CQU study identified that US Personnel spent their free time:
   a. visiting a night club (72.1 per cent surveyed)
   b. shopping (69.1 per cent surveyed)
   c. resting and relaxing (65.3 per cent surveyed)
   d. visiting a friend (49.7 per cent surveyed)
   e. staying on base (8.9 per cent)

114. On the time spent, the report says that the US personnel:
   a. Were with military friends 71.9 per cent of the time

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26 The CQU study did not provide guidance about the total number of days each contingent visited Australia for training exercises, which means we have considered the aggregate patterns outlined in that report.
b. Visited botanic gardens and zoos 26.8 per cent of the time

c. Attended a gym 18.2 per cent of the time

d. Went on day trips to nearby beaches 12 per cent of the time

The study includes details about how Marines spent money in Queensland. We are not using the quantum discovered for Queensland, given the different nature of the events being measured. However, we have used the information to form a distribution of how funds will be expended while on Liberty. The way in which any Liberty funding would be spent is assumed to be similar to the expenditures revealed in Central Queensland, excluding Accommodation, Postage and Telephony, Air Travel and Rail Travel expenditures.

Figure 5 demonstrates the distribution which we are applying to the Liberty expenditure.

To estimate the direct impact of Liberty, we have assumed that the Marines would spend any allocated income (allowances plus 12 per cent of income) in excess of their basic needs on leisure time Liberty. This sets a budget of between $0.8 and $1 million over a six month period in the respective years.

To test the reasonableness of this assumption there is some research that outlines the expenditures of military personnel. For example, in the Central Queensland study total US personnel expenditure was estimated at $3,270 per person for the duration of their stay. A study of the expenditure of sailors in the port of Darwin suggested a daily expenditure of $182.40 (excluding accommodation) in 2007. A study of the Hawaiian economy draws on typical expenditure patterns in a US Household without revealing a daily

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28 This assumption balances the expenditure with the income allocation.
29 The study was conducted between 2002 and 2004 on a range of forces. The study provides details about the range of days leave by force type, but is not clear about the daily rates of expenditure. The figure therefore represents the volume of expenditure for a training visit for US personnel.
spend. Based on these studies, not adjusting for the dates of the studies, our estimate of around $157 per day of Liberty (or around $4,100 over a six month period) sits inside but at the upper end of the range of $2,469 and $4,768 of the CQU and NT specific studies, excluding accommodation, respectively.

On barracks effects

119. With the USMC being temporarily stationed at Robertson Barracks it is likely they will have some impact on the barracks. Some of these impacts may make a contribution to the local economy.

120. It is important to note there is a slight difference between the financial and economic effect on barracks. There will be financial costs incurred by the Australian Government from hosting the USMC. These financial costs may or may not be offset by payments by the USMC. The extent to which the USMC reimburses the Australian Government for costs incurred by the Australian Government during the rotation will determine the net financial impact on the Australian Government.

121. Noetic understands that the USMC intends to pay for the financial costs incurred during the rotational presence. Defence is working with the USMC on funding arrangements. A key financial assumption is that, in principle, Defence will be fully compensated by the USMC for the presence.

122. The economic effect we are assessing is the degree to which the expenditures that are occurring as a result of additional USMC personnel being rotated through the barracks will draw upon the resources (i.e., increase the demand for resources) in the regional economy. This is inherently difficult to estimate due to the way in which contracts are established for the operation of barracks, and the limited information available on the resources consumed by the Marines specifically. In effect we are looking for the leakage of the expenditure into the economy, rather than whether the costs are being recouped.

123. The actual on barracks cost impacts are being calculated as the 2012 rotation unfolds. There are some actual data available from early in the 2012 rotation, which we have incorporated into this assessment, and we have developed assumptions to determine the expected impact in the wider local economy.

124. We are assuming that additional economic activity will be generated from additional purchasing activity only. This activity, from preliminary data available on the 2012 rotation, covers food costs (‘messing’ and ‘rations’) and incidental costs. The incidental costs include, for example, the hire of cars, hire of buses, the hire of ablution facilities, explosive handling, cargo processing and communications. The purchase of these services requires support from outside of the barracks and will generate additional activity.

125. Accommodation costs are also incurred financially. These costs vary based upon the quality of the accommodation. However, regardless of the costs, we are advised that the accommodation being utilised in the initial rotational presence exists on the barracks and was not being utilised. We therefore assume that these sunk costs are unlikely to generate additional economic activity.

126. Actual and future costs, which will affect future impact assessments, may vary based on longer term data collection and any future arrangement agreed between the Australian and United States Governments.

127. The indicative daily cost that will generate additional economic activity based on the data available is around $19.34 per day per Marine. In addition, there will be an accommodation cost, which will range from $2.15 to $20.85 per day per person, depending on the quality of the facilities, and the methodology selected. For the purposes of our assessment the $19.34 component will have wider effects.

128. Of this, the meals component is around $11.10 per Marine per day. We note that this cost is based in part on the contribution rates charged to ADF personnel under the Defence Pay and Conditions Manual.
(PACMAN), which are around $172.50 per fortnight, or $10.68 per day. The PACMAN rate is a subsidised meal rate. In addition the figure includes rations, which again, may vary depending on the days utilisation of rations and in the longer term upon arrangements made between the US and Australia. Collectively, these conditions mean the selected rate is likely to be conservative. This activity will contribute to economic activity as it will need to be supplied from the wider economy.

129. The remaining daily cost of $8.24 per Marine per day is an approximation of the other costs incurred to date. As noted, these are incidental to the rotational presence, and will be additional activity on Robertson.

130. For the purposes of this assessment we have assumed that the daily costs would hold across each day of the rotation for 200-250 Marines for each year respectively. In reality the model may not bear out in truth, for example the first rotational presence of Marines was out of Australia from May until late June. Without precise knowledge of schedules of activity it is necessary to make assumptions which can support estimation. Due to the number of days assumed and number of Marines, the on barracks value in our assessment is relatively high and likely to be optimistic. Better data for time on barracks and time on training, and the relative costs differences, which emerge as the rotations unfold, should improve the quality of this result.

131. The ADF members at Robertson are expected to perform and be configured largely as if it is business as usual. There may be a shift in the routines to accommodate cooperative training opportunities, however we understand from consultations that it is not expected that additional ADF members would be shifted to Robertson.

132. While it cannot be calculated at this stage the rotational presence will enhance the productivity of the ADF and the Marines. The nature of the cooperation means that each force will become familiar with the other forces tactics, techniques and procedures. The productivity benefit would be strongest in deployed situations where the forces cooperate. There is also a learning benefit to the ADF in terms of highly specialised skills such as amphibious capability and ship loading skills, which is training the ADF may otherwise need to purchase. In the longer term this may transpire into additional training capacity for the wider NT Defence sector.

Indirect Effects

133. The methodology employed to derive the indirect effect is input-output (I-O) analysis.

134. To achieve the assessment we have calculated the Australian I-O multipliers from the 2007-08 I-O Tables for 111 sectors and drawn upon extant multipliers for the NT. The Australian multipliers Noetic have calculated are output and value added multipliers for the initial effect, the first round effects, industrial support effects, production induced effects, consumption induced effects and summary simple and total

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30 PACMAN 7.7.5 “Fortnightly Meal Charge”
multipliers. Broadly speaking, the methodology used is based upon Australian Bureau of Statistics methodology\(^{31}\), and a more technical description can be found in Annex B.

135. The I-O multipliers provide an imperfect but effective short hand way of assessing the impact of a small stimulus in an economy, where certain assumptions are made. The assumptions, and some limitations, are discussed at Annex B. In effect, I-O is effective for this assessment due to the small scale of the initial rotational presence relative to the NT economy.

136. Noetic emphasise that the results of an I-O analysis should be seen as an approximation, which illustrates the broad magnitude and direction of the consequences of a change in activity from what might otherwise have occurred absent whatever the I-O analysis is investigating.

137. Depending on how the I-O and underlying data are structured, it may not be possible to simply scale the calculations up or down to assess how the magnitude and direction change from some change in the assessed impacts. For example, for the assessment of the initial rotational presence it is not possible to multiply our values by 10 to generate the impact of a 2500 person rotational presence. This would be misleading due to the different scale, scope and structure of a MAGTF compared to a Rifle Company.\(^{32}\)

138. The multiplier assessments are interpreted as:

a. Simple multiplier: a $1 increase in output will induce a total of the multiplier in extra output. The value added interpretation is similar

b. The simple multiplier consists of the first round (the increase in economy wide output required to generate an extra dollar of output in the sector) plus the industrial support effect (the increase required by suppliers to the industry). The production effect (the total increase in additional production) is also derived from the sum of the first round and industrial support effects

c. Total multiplier: a $1 increase in output will induce a total of the multiplier in extra output (or value add) across all industries

d. The total multiplier consists of the simple multiplier plus induced consumption (the increase in output required to assist additional demand generated by increased compensation of employees from the total increased output in the economy)

139. The output multipliers we have calculated and used are set out below. The methodology used to calculate the multipliers is in Annex B. Table 5 illustrates the sectors the direct effects are allocated to for multiplication. The Table excludes the initial effects which are the direct assessment values.

140. In order to focus our assessment on the net economic impact of the initial rotational presence, we have generated value added multipliers. ‘Value added’ is the amount of the change in output that will be, in effect, returned to workers through wages and salaries and business owners as profits. The methodology used to calculate the multipliers is in Annex A. Table 6 illustrates the sectors to which the direct effects are allocated to achieve the value added calculations.

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\(^{31}\) ABS 1995.

\(^{32}\) The only element of direct comparability between the Company and the MAGTF sized rotations is that the latter will include three Rifle Companies. The residual personnel will be different ranks, be structured differently and will carry different equipment.
Table 5: Australian Level Output I-O Multipliers (2007-08)

<table>
<thead>
<tr>
<th>Industry</th>
<th>First Round</th>
<th>Industrial Support</th>
<th>Production Induced</th>
<th>Consumption Induced</th>
<th>Simple Multiplier</th>
<th>Total Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing</td>
<td>0.52</td>
<td>0.71</td>
<td>1.23</td>
<td>1.93</td>
<td>2.23</td>
<td>4.16</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>0.43</td>
<td>0.53</td>
<td>0.96</td>
<td>2.06</td>
<td>1.96</td>
<td>4.02</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>0.59</td>
<td>0.78</td>
<td>1.37</td>
<td>1.85</td>
<td>2.37</td>
<td>4.22</td>
</tr>
<tr>
<td>Road Transport</td>
<td>0.54</td>
<td>0.67</td>
<td>1.21</td>
<td>1.63</td>
<td>2.21</td>
<td>3.84</td>
</tr>
<tr>
<td>Postal</td>
<td>0.51</td>
<td>0.61</td>
<td>1.12</td>
<td>1.80</td>
<td>2.12</td>
<td>3.93</td>
</tr>
<tr>
<td>Gambling</td>
<td>0.50</td>
<td>0.60</td>
<td>1.11</td>
<td>1.77</td>
<td>2.11</td>
<td>3.88</td>
</tr>
<tr>
<td>Personal Services</td>
<td>0.54</td>
<td>0.64</td>
<td>1.18</td>
<td>2.36</td>
<td>2.18</td>
<td>4.54</td>
</tr>
<tr>
<td>Defence</td>
<td>0.47</td>
<td>0.62</td>
<td>1.09</td>
<td>1.77</td>
<td>2.09</td>
<td>3.86</td>
</tr>
<tr>
<td>Other Services</td>
<td>0.38</td>
<td>0.45</td>
<td>0.82</td>
<td>2.18</td>
<td>1.82</td>
<td>4.01</td>
</tr>
</tbody>
</table>

Table 6: Australian Level Value Added I-O Multipliers (2007-08)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Initial Effects</th>
<th>First Round</th>
<th>Industrial Support</th>
<th>Production Induced</th>
<th>Consumption Induced</th>
<th>Simple</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing</td>
<td>0.46</td>
<td>0.20</td>
<td>0.30</td>
<td>0.50</td>
<td>0.92</td>
<td>0.95</td>
<td>1.87</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>0.54</td>
<td>0.18</td>
<td>0.23</td>
<td>0.41</td>
<td>0.98</td>
<td>0.95</td>
<td>1.93</td>
</tr>
<tr>
<td>Food and Beverage Services</td>
<td>0.37</td>
<td>0.23</td>
<td>0.33</td>
<td>0.56</td>
<td>0.88</td>
<td>0.93</td>
<td>1.82</td>
</tr>
<tr>
<td>Road Transport</td>
<td>0.40</td>
<td>0.19</td>
<td>0.32</td>
<td>0.51</td>
<td>0.78</td>
<td>0.91</td>
<td>1.69</td>
</tr>
<tr>
<td>Postal and Courier Pick-up and Delivery Service</td>
<td>0.42</td>
<td>0.20</td>
<td>0.28</td>
<td>0.48</td>
<td>0.86</td>
<td>0.90</td>
<td>1.76</td>
</tr>
<tr>
<td>Gambling</td>
<td>0.48</td>
<td>0.21</td>
<td>0.26</td>
<td>0.48</td>
<td>0.84</td>
<td>0.96</td>
<td>1.80</td>
</tr>
<tr>
<td>Personal Services</td>
<td>0.44</td>
<td>0.24</td>
<td>0.28</td>
<td>0.52</td>
<td>1.13</td>
<td>0.96</td>
<td>2.08</td>
</tr>
<tr>
<td>Defence</td>
<td>0.50</td>
<td>0.19</td>
<td>0.27</td>
<td>0.45</td>
<td>0.85</td>
<td>0.95</td>
<td>1.80</td>
</tr>
<tr>
<td>Other Services</td>
<td>0.60</td>
<td>0.17</td>
<td>0.19</td>
<td>0.36</td>
<td>1.04</td>
<td>0.96</td>
<td>2.00</td>
</tr>
</tbody>
</table>

141. To understand the regionalised impact of our assessed values, we have utilised regional value added multipliers calculated by the NT Department of Business and Employment (DBE). DBE provided two regions’ multipliers being NT and the ‘Top End’. We understand the Top End is closest to the statistical geography of the rotational presence. DBE have supplied the simple and total multipliers, from which Noetic have derived the consumption induced multipliers. These multipliers are summarised in Table 7.
142. We accept these on the advice of DBE, and note that each of the multipliers is less the smaller the scale of the counting area (for example Australia is largest, NT is next, followed by the Top End) which is consistent with what we would expect.

Table 7: Regional value added multipliers (2006-07)

<table>
<thead>
<tr>
<th></th>
<th>NORTHERN TERRITORY</th>
<th>TOP END REGION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Simple Multiplier</td>
<td>Total Multiplier</td>
</tr>
<tr>
<td>Publishing</td>
<td>0.75</td>
<td>1.04</td>
</tr>
<tr>
<td>Retail trade</td>
<td>0.72</td>
<td>1.01</td>
</tr>
<tr>
<td>Accommodation, cafés and restaurants</td>
<td>0.56</td>
<td>0.76</td>
</tr>
<tr>
<td>Road transport</td>
<td>0.61</td>
<td>0.84</td>
</tr>
<tr>
<td>Communication services</td>
<td>0.70</td>
<td>0.88</td>
</tr>
<tr>
<td>Sport, gambling and recreational services</td>
<td>0.57</td>
<td>0.79</td>
</tr>
<tr>
<td>Personal services</td>
<td>0.73</td>
<td>1.02</td>
</tr>
<tr>
<td>Defence</td>
<td>0.50</td>
<td>0.71</td>
</tr>
</tbody>
</table>

143. We have assumed that the time difference between 2006-2007 and 2009-10 for both sets of multipliers is not a major issue. For example, structural change takes time, and over three years we would not expect dramatic industry shifts. Having said that, there will be a need to assess the NT and Australian multipliers against newer expenditure and investment details and using consistent industry groupings in a larger scale assessment.

144. Additional caveats should be noted for the regional multipliers. In particular the allocation of data to the input-output framework is slightly more subjective than at the Australian level and the tables are based on data with relatively higher statistical errors.

145. We observe that the multipliers for Australia, particularly simple and total multipliers suggest a high level flow on from any impact. Notwithstanding the technical interpretations, it is best to focus on the initial effect plus production and consumption induced effects of the initial rotational presence to understand the relative size of the indirect activities.

**Long term effects of additional Marines**

146. The direct and indirect activity generated by the initial rotational presence is assumed to have no long term structural impact on the NT. That is, the activity will be dissipated within the economy during the period it is generated. This assumption is made because the presence is rotational not permanent.

147. Any longer term effects would be entirely consequential upon the scale, scope and broad strategy adopted for a potential MAGTF.
148. The MAGTF is the principal organising structure of the US Marines Corp across all missions. There are a consistent set of four elements to these taskforces, being command, ground combat, logistics combat support and aviation combat. The size of the MAGTF however depends on its purpose.

149. There are a range of postures depending upon the nature of the MAGTF including an expeditionary force, an expeditionary brigade and an expeditionary unit. The scale of these MAGTF starts in the high tens of thousands of personnel at the expeditionary force level, down to a couple of thousand at the expeditionary unit level. Based upon publicly available commentary about the potential MAGTF within Australia, suggesting a rotational force size of up to 2500 personnel, Noetic assume that any MAGTF would most closely align with a Marine Expeditionary Unit (MEU).

150. To understand what an MEU might look like we have generated Figure 6 which shows the elements and their broad structure and function. Clearly the functions and components are different to a more straightforward Rifle Company, which is the force structure in the initial rotational presence.

*Figure 6: Broad structure of an expeditionary unit MAGTF*
151. We note that evidence used to build this representation is partly based upon a Special Purpose MAGTF, where the notion of Special has particular meaning. A reliable picture of what might be used in Australia cannot be obtained until there is further agreement between the Australian and US governments.

152. What this means is that conclusions about the impact of a rifle company cannot be extrapolated to assess the impact of the MAGTF. There is some transitive comparison, with the MAGTF containing three rifle companies, which should each be individually similar to the short term assessment; however that is the only real comparison available.

153. Indeed, the issue of equipment changes substantially with the scale of the MAGTF. The rifle company and the weapons platoons are assumed to be broadly similar in a MAGTF to a Company scale rotation, however there are substantial additional equipment and support infrastructure in a complete MAGTF.

154. To understand the types of equipment that may accompany a MAGTF, Noetic have summarised the kind of equipment used in an existing deployed Special Purpose MEU MAGTF in Annex D.33

155. We have not assessed the precise nature or form of infrastructure that is required to house the elements or that which is required to support the training needs of the rotation in any meaningful way. We note the advice from stakeholder consultations that there are appropriately trained persons who are involved in dialogue about the required structure and intent of any MAGTF.

156. It should be clear from this discussion that it is not feasible to meaningfully assess the impact of the MAGTF based on current information.

Observation: To be meaningful any assessment of the potential economic effect of a MAGTF requires further details about the scale, scope and expected locations of what is proposed.

ASSESSMENT OF THE ROTATIONAL PRESENCE

157. The change that is expected for the NT economy is the temporary addition of up to 250 US Marines at Robertson Barracks, who will also travel to existing Australian Defence installations for training, for a period not exceeding six months in the dry season.

158. The presence will generate some additional activity at the Robertson Barracks and within the region identified. These activities will impact upon specific sectors of the economy, across a group of economic activity types. The initial rotation will directly impact upon nine sectors based upon our assessment.

159. To be clear this assessment considers only the marginal impact of the presence. It is not an assessment of the economic impact of the Robertson Barracks more broadly. This type of assessment was undertaken by KPMG in 2010, which estimated that Robertson Barracks supported some 5900 jobs and $428 million in economic value add.34

160. This section presents the results of modelling the potential effects of the initial rotation based upon the data discussed under ‘the impact of the presence’.

Short Term

161. In 2012 additional direct activity will be approximately $1.8 million. This will include $0.29 million allocated to lifestyle goods and services, $0.82 million will be spent on Liberty activities and $0.71 million will be spent through the barracks. The direct activity will increase to approximately $2.3 million in 2013, of which

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33 Media guide, Special MAGTF MEU 26th.
34 KPMG econTECH 2010.
$0.36 million will be allocated to lifestyle goods and services, $1.03 million will be spent on Liberty activities and $0.91 million will be spent through the barracks.

162. These direct effects will be expended mostly in the NT. There may be some leakage out of the NT through contracting arrangements, and depending on where the Marines choose to undertake Liberty activity. However, the majority of this should occur in the NT.

163. Creating a present value of the two years shows that the total direct benefit is measured at approximately $3.96 million. The distribution of the two year direct effect is summarised in Figure 7.

164. We note that in this Figure the on barracks effect is concorded to the Defence sector, rather than disaggregated into other industries, which is what drives the relatively larger percentage of Defence.

165. These direct effects will have consequences across a range of sectors based upon the multiplier effects. Applying the multipliers identified earlier yields a set of results which define the following Tables. The total assessed increase in output across both years is around $16 million.

166. The first way to understand where this activity might fall is presented in Table 8, showing the results of applying the Australian and regional direct activity to the output multipliers. These calculations suggest that of the $16 million over 2012 and 2013, $7 million is likely to occur in the NT, the bulk of which will be in the Top End.

167. The Australian multipliers suggest that there would be activity generated outside of the NT, which is consistent with common sense, as much of the activity required to produce the goods and services that would be consumed in the bundles we have estimated would occur outside of the NT.
More meaningful analysis requires removing the effect on intermediate demand, and focusing just on the economic value added from the additional output.

To understand this impact we have applied the value added Australian and regional multipliers to the increased output to generate Table 9. These calculations suggest that for the $4 million of direct output generated, about $7.4 million is likely to be generated in value adding activity. The NT is likely to retain $3.3 million, the bulk of which, $3.2 million, will be retained in the Top End.

To enrich the distribution we have also presented the total value added multiplier effect by industry of impact in Table 10. Due to the relatively larger direct effect of on barracks activity, the largest single sector is defence related. Then, as might be expected, retail and food and beverage services are the next most significant.

To be clear, while the NT results are the focus of this assessment, the Australian level results are meaningful as the NT cannot produce all of the required outputs internally. For example, local bakeries may produce cakes and biscuits which would see all of the direct effect and value added multiplier effect being retained in the NT, however alcohol sales would see effects in the local economy plus in the location where the alcohol is manufactured. Our presentation considers the entire Australian value added impact, and the NT impact to illustrate where there may be wider effects than just the NT.

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35 Value added is simply the earnings of individuals (the ‘compensation of employees’) and the returns to business owners (the ‘gross operating surplus’).
It is important to note that this assessment has not estimated additional costs or benefits which may be generated by social impacts. Any net social cost should be seen as reducing this overall potential benefit.

Finding: The assessed direct economic activity in the NT attributable to the initial presence over 2012 and 2013 is around $3.96 million. This should generate additional economic output of $16.1 million, of which $7.4 million is value adding activity. Of the value added activity approximately $3.3 million will occur in the NT, of which $3.2 million will be in the Top End.

Government

To understand the effect on ‘government’ we have considered potential revenue and expenditure impacts of each of the levels of Government in Australia. We have not considered the impact on the US Government. To make the assessment we set up a range of propositions in the Issues Paper (see Annex E), and sought feedback from stakeholders (which included representatives of most of the potentially affect Government agencies).

Based on the feedback received on our propositions, and our knowledge of the operations of government, we believe:

a. It is unlikely there will be any increase in demand for Australian Government services or programs from the initial rotational presence. This is due to the fact that Marines will be largely self contained at Robertson Barracks and ineligible to access Australian Government programs. Similarly, Australian Government revenues are unlikely to be affected by the initial rotational presence, noting that any changes that may occur at the margins from slight uplift in consumption related taxation or excises, from additional economic activity, will be a very minor proportion of the aggregate fiscal activity of the Australian Government.

b. It is unlikely that there will be any increase in demand for services or programs from the initial rotational presence for the NT Government. We note observations that there may be some minor re-focus of activities such as policing. But for the scale of the presence we believe it is unlikely there would be a need for additional recruitment in any area of the NT government. It is possible there will be minor revenue increases in payroll, gambling and other consumption taxes or fees; however these are not likely to be significant. For example, if all of the day-to-day and Liberty activity were liable for goods and services tax, the total national pool effect would be $10,000-126,000 (in 2012 or 2013).

c. Local Government should experience minimal increase in demand for services from the initial rotational presence. There is unlikely to be any meaningful revenue gains. However, there may be marginal revenue gains from things like pool entry fees or other fee for service activities of council, and some minor consumption of council services such as recreational facilities.

Table 10: Assessment of short term indirect value added activity - by sector ($million 2012)

<table>
<thead>
<tr>
<th>Assessment Level</th>
<th>Initial Effects</th>
<th>First Round</th>
<th>Industrial Support</th>
<th>Production induced</th>
<th>Consumption Induced</th>
<th>Simple Multiplier</th>
<th>Total Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>0.4</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.7</td>
<td>0.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Food and Beverage Services</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.7</td>
<td>0.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Road Transport</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Postal</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Gambling</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Personal Services</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Defence</td>
<td>0.8</td>
<td>0.3</td>
<td>0.4</td>
<td>0.7</td>
<td>1.3</td>
<td>1.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Other Services</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>1.9</td>
<td>0.8</td>
<td>1.1</td>
<td>1.9</td>
<td>3.6</td>
<td>3.7</td>
<td>7.4</td>
</tr>
</tbody>
</table>
175. Anecdotally, the Darwin Port Corporation may receive some financial benefit from additional ship movements. We have not estimated these as the full program of movements is not clear at this stage, and our understanding is that movements of Marines in the initial rotational presence will be largely by road and commercial airline. We note that in 2010-11 a total of 62 Defence vessels were hosted through the Darwin Port Corporation, compared to some 1,745 total vessels using the ports, so as a relative proportion, a few additional movements would seem to be a minor impact.36

176. Defence has reallocated some internal resources to create the Implementation Team, and has drawn on the services of other areas of Defence to assist with the implementation. Similarly some personnel at Robertson Barracks have been tasked with activities relating to the rotational presence. We are not aware of any additional recruitment for these roles, and therefore observe that the activity is a reallocation of resources. For Defence there is a minor risk that if the allocation of costs incurred is less than the recovery of costs from the USMC they may be required to cover the shortfall.

177. The Social Impact Assessment also canvassed how specific social services may be impacted and should be read in conjunction with this assessment.

178. The majority of activity undertaken during the initial rotational presence is unlikely to represent a net call upon Government services.

**Long Term**

179. The aim of this section is to outline potential impacts that may emerge if a MAGTF scale presence were to occur. This is speculative and based upon consultations and research only.

180. The key observation is that much of this section is conditional upon decisions which have not been taken. Any meaningful analysis of the impact requires more specification of the activity which will occur prior to being analysed.

181. The first observation is that there will be similar but larger scale impacts from the Ground Combat Element when compared to the Rifle Company. That is, there are three Rifle Companies in the Ground Control Element of the MAGTF, while there are three additional elements plus the remainder the Ground Combat Element.

182. Defence contracting arrangements will determine the likely local industrial impact of any major addition of activity. That is, if Defence and the USMC enter into arrangements that allow for local small to medium enterprises (SMEs) to assist the USMC maintain equipment then there would be wider economic impacts than simple consumption and recreational service effects. This is critical because the logistics combat element contains some maintenance and a MAGTF will bring equipment requiring regular and periodic larger scale maintenance. Understanding the contracting, sequencing and maintenance cycles would be crucial to future investigations.

183. If repair and maintenance of equipment does proceed with local contracting additional demand for particular skills in the economy may cause, or be affected by, wider economic pressures. The demand for skills may crowd out, or be crowded out by, other major investments in the NT. The consequences may be higher labour prices across the board, or a potential lack of appropriately trained persons to meet economy wide demand.

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36 Darwin Port Corporation 2011, pp 7-8
Generally speaking, based on our stakeholder conversations and research of the NT economy, the skills most likely to be affected within the NT economy if contracting occurs are non technical skills such as systems and business skills (understanding how to deal with Defence contracting) and technical skills in engineering (civil, mechanical, and electrical), fabrication, marine engineering and maintenance support. Noetic is making a judgement that this list should be extended to include supply chain management, transportation logistics and warehousing given the types of investments occurring concurrently in the NT.

The NT Government acknowledges that there are skills shortages in the NT, and this was raised during consultations as an area for longer term focus. The NT publishes an annual list of skill shortages which measures gaps in occupations that have either a shortage or that are experiencing recruitment difficulties. For 2010-11 the list identifies a wide variety of potential shortages, and relevant for the potential MAGTF stage of the rotational presence, it identifies the following occupational shortages:

- Civil Engineer
- Civil Engineering Draftsperson and Technician
- Construction Project Manager
- Electrical Engineer
- Electrical Engineering Draftsperson and Technician
- Engineering Manager
- Mechanical Engineer
- Quantity Surveyor
- Structural Engineer
- Surveying or Cartographic Technician
- Surveyor

Over time structural responses by Government and industry, such as targeted recruitment campaigns, training, skilled migration and similar programs may mitigate these shortages. However, as it stands, if there is to be utilisation of NT industry during the scale up and existence of a potential MAGTF, preliminary planning would be an essential step to ensure capability exists to support whatever rotational presence is agreed.

Depending on the location of the MAGTF and supporting personnel additional construction activity may be required on barracks across the NT. If there is additional construction, this will have an impact in the local economy through the construction phase where contractors are utilised.

Depending on the volume and frequency of maritime activity movements required with a MAGTF size rotation there may be consequences in the Port of Darwin, in particular issues around the queuing of maritime movements, wharf timing and quarantine cleaning issues. These consequences will depend upon the amount and type of equipment to be used and the degree to which the USMC movements compete with other shipping such as minerals, mining or agricultural exports and tourism.

The impact of the rotational presence on transport movements and infrastructure will depend on the scale of the MAGTF and the movements of personnel. Based on consultations and our understanding of

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37 NT Government 2011.
MAGTF generally, we note that there may be intermittent additional road usage linked to the movements of personnel and some equipment, which may place pressure on competing road users such as agricultural export transport, mine and mineral transport and tourist movements. However, we understand based on consultations that the infrequency of the specific movements of Marines and equipment is unlikely to lead to a requirement for additional transport infrastructure under the short or long term scenarios. So the scale of the MAGTF will determine the degree to which competing transport movements may be impacted upon, however the volume is unlikely to require additional infrastructure.

190. There may be additional ADF activity required in logistics and planning for the deployment which has not been necessary initially due to scale. We are assuming that, given the current budgetary climate, this is likely to be a transfer of Defence personnel rather than a net increase in personnel.

191. Based on our understanding of economic impacts, what these various factors will contribute to is a set of price, employment and output impacts, which would be occurring during a relatively large capacity increase in the mining and minerals sector. In the longer term a number of changes about the way the rotational presence is implemented suggest additional sectors could be affected compared to the initial rotational presence, and we have identified a preliminary assessment matrix using typical sector allocations in a large scale economic model in Table 11.

192. We note that the complexity of the future state would potentially require a more sophisticated economic model to estimate the range of impacts such as price and other behavioural responses. A crucial part of the assessment would be ensuring the models employed have an appropriate set of data for the current state of the NT economy, reflecting the massive increase in investment into the baseline, so a measurement of additional rotational Marines could be seen in the appropriate context.

Observation: In any assessment of the longer term impacts, the future state of the NT economy needs careful consideration to ensure an appropriate baseline is established. That is, it may be necessary to build a baseline first using current statistics and future known investment prior to analysing a counterfactual built around the impact of an enlarged USMC rotational presence.
Table 11: Potential Distribution of MAGTF Economic Activity

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>DESCRIPTION</th>
<th>PRICE</th>
<th>EMPLOYMENT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture Forestry and fishing</td>
<td>Potential displacement of inputs</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Price effects in labour</td>
<td>+</td>
<td>-</td>
<td>+/-</td>
</tr>
<tr>
<td></td>
<td>Infrastructure competition</td>
<td>+</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>Mining</td>
<td>Potential displacement of inputs</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Price effects in labour</td>
<td>+</td>
<td>-</td>
<td>+/-</td>
</tr>
<tr>
<td></td>
<td>Infrastructure competition</td>
<td>+</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Larger scale indirect effect from specialised equipment</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Consequence from consumption</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Electricity, gas, water and waste water</td>
<td>Significant additional consumption</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Construction</td>
<td>Potential displacement of inputs</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Price effects in labour</td>
<td>+</td>
<td>-</td>
<td>+/-</td>
</tr>
<tr>
<td></td>
<td>Additional building need</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>Increased throughput from consumption</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Increased throughput from activity</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Retail trade</td>
<td>As for short term, enhanced scale</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Accommodation, cafes and restaurants</td>
<td>As for short term, enhanced scale</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>SECTOR</td>
<td>DESCRIPTION</td>
<td>PRICE</td>
<td>EMPLOYMENT</td>
<td>OUTPUT</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>Transport</td>
<td>As for short term, enhanced scale</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Marginal additional movements.</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Communications services</td>
<td>Additional services</td>
<td>+/-</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>Finance and Insurance Services</td>
<td>Marginal to no effect, expect for flow on</td>
<td>+/-</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>Property and business services</td>
<td>Minor housing for off-barrack support staff.</td>
<td>+</td>
<td>+/-</td>
<td>+</td>
</tr>
<tr>
<td>Government Administration and Defence</td>
<td>Extra resourcing</td>
<td>+/-</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Education</td>
<td>Marginal impact for housing if any support staff are required to reside off barracks.</td>
<td>+/-</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Health and community services</td>
<td>Marginal impact for housing if any support staff are required to reside off barracks.</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Cultural and recreational services</td>
<td>As for short term, enhanced scale</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Personal and other services</td>
<td>As for short term, enhanced scale</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Legend

**Sector**: the approximate Australian New Zealand Standard Industry Classification industry name

**Price**: the likely direction of a pricing effect for producers or consumers

**Employment**: the likely direction of an employment effect

**Output**: the likely direction of an output effect

**Note**: ‘+’ indicates an increase, ‘-’ indicates a reduction, ‘+/-' indicates an uncertain impact

**Description**: description of the change which alters economic activity
Government

193. As the scale and range of impacts may change with a potential MAGTF rotational presence, the effects on Government are likely to change compared to the initial rotational presence.

194. The longer term impact on the Australian Government may include demands for additional infrastructure, funding to the NT for support services where increases might be likely, and potentially some additional revenue if the hypothesised force scale of 2500 materialises.

195. Defence in particular may face increased potential capacity requirements on Robertson Barracks, and the training ranges that would be used.

196. For the NT Government the long term profile of effects are likely to be different to the short term effects and more complicated. If a rotational force of 2500 personnel materialises this may induce additional need for supporting infrastructure expenditures, may have an intermediate effect on training and skilled workforce development packages and will almost certainly have a material impact on revenue through growth in economic activity such as through payroll tax and taxes on recreational services.

197. Should there be a need for any US Personnel to be accommodated off barracks in the Darwin, Litchfield or Palmerston areas this could have flow on effects in rents and prices, which may have adverse consequences on affordability, and consequently housing policy.

198. The Local Government impact should remain minimal from a larger rotation. Anecdotally, some effects may include minor additional local road infrastructure development or repair and more frequent use of locally managed parks and grounds.

199. There are some larger challenges that may shape the way in which the Governments collectively look at the rotational presence. In the longer term scenario there may be capacity constraints or regulation issues that affect the NT Government in the form of road networks, waterway usage and airspace regulation. Depending on the agreed arrangements, there may be a call on Governments of all sizes, including additional States beyond the NT, to address potential skilled labour gaps.

200. We cannot conclusively say what the impact on Government might be from a MAGTF.

Opportunities

201. During consultations a range of opportunities were identified to improve the potential economic benefits of the initial rotational presence and more particularly the large scale MAGTF. The actions would include:

a. Clarifying the sequencing and shape of any potential MAGTF, particularly for the period 2014 to 2016 or 2017, starting as soon as possible

b. Connect elements of the NT Government (Defence Executive Consultative Group), Australian Industry Defence Network, Chamber of Commerce, USMC and Defence (Implementation Team and on the ground operations) to define and scope the skills required in the economy under a MAGTF and identify any long lead time training and/or retention plans that may be feasible

c. Outline a broad strategy for the anticipated repair and maintenance of equipment including things such as local or internal trade skills, behind the wire versus wider utilisation and any required specialised accreditation to access outsourcing opportunities

d. As more information becomes available, undertake a limited education campaign through key industry channels to make clear what will and will not be likely to happen
202. The key issue identified is communication and the importance of keeping stakeholders informed.

Observation: It would be prudent to ensure key stakeholders remain apprised of developments in planning so there are no surprises at future implementation stages.

FINDINGS

Conclusion

203. Based on the terms of reference our assessment suggests:

a. There will be additional direct expenditure in the NT economy of around $1.8 million in 2012, increasing to $2.3 million in 2013, or $3.96 million in present value terms, due to the initial rotational presence. The value added to the NT economy from the additional expenditure will be approximately $3.3 million, while the total value added effect of the expenditure in Australia is estimated at $7.4 million. The bulk of the effect in the NT should be retained in the Top End region surrounding Robertson Barracks.

b. The industries most likely to be affected by the initial rotational presence are those which support basic living, the recreational economy and Defence activity. These industries include transportation, retail trade, food and beverage services and sport and recreation providers. The assessment demonstrates that there are nine directly impacted statistical sectors, and these have indirect linkages across all 111 available Input-Output industries.

c. During the initial rotational presence there are likely to be very minor Government revenue and expenditure impacts. Based on our expectations and feedback there will be minimal additional consumption taxation and fee collection, no call for new programmatic expenditures and some reallocations of existing government resources to deal with marginal issues linked with the rotational presence (such as advice to government, police services and consumption of recreational facilities).

d. Defence will be administratively and financially affected during the initial rotational presence. Administratively they will be accountable for organising the Australian contribution to the initial rotational presence and negotiations about potential future rotations. Financially, there has been some internal reallocation of personnel to implement the rotational presence in the Department, and among personnel at Robertson Barracks. Several details are being negotiated on the attribution of costs associated from the initial rotational presence impact on Robertson Barracks.

e. We have not received feedback or found evidence to suggest the initial rotational presence will have a material impact on the operations of other Australian Government departments. There may be similar minor internal reallocation of personnel to consider issues on the rotational presence.

f. We have not directly estimated the number of jobs likely to be created as our primary analysis has been of output and value added, not expected employment creation. Based on the small impact Noetic do not believe that the additional activity is likely to create additional employment. There are rules of thumb that suggest certain levels of production support a level of employment in an economy. For Australia, the rule of thumb based on Input-Output tables is that $1m in annual production supports around 4 full time equivalent (FTE) jobs. Using this rule of thumb, and drawing on the output effects estimated in this assessment, it could be claimed that the rotational presence might support up to 8 FTE from the direct expenditure and 32 FTE indirectly, per annum.
204. The longer term will see a different set of impacts based on the different scale, scope and structure of a MAGTF. This is beyond our brief to assess, however it will likely have a larger effect across more sectors and will be competing in a constrained marketplace.

205. Similarly the short and long term effects need to be considered in light of the activity already occurring in the NT. As the rotational presence moves from a small initial rotational force that will be absorbed in existing capacity to a larger more competitive scale, the growth in activity across the North is likely to present price and skilled labour challenges.

206. Our assessment is that there will be a small and positive increase in the level of economic activity in the NT caused by the initial USMC rotational presence.
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ANNEX A - TERMS OF REFERENCE

1. The economic assessment will provide a discussion of the potential impacts for:
   a. The NT economy
   b. Private industry (e.g. Defence industry suppliers, the resource industry etc)
   c. Taxation and other revenue sources of the local, Territory and federal governments
   d. Defence, including potential costs associated with infrastructure requirements (such as needing to establish new facilities to cope with increased demand for housing, utilities or storage at Defence facilities)
   e. Other Australian Government (including Defence programs)

2. The economic assessment will also consider the social assessment terms of reference seeking an "assessment of the impacts the activities may have on the local labour market in terms of employment and skill opportunities in the medium to longer term".
ANNEX B - TECHNICAL APPENDIX

Input-Output Multipliers

1. The I-O method relies upon a system of statistics developed to explain the economy in terms of the supply and use of goods within and between industries, and the end product of economic activity in terms of expenditure and income. They are an integral part of the system of national accounting that determines a nation’s economic income.

2. I-O Tables summarise a snapshot of the transactions which occur in an economy at a moment in time. They capture the transactions that link particular industries together.

3. I-O multipliers can be estimated from I-O Tables and measure a range of technical direct and indirect effect metrics for elements such as output, employment and value added. They can be built for many components of the economy. This assessment deals almost exclusively with output changes.

4. Multipliers provide a short hand way of assessing the impact of some form of stimulus in an economy.

5. The results of an IO analysis should not be seen as anything more than an approximation, with an intention of showing the broad magnitude and direction of the consequences of a change in activity from what might otherwise have occurred absent whatever the IO analysis is investigating.

6. The assumptions implicit in our analysis to enable the use of an I-O method are that the initial presence:
   a. is not likely to affect prices in the NT economy
   b. is not going to generate sufficient activity to cause capacity issues (i.e. it can be fully absorbed)
   c. will not affect the capital or input decision of businesses, including the import shares, capital and labour mix.

7. The multipliers we have generated are at the Australian economy level. These are more reliable, have a deeper disaggregation and are publically available allowing for replication of our results. Where possible we have tried to incorporate extant multiplier information that may enhance the understanding of the regional impact. The broad assumption underlying the presentation is that the NT economy cannot produce all of the effort required to meet the additional economic activity, so that there would be a regional effect (based on the calculation of direct effects and the indirect regional effects) and that the residual between the regional and the Australian level calculations would measure activity that must occur elsewhere to fulfil the shortfall in the NT.

Calculating the Australian Multipliers

8. Multipliers have been calculated for 111 industries for output and income across six types, including:
   a. First round effects
   b. Industrial support
   c. Production induced
   d. Consumption induced
   e. Simple multiplier
   f. Total multiplier
9. To estimate the multipliers \( a, b, c \) and \( e \) we adopted an open economy Leontief framework. In this framework we generate from, or adopt the ABS version, to generate:

a. The direct requirements coefficients (the \( A \) matrix), which provided the vector of first round effects

b. An identity matrix (I) of dimensions 111x111

c. The total requirements coefficients (using the \( (I - A)^{-1} \) Leontief convention), which provided the vector of simple multipliers and the \( A^* \) matrix

d. The industrial support effects which are the difference between the simple multiplier and the initial effects (set at 1) and first round effects

e. The production effect, which is the sum of the first round and industrial support effects

10. To derive the multipliers \( d \) and \( f \) we have estimated a closed economy system which endogenises the household sector. This was achieved by establishing:

a. A revised direct requirements coefficient matrix (the \( B \) matrix) by extending the \( A \) matrix to include compensation of employees and final consumption expenditure as a new ‘industry’

b. Developing a new 112 x 112 identify matrix (I)

c. Developing the revised total requirements coefficients (using the \( (I - B)^{-1} \) Leontief convention), which provided the new \( B^* \) matrix which provides a revised vector for the total multiplier

d. The consumption induced vector of multipliers, which is the difference between the total multipliers and the simple multipliers

11. To generate the income multipliers the matrices developed for the output multiplier were used. A further vector of coefficients was defined for the ‘compensation of employees’ row of the \( A \) matrix. In order to generate multipliers we calculated:

a. The initial effect, the compensation of employee’s vector, as the \( h \) vector

b. The first round as the product of the \( h \) and \( A \) matrices

c. The simple multiplier as the product of the \( h \) and \( A^* \) matrices

d. The total multiplier as the product of the \( h \) and \( B^* \) matrices

e. The remaining multipliers (industrial support, product induced and consumption induced) are derived using the same relationship outlined for the output multipliers

12. To generate the value added, or ‘Value Added at Factor Cost’, multipliers the matrices developed for the output multiplier were also used. A new vector of coefficients was defined as the sum of the ‘compensation of employees’ and the ‘gross operating surplus and mixed income’ rows of the \( A \) matrix. In order to generate multipliers we calculated:

a. The initial effect, the valued added at factor cost vector, is \( VA \)

b. The first round is the product of the \( VA \) and \( A \) matrices

c. The simple multiplier as the product of the \( VA \) and \( A^* \) matrices

d. The total multiplier as the product of the \( VA \) and \( B^* \) matrices
e. The remaining multipliers (industrial support, product induced and consumption induced) are derived using the same relationship outlined for the output multipliers.

13. All data was based upon the indirect allocation of imports data in the 2007-08 Australian I-O Tables.

Limitations

14. A criticism of the I-O assessment is that it does not effectively deal with behavioural aspects of economic systems.

15. Some of the key assumptions underpinning I-O analysis include constant prices, fixed technology, fixed import shares and relatively unlimited supplies of all resources, including labour and capital.

16. The Australian Bureau of Statistics cautions against using I-O multipliers generally speaking, as they can be misinterpreted when applied incorrectly. In this case we believe that the size of the impact is unlikely to generate misinterpretation given the small scale of the rotation.

17. That is, based on our understanding of the presence, the scale of the initial presence is unlikely to displace resources within the NT economy, will not be sufficient to affect prices within the regional or NT economies, is unlikely to affect import shares and will be in sectors that have relatively spare capacity. On this basis, for the short term assessment I-O analysis is sufficient.

Regional Multipliers

18. Noetic have not generated unique regional multipliers. We have relied upon extant multipliers derived by the NT Department of Business and Economic Development.

19. The NT multipliers are based on 2006-07 I-O Tables of the NT Economy developed for and maintained by the DBE.

20. The first region identified is NT, which is the whole Territory.

21. The second sector we have sought is the Top End. We understand this area matches to the three areas we are looking at around Robertson Barracks.

22. The DBE has provided simple and total output multipliers for sectors we are assessing in the short term. This was the nature of our request.

23. We acknowledge the assistance of the NT DBE officers in providing this valuable contextual information and explaining the derivation of these multipliers.

24. In relation to regional multipliers an additional caveat is that the underlying data are based on surveys and statistics that have a high relative standard error. This means that relying on a single point estimate does not provide a picture of the potential range of results. Indeed, as the multipliers become more regionalised issues like importation and industry structure become more complicated.

25. The only manipulation we have undertaken is to calculate the consumption induced multipliers as the difference between the total and simple multipliers.

Statistical properties

26. Several of the inputs to the estimation of our direct effect require judgments based on a range of data. Typically we will not have the full range of data, so will not have statistical properties such as mean,
median, mode, variance or standard deviations that would assist characterise the full data picture. Where it is possible to use statistical techniques we have used them.

27. Where the data is limited we utilise basic statistical concepts such as the minimum, maximum and mid points and the range to derive mid points or proportions in the range to estimate useable data points.

28. We note that for some secondary data there are statistical errors which affect the quality of the results. This is an acute issue for smaller jurisdictions. Where this is an issue we have noted it in footnotes.

**Location quotients**

29. The presentation of employment intensity is based upon location quotients (LQ).

30. The calculation of LQs requires calculating the percent of employment in a particular industry in a location, which is then divided by the percentage of employment in the same industry compared to a larger location.

31. In the assessment figure 3 compares the LQ for each industry of the region (Darwin plus Litchfield plus Palmerston) to the NT and the Australian economies.

32. An LQ which exceeds one implies that the employment intensity is higher within the region than the comparison area (for example, higher in the region than in the NT or in Australia.
ANNEX C - KEY ASSUMPTIONS

1. To understand what is driving values in our assessment the following assumptions should be considered in conjunction with the results.

Company Structure
2. To obtain a meaningful distribution of the ‘up to 250 personnel’ for the expected presence, Noetic have used proportions from a Table of Organisation and Equipment for a typical Rifle Company structure. That is, the components of the 200-250 are estimated by:
   a. Balancing the 185 units that can be counted in a ‘typical’ Rifle Company based on the component of the Company and typical ranks
   b. Calculating the proportion of each of these elements in a Rifle Company
   c. Applying the proportions to 200 for 2012 and 250 for 2013, and rounding up or down to the nearest whole person

3. We understand this will not be perfect, however it allows for better assumptions in relation to pay and conditions. For example, assuming less than 250 in 2013 would lower the overall direct economic activity, conversely assuming highly aggregated structures would under or over estimate the valuations.

4. The effect of rebalancing the Rifle Company by using this method is demonstrated in Table C1. This shows minimal growth in the senior rank levels, and higher growth in the enlisted ranks.

Table C1: Effect of distribution method on company structure

<table>
<thead>
<tr>
<th>RANK</th>
<th>TECHNICAL</th>
<th>2012 DISTRIBUTED</th>
<th>2013 DISTRIBUTED</th>
<th>2012 DIFFERENCE</th>
<th>2013 DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>E8</td>
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<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
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<td>3</td>
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<td>1</td>
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<td>E6</td>
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<td>0</td>
<td>1</td>
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<td>23</td>
<td>25</td>
<td>31</td>
<td>2</td>
<td>8</td>
</tr>
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<td>E4</td>
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<td>59</td>
<td>5</td>
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<td>E2</td>
<td>37</td>
<td>40</td>
<td>50</td>
<td>3</td>
<td>13</td>
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<td>E1</td>
<td>27</td>
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<td>0</td>
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<tr>
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</tr>
<tr>
<td>O1</td>
<td>3</td>
<td>3</td>
<td>4</td>
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<td>1</td>
</tr>
<tr>
<td>Count</td>
<td>185</td>
<td>200</td>
<td>250</td>
<td>15</td>
<td>65</td>
</tr>
</tbody>
</table>
5. We note that there is a Company already in place, which may not be precisely replicated in 2013. Without the precise knowledge of who is likely to come, the assumed method allows for direct comparability across two years, and is scalable to allow calculations of a MAGTF.

Incomes

6. For posting outside of continental USA there is a per diem paid for the purposes of covering living expenses. This is not the same as the US Department of Defense travel per diems which are based on a range of metrics depending on the timing and the location. We are advised that for the rotation the per diem will be US$11.50 per day.

7. The incomes used for each rank are the mean of the array of potential pay points across an experience scale from less than 2yrs to 20 years. For 2013 we have assumed a 1.6% increase in US$ pay for all ranks, based upon a notation that this was the raise received in 2012.

8. The Basic Allowance for Subsistence is paid in fixed amounts at the rate of US$239.96 per month for Officer ranks, and US$348.44 per month for Enlisted ranks.

Spending

9. Estimates of expenditure on Liberty are dependent upon results from a Central Queensland University (CQU) study undertaken between 2002 and 2004. The data used by us is in relation to the types of expenditures that Marines made according to survey results. We use the total expenditure figures demonstrated in the CQU report; deduct those that we see as unrealistic for the rotational Marine presence (Accommodation, Rail transport, Postage and Air transport). Once those are deducted a new total is formed, and the relative proportions of the remaining expenditures are calculated. These are applied to the income measurement to determine where the remaining incomes are likely to be spent while on Liberty.

Generic Assumptions

10. All initial dollar values are nominal in the model, with price adjustments made to bring values to 2012 levels where possible. Where the data are combined to form a total impact across the two years, the second year is discounted at 7 per cent to create a present value for the future effect.

11. We have assumed 183 days of posting, which is six months rounded up to the nearest full day.

12. To achieve Australian Dollar ($) values it is necessary to assume a rate of exchange with the United States Dollars (US$). The Reserve Bank of Australia and the Australian Treasury have used a technical assumption of $1 = US$1.03 in the Statement of Monetary Policy and the 2012-13 Budget respectively. Noetic have adopted this rate.

13. Between the 2006 and 2011 Census ABS statistical geography changed. This appears to affect mostly the former statistical local area (SLA) of Darwin. In the newer statistical area presentation Darwin is broken onto two SA3 levels, Darwin City and Darwin Suburbs. To create comparability and update Census results these two areas of Darwin are combined, and compared to the 2006 SLA. There may be minor issues of comparability for the other regions, however that is beyond our scope to assess.

14. We have assumed as part of our assessment is that the training exercises will remain relatively constant. The effect of this assumption is that no additional large scale exercises are anticipated as a consequence of the rotational presence.
15. Where Australian wages, salaries or price levels are utilised we are assuming a non-inflationary growth rate. This assumption means price growth is assumed at 2.5 per cent as the midpoint of the consumer inflation target for the Reserve Bank.

16. For the rule of thumb calculation on employment support, we have drawn upon the ‘Employment by Industry’ table in the 2007-08 Australian Input-Output tables. The employment coefficient for all industries, being total Australian production divided by FTE employment was 4.03. This suggests that for each million dollars of production 4 FTE positions are supported.

17. For US military wage and salary data the assumption is for 1.6 per cent growth to 2013. This is based on the growth received in 2012.

18. We have tried to balance the total direct expenditure that would be made with an I-O category to ensure the direct effects can be allocated to an indirect multiplier category. Where this has not been successful the residual expenditure has been forced to the ‘other services’ category.

19. To understand how we have allocated our assessment sectors, Table C2 provides a limited concordance between the area of assessment, the Australian I-O Table sectors and the NT regional multiplier sectors.
Table C2: Concordance of assessment areas to industry sectors

<table>
<thead>
<tr>
<th>ASSESSMENT AREA</th>
<th>I-O INDUSTRY</th>
<th>REGIONAL INDUSTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Entertainment</td>
<td>Personal Services</td>
<td>Personal services</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Food and Beverage</td>
<td>Accommodation, cafes and restaurants</td>
</tr>
<tr>
<td>Books, newspapers, magazines and other printed material</td>
<td>Printing</td>
<td>Publishing; recorded media and publishing</td>
</tr>
<tr>
<td>Cakes, biscuits, puddings and related products</td>
<td>Food and Beverage</td>
<td>Accommodation, cafes and restaurants</td>
</tr>
<tr>
<td>Cash gifts, donations to churches, synagogues and related</td>
<td>Other</td>
<td>Personal services</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Confectionery</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Dry Cleaning and Laundering</td>
<td>Personal Services</td>
<td>Personal services</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>Food and Beverage</td>
<td>Accommodation, cafes and restaurants</td>
</tr>
<tr>
<td>Fragrances</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Fruit and vegetable juice</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Gambling</td>
<td>Gambling</td>
<td>Sport, gambling and recreational services</td>
</tr>
<tr>
<td>General activities and entertainment</td>
<td>Personal Services</td>
<td>Personal services</td>
</tr>
<tr>
<td>Hair care products</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Hair services (male)</td>
<td>Personal Services</td>
<td>Personal services</td>
</tr>
<tr>
<td>On base</td>
<td>Defence</td>
<td>Defence</td>
</tr>
<tr>
<td>Oral hygiene products</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Postal charges</td>
<td>Postal</td>
<td>Communication services</td>
</tr>
<tr>
<td>Shopping</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Soap</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Stationery equipment</td>
<td>Printing</td>
<td>Publishing; recorded media and publishing</td>
</tr>
<tr>
<td>Talcum powders and deodorants</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Toiletries and cosmetics not elsewhere classified</td>
<td>Retail Trade</td>
<td>Retail trade and retail repairs</td>
</tr>
<tr>
<td>Transport</td>
<td>Road Transport</td>
<td>Road transport</td>
</tr>
</tbody>
</table>
## ANNEX D - REPRESENTATIVE MAGTF EQUIPMENT

<table>
<thead>
<tr>
<th>Short Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV-8B Harrier II</td>
<td>A vertical takeoff and landing capable jet designed to attack surface targets under day and night conditions.</td>
</tr>
<tr>
<td>AH-1W Super Cobra</td>
<td>An attack helicopter designed to provide fire support, armed escort, air defence and reconnaissance support for land and sea based operations.</td>
</tr>
<tr>
<td>UH-1N Huey</td>
<td>A utility helicopter designed for airborne command and control, combat assault, medical evacuation, maritime special operations, fire support and security.</td>
</tr>
<tr>
<td>CH-53E Super Stallion Helicopter</td>
<td>Designed to transport heavy equipment and supplies during ship to shore movements.</td>
</tr>
<tr>
<td>V-22 Osprey</td>
<td>Tilt rotor aircraft that combines the vertical flight capabilities of a helicopter with the speed and range of an airplane.</td>
</tr>
<tr>
<td>CH-46E Sea Knight</td>
<td>A medium lift assault helicopter designed to provide all weather, day and night transport of troops, supplies and equipment during amphibious and subsequent operations ashore.</td>
</tr>
<tr>
<td>KC-130 Hercules</td>
<td>A multi role, multi mission, tactical refuelling tanker and transport aircraft. Can provide aerial refuelling to tactical aircraft and helicopters.</td>
</tr>
<tr>
<td>M1A1 Main Battle Tank</td>
<td>Carries a 120mm main gun, an M2 .50 calibre machine gun, and two M240G 7.62mm machine guns.</td>
</tr>
<tr>
<td>M88A2 Hercules Recovery Vehicle</td>
<td>Recovery vehicle for main battle tanks.</td>
</tr>
<tr>
<td>M998 High Mobility Multipurpose Wheeled Vehicle</td>
<td>Provides a variety of wheeled vehicle platforms.</td>
</tr>
<tr>
<td>M23 7-ton truck</td>
<td>A medium tactical transport vehicle.</td>
</tr>
<tr>
<td>MK48 Logistics Vehicle System</td>
<td>A front power unit with interchangeable rear body transport units.</td>
</tr>
<tr>
<td>Extended Boom Forklift</td>
<td>The EBF has a 10,000 pound maximum lift capacity.</td>
</tr>
<tr>
<td>Tractor, Rubber tired, Articulated steering, Multipurpose 644E vehicle</td>
<td>A hydraulic, rough terrain forklift and loader</td>
</tr>
<tr>
<td>Expeditionary Fighting Vehicle</td>
<td>High speed combat vehicle to carry Marines from amphibious ships offshore to the beach and, once ashore, operate as an armoured personnel carrier.</td>
</tr>
<tr>
<td>Beretta M9 Pistol</td>
<td>A light weight, semiautomatic pistol.</td>
</tr>
<tr>
<td>M1911A1 pistol</td>
<td>The .45 is used by some Special Operations and Reconnaissance Marines.</td>
</tr>
<tr>
<td>12 gauge shotgun</td>
<td>A manually operated (pump), repeating shotgun, with a seven round tubular magazine, a modified choke barrel, ghost ring sights, and equipped with a bayonet attachment.</td>
</tr>
<tr>
<td>Joint Service Combat Shotgun</td>
<td>A compact, lightweight, semiautomatic, 12 gauge weapon.</td>
</tr>
<tr>
<td>Short Title</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>M16A2/M16A4 Service Rifle</td>
<td>The M16A2 and its improved version, the A4, are lightweight, air cooled,</td>
</tr>
<tr>
<td></td>
<td>gas operated, magazine fed, shoulder fired weapons designed for either</td>
</tr>
<tr>
<td></td>
<td>semi automatic or three round burst fire</td>
</tr>
<tr>
<td>M4 Carbine Rifle</td>
<td>A shorter and lighter version of the M16 Service Rifle featuring a</td>
</tr>
<tr>
<td></td>
<td>collapsible butt stock and shorter muzzle length</td>
</tr>
<tr>
<td>M203 Grenade Launcher</td>
<td>The M203 is a lightweight, compact, breech loading, pump action, single</td>
</tr>
<tr>
<td></td>
<td>shot launcher which attaches to the underside of an M16A2, M16A4, or M4</td>
</tr>
<tr>
<td>Rifle</td>
<td>rifle</td>
</tr>
<tr>
<td>Squad Advanced Marksmanship Rifle</td>
<td>Rifle with an attached bipod and scope.</td>
</tr>
<tr>
<td>MK-11 Sniper Rifle</td>
<td>A semi automatic sniper rifle including a sound and flash suppressor to</td>
</tr>
<tr>
<td></td>
<td>aid in concealment</td>
</tr>
<tr>
<td>M40A3 Sniper Rifle</td>
<td>A heavy barrel, bolt action, magazine fed rifle</td>
</tr>
<tr>
<td>M107 Special ApplicationScoped Rifle</td>
<td>A semiautomatic, long-range rifle that can be used for anti personnel,</td>
</tr>
<tr>
<td></td>
<td>antimateriel, or anti armour roles</td>
</tr>
<tr>
<td>M249 Squad Automatic Weapon (SAW)</td>
<td>An individually portable, gas operated, magazine or disintegrating</td>
</tr>
<tr>
<td></td>
<td>metallic link belt fed, light machine gun with fixed headspace and quick</td>
</tr>
<tr>
<td></td>
<td>change barrel feature</td>
</tr>
<tr>
<td>M240G Medium Machine Gun</td>
<td>A coaxial/pintle mounted machine gun for tanks and light armoured</td>
</tr>
<tr>
<td></td>
<td>vehicles</td>
</tr>
<tr>
<td>Browning M2 .50 Calibre Machine Gun, Heavy</td>
<td>An automatic, recoil operated air-cooled machine gun with adjustable</td>
</tr>
<tr>
<td></td>
<td>barrel</td>
</tr>
<tr>
<td>MK19 machine gun, MOD 3</td>
<td>An air cooled, disintegrating metallic link belt fed, blowback operated,</td>
</tr>
<tr>
<td></td>
<td>fully automatic weapon</td>
</tr>
<tr>
<td>Expeditionary Fire Support System</td>
<td>Rifled towed 120mm mortar plus prime mover based on the Internally</td>
</tr>
<tr>
<td></td>
<td>Transportable Vehicle (ITV).</td>
</tr>
<tr>
<td>M224 Lightweight Mortar</td>
<td>A smooth bore, muzzle loading, high angle of fire weapon.</td>
</tr>
<tr>
<td>M252 Medium Extended Range Mortar</td>
<td>A crew served, medium weight mortar</td>
</tr>
<tr>
<td>M777 Lightweight Howitzer, Towed</td>
<td>Provides field artillery fire support for all Marine Air Ground Task Forces.</td>
</tr>
<tr>
<td>M136 AT4</td>
<td>A shoulder launched, anti armour weapon designed to defeat modern</td>
</tr>
<tr>
<td></td>
<td>main battle tanks</td>
</tr>
<tr>
<td>Shoulder-Launched, Multipurpose Assault Weapon</td>
<td>A man portable weapon system designed to destroy bunkers and other</td>
</tr>
<tr>
<td></td>
<td>fortifications during assault operations and to destroy main battle tanks</td>
</tr>
<tr>
<td></td>
<td>with the High Explosive Anti Armour rocket.</td>
</tr>
<tr>
<td>Stinger</td>
<td>The Stinger is a man portable, shoulder fired guided missile system which</td>
</tr>
<tr>
<td></td>
<td>enables the Marine to effectively engage low altitude jet, propeller</td>
</tr>
<tr>
<td></td>
<td>driven and helicopter aircraft.</td>
</tr>
<tr>
<td>M98A1 Javelin Surface Attack Guided Missile</td>
<td>A fire and forget, man portable, anti tank missile system.</td>
</tr>
<tr>
<td>System</td>
<td>A wire guided missile system designed primarily to attack and defeat</td>
</tr>
<tr>
<td></td>
<td>tanks and armoured vehicles</td>
</tr>
</tbody>
</table>
ANNEX E - ISSUES PAPER

ECONOMIC ASSESSMENT OF THE JOINT FORCE POSTURE INITIATIVE ON THE NORTHERN TERRITORY

An issues paper for public consultation

Noetic Solutions Pty Limited
ABN 87 098 132 024

May 2012
Distribution

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<tr>
<th>Copies</th>
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<td>Major General Michael Krause</td>
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<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
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</thead>
<tbody>
<tr>
<td>Principal</td>
<td>Noetic Solutions Pty Limited</td>
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Revision Log

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<th>Revision description</th>
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<td>F1</td>
<td>Draft impact assessment and impact matrix for approval</td>
</tr>
<tr>
<td>17 May 2012</td>
<td>F2</td>
<td>Final assessment and matrix</td>
</tr>
<tr>
<td>18 June 2012</td>
<td>F3</td>
<td>Final assessment and matrix</td>
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</table>

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INTRODUCTION

Background
1. In November 2011 the Prime Minister of Australia and the President of the Untied States of America announced enhanced Australia-United States (US) defence cooperation. The joint Australian-US force posture initiative will see small rotational US Marine Corps presence in Northern Australia, particularly the Northern Territory (NT). In April 2012 the first company of the US Marine Corps arrived in Darwin.
2. The Australian Department of Defence (Defence) has constituted an Implementation Team to progress action on the initiative.
3. Noetic Solutions Pty Ltd (Noetic) has been commissioned by the Defence Implementation Team to undertake an independent, impartial assessment of the potential social and economic impacts of the presence of US Defense personnel in the NT (the presence).

Aim
4. The aim of this report is to identify the issues that will inform the analysis and presentation of potential economic impacts of the presence. The report also provides a preliminary assessment matrix to gather stakeholder views on the direction of the assessment.
5. The terms of reference are that the economic assessment will include a discussion of the potential impacts for:
   a. The NT economy
   b. Private industry (e.g. Defence industry suppliers, the resource industry etc)
   c. Taxation and other revenue sources of the local, Territory and federal governments
   d. Defence, including potential costs associated with infrastructure requirements (such as needing to establish new facilities to cope with increased demand for housing, utilities or storage at Defence facilities)
   e. Other Australian Government (including Defence programs)
6. The economic assessment will also consider the social assessment terms of reference seeking an “assessment of the impacts the activities may have on the local labour market in terms of employment and skill opportunities in the medium to longer term”.

Scope
7. The scope of this assessment is limited to:
   a. the agreed level of commitment between the Australian and United States Governments
   b. the time frames and data sources available to the review
8. Noetic understand that a firm commitment has been made by the Australian and US Governments to the first two years of the joint posture initiative (2012 and 2013). Our study will be focussed on this initial presence only. Our assessment will not speculate on the potential economic value of what is not currently committed. Our research will be guided by the potential for expansion of the presence to a rotational force
equivalent to a full Marine Air Ground Task Force (MAGTF) of up to 2500 personnel, in line with public announcements on possible future arrangements. This research will consider and identify, but not assess, potential longer term economic effects.

9. Our time frame for the review is defined by our agreement with the Implementation Team. The data we have access to for the technical calculations is entirely secondary.

10. This report therefore presents the issues Noetic believe are relevant in developing a targeted economic assessment of the initial force posture. A key dimension to this project is the collection and consideration of stakeholder feedback.

11. The report is divided into five sections.
   a. The first section discusses the initiative in general
   b. The second section provides a context for the assessment by outlining some key metrics on the NT economy
   c. The third section outlines the approach to economic assessment and the method to be used in our assessment
   d. The fourth section outlines the changes expected from the presence in the NT economy. This is complemented by a preliminary assessment matrix at Annex A
   e. The fifth section provides some discussion about impacts on Government

12. As one key objective of this paper is to elicit stakeholder feedback the paper poses a range of questions throughout the report.

UNDERSTANDING THE INITIATIVE

13. In order to make the an economic assessment it is important first to define what is actually going to happen, the specifics of the proposed initiative as understood by Noetic.

14. For the years 2012 and 2013 one company of US Marines will be rotated through the Robertson Barracks in the Litchfield Shire of the NT. A company in the US Marine Corps consists of up to 250 personnel. The Marines will live entirely at Robertson Barracks during the rotation, in existing accommodation facilities. The Marines will not be accompanied.

15. There will be no supporting heavy equipment, vehicles or aircraft associated with the initial presence.

16. The rotation will be for a period of six months, typically aligned to the NT dry season.

17. The type of company to be deployed in the rotation initially will be a Rifle Company. A Rifle Company consists largely of infantry personnel.

18. The first company arrived in Darwin on 3 April 2013 and will be rotated out in mid-late September 2013. It is expected the second company will arrive in Australia in March-April 2013. This 2013 rotation would be similar in nature to the 2012 rotation.

19. Over a six month period, the Marines are expected to undertake bilateral training in Australia with the Australian Defence Force, participate in exercises, undertake unilateral training in Australia1 and engage

---

1 Unilateral training is not an unusual activity within defined Defence assets and all foreign forces in Australia must comply with Australian rules and regulations.
with countries in the region. The type of training activity is likely to be platoon level manoeuvre and live fire training.

20. Noetic understand that the Marines will spend the bulk of their time in NT training areas and ranges, in particular the Mount Bundy and Kangaroo Flats Training areas.


22. The SOFA grants Australia and the US concurrent jurisdiction over US military personnel, subject to some conditions. The SOFA has provided the legal arrangements for the deployment of US visiting forces since enactment, and will apply to the US Marine Corps personnel in northern Australia.

23. The press release announcing the initiative outlines an intent “...in coming years is to establish a rotational presence of up to a 2,500 person Marine Air Ground Task Force (MAGTF).” The way in which this may or may not progress is subject to ongoing negotiation and is beyond the scope of this assessment.

24. In the event the intent of the two Government’s is met, it is useful to understand that a MAGTF has a specific structure, which includes four components:
   a. A Command Element
   b. A Ground Combat Element (like a Rifle Company)
   c. An Aviation Combat Element
   d. A Logistics Combat Element (comprised of engineers, maintenance, medical and specialised personnel)

25. Noetic understand that in addition to personnel a MAGTF would include some support equipment. This would include for example “wheeled vehicles, artillery pieces, light armoured vehicles and aircraft”.

26. In the event a MAGTF is agreed, the implementation would not be immediate, and is likely to be phased in over a longer time frame. Noetic understand that MAGTF rotations would not occur before 2016-17.

27. No further details are relevant in relation to the potential MAGTF rotational posture until the precise nature of cooperation is announced by Government.

28. In effect the characteristics of the initiative are a short term addition of a small number of persons to an existing Barracks who will perform a particular task operating under a system of rules and procedures.

THE NORTHERN TERRITORY ECONOMY

29. Some understanding of the broad NT economy is necessary to understand the potential economic effect of the presence. Generally, the NT has a small economy, relative to the Australian economy, which is

---

diversified across agriculture, mining, mineral exploration, tourism, Defence and as a port for trade into Asia.

30. In the first instance the presence will be located at the Robertson Barracks. This defines the statistical geography for our assessment. The regions in scope are Darwin, Litchfield and Palmerston East-Arm Statistical subdivisions. Australia and NT wide effects are also in-scope; however these specific regions will be most directly impacted.

**Question: Is there sufficient differentiation for the Robertson Barracks to be considered a micro economy within the statistical subdivisions? If so, what localised data can be generated to characterise that economy, particularly in relation to economic activity and population?**

**People**

31. In order to provide a demographic context for the potentially affected regions we have combined recent population and labour force data with 2006 Census regional data. These are separated into a population category and ‘employment, income and training’ category. For comparisons we have built the same data for the NT and Australia.

32. Table 1 provides the demographic picture.

33. The population data suggests that the region has grown faster than the NT over the most recent five year period, but not as fast as Australia as a whole. Litchfield has grown faster than the national average. The region exceeds 50 per cent of the entire NT population, and is less than one per cent of the national population. Darwin and Litchfield have similar median ages to the national median, whereas Palmerston is much younger. The median age for Palmerston is closest to the median age of the US Marine Corps.

34. Aboriginal and Torres Strait Islanders make up significantly more of the regional population than is the case for Australia, but are substantially lower when compared to the NT population.

35. The region has much higher proportions of fulltime employment than the nation and Territory, with a relatively lower labour force. Labour force disengagement measured by being ‘not in the labour force’ is lower across the region than either in Australia or the NT.

36. Individual, household and family incomes in the region all comfortably exceed the levels reported for the NT and Australia.

37. The level of education varies by region. At the regional level there are relatively more persons trained to all undergraduate levels compared to the NT. All post graduate study and all but certificate level training proportions at the national level are lower in the region compared to the NT and national proportions.
Table 1: Comparative demographic profile of the region

<table>
<thead>
<tr>
<th>Population</th>
<th>Region</th>
<th>State</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Darwin</td>
<td>Palmerston</td>
<td>Litchfield</td>
</tr>
<tr>
<td>Change 2006 to 2011</td>
<td>Total</td>
<td>%</td>
<td>2.3</td>
</tr>
<tr>
<td>Census total persons - 2006</td>
<td>#</td>
<td>75,546</td>
<td>24,326</td>
</tr>
<tr>
<td>Median age of persons</td>
<td>Years</td>
<td>35</td>
<td>29</td>
</tr>
<tr>
<td>Persons aged 15 years and over</td>
<td>% of census</td>
<td>78.7</td>
<td>70.8</td>
</tr>
<tr>
<td>Aboriginal and Torres Strait Islander</td>
<td>% of census</td>
<td>9.1</td>
<td>13.0</td>
</tr>
</tbody>
</table>

Employment, income and training

<table>
<thead>
<tr>
<th>Region</th>
<th>State</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darwin</td>
<td>Palmerston</td>
<td>Litchfield</td>
</tr>
<tr>
<td>Employed, worked full-time</td>
<td>% of census</td>
<td>34.8</td>
</tr>
<tr>
<td>Employed, worked part-time</td>
<td>% of census</td>
<td>10.4</td>
</tr>
<tr>
<td>Unemployed, looking for work</td>
<td>% of census</td>
<td>1.8</td>
</tr>
<tr>
<td>Total labour force</td>
<td>% of census</td>
<td>18.5</td>
</tr>
<tr>
<td>Median individual income</td>
<td>$/week</td>
<td>668</td>
</tr>
<tr>
<td>Median family income</td>
<td>$/week</td>
<td>1,524</td>
</tr>
<tr>
<td>Median household income</td>
<td>$/week</td>
<td>1,257</td>
</tr>
<tr>
<td>Average household size</td>
<td>Persons</td>
<td>2.5</td>
</tr>
<tr>
<td>Postgraduate Degree</td>
<td>% of census</td>
<td>2.4</td>
</tr>
<tr>
<td>Grad Diploma and GradCertificate</td>
<td>% of census</td>
<td>1.6</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>% of census</td>
<td>9.7</td>
</tr>
<tr>
<td>Advanced Diploma and Diploma</td>
<td>% of census</td>
<td>5.7</td>
</tr>
<tr>
<td>Certificate Level</td>
<td>% of census</td>
<td>13.9</td>
</tr>
</tbody>
</table>

38. We note that as at March 2011 the labour force within the three regions of interest was 77,125 persons, of whom 1,502 are unemployed. In the same period this unemployment rate of 1.95 per cent compares to a rate of 3.4 per cent across the Northern Territory.  

Industry

39. There are two layers of context we have reviewed to identify the important sectors in the region. The first is the relative industry factor income for the NT, and the relative importance of industries within the region based upon employment data.

40. Total Factor income in the NT represents around 1.3 per cent of the total national factor income. As at June 2011 it measured around $16 billion. In Figure 1 the proportion of each sectors contribution to total factor income is compared for Australia and the NT. Unsurprisingly the dominant sectors are mining and construction. All sectors where the relative share in the NT exceeds the relative share of Australia include:

a. Agriculture, forestry & fishing
b. Mining
c. Construction
d. Rental, hiring & real estate services
e. Public administration & safety
f. Arts & recreation services

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4 Noetic note that first run 2011 Census data will be available from June 2011. Some of that data might be able to be incorporated depending on progress of our final impact assessment.
5 ABS 1362, Regional Statistics, Northern Territory, March 2011.
6 Factor income is the sum of payments to employees and the returns to businesses. It is a short hand representation of income in the economy.
Question: Is there available and reliable data on the total factor income, or its components, held for any of Darwin, Litchfield or Palmerston, beyond what is publicly available through the ABS?

Figure 1: Total factor income in the NT and Australia economy (June 2011, Current Prices)

41. To estimate the important industries from an employment perspective we have constructed location quotients for each region and compared those to the quotients for Australia at large, and the NT. The interpretation of a location quotient is that if the value is greater than one, that industry is more important to the region than the comparison area. Figure 2 illustrates the location quotients for the region against the NT and Australia.

42. Compared to the NT, the region has strong representation in:

a. Wholesale trade
b. Transport, postal & warehousing
c. Information media & telecommunications
d. Financial & insurance services
e. Rental, hiring & real estate services
f. Professional, scientific & technical services
g. Administrative & support services
h. Arts & recreation services
43. Compared to Australia, the Region has a stronger representation in:
   a. Mining
   b. Public administration & safety
   c. Education & training
   d. Arts & recreation services

44. These details assist in determining the likely areas of impact from the presence.

**Figure 2: Relative employment intensity within the region (2006)**

Source: Noetic calculations from Basic Community Profiles in ABS Census 2006

**Question:** The location quotient calculations are based off 2006 Census data? Is it likely these still hold?

**Question:** For the industries identified as being important within the region, are there any particular bottlenecks to small, short term, or large, long term changes to demand? Are any of these industries face constraints to growth (labour cost, availability, capital costs, substitutes etc)?

**Defence in the NT**

45. Defence is a substantial contributor to the NT economy. The NT hosts Royal Australian Air Force (RAAF) Base Darwin, Larrakeyah Defence Precinct, Defence Establish Berrimah, Robertson Barracks and RAAF Base Tindal. In addition there are large Defence training facilities in the Bradshaw Field Training Area,
Mount Bundy Training Area, Delamere Range Facility and the Kangaroo Flats Training Area. The NT also hosts the Joint Defence Facility Pine Gap.

46. The economic contribution of just the base footprint was estimated at $805 million of economic value added in the NT economy, and the bases support up to 11,100 NT jobs.7

47. The NT is host to approximately 10 per cent of all Australian Defence Force (ADF) personnel, and 6 per cent of the total Australian Government Defence spend.8

48. Defence activities that are material to the assessment include the range of large scale exercises undertaken within the Territory. The NT Treasury identify in 2011-12 that there have been six major exercises9, and Defence report two others which occurred in 201010:

a. TALISMAN SABRE: an Australian/US biennial exercise to improve combat readiness
b. CASSOWARY: an Australian/Indonesian interoperability exercise focussed on naval warfare
c. ARNHEM THUNDER: an RAAF annual exercise to practice offensive counter-air operations
d. MATILDA: a combined tactical skills and inter-operability exercise with the Army and Singapore Armed Forces
e. GOLD EAGLE: a bilateral tactical skills and inter-operability exercise conducted between the Australian Army 1st Brigade and United States Marine Corps
f. PREDATORS WALK: dry and live firing manoeuvres for the 1st Brigade
g. PITCH BLACK: a biennial RAAF exercise at Tindal and RAAF Base Darwin which simulates offensive counter air and defensive counter air combat with several international air forces invited to attend, including the United States
h. KAKADU: RAN maritime warfare simulation off Darwin involving ships and aircraft from Thailand, Singapore, New Zealand and Japan aimed at interoperability in multilateral operations

49. There is a clear and strong baseline of Defence activity in the NT. A key assumption in our assessment is that the training exercises will remain relatively constant, and that the Marines will become involved in those activities. That is, the presence will not add additional major exercises.

Question: What assessments have been made of previous large scale exercises in the NT?

Question: Is it reasonable to assume that the same number and scale of exercise commitments will be maintained in the short term?

MAKING AN ECONOMIC ASSESSMENT

50. An economy is a complex system of transactions occurring between a range of participants such as consumers, producers, government and similar participants external to a particular location.

51. In order to have an impact on economic activity an initiative must create some type of change or disruption in the system of transactions that is different to what would otherwise occur. That is, it must be

77 KPMG econTECH 2010, p 8.
additional to, or subtract from, ‘business as usual’ where business as usual is the totality of all transactions. For an impact to be positive the change in activity must be a positive change in some measure like income, output or population that exceeds any costs of the activity, and must be genuinely different to the existing system of transactions.

52. In a pure sense assessing the economic impact of any particular initiative is reasonably complex, given the number and nature of participants and transaction occurring within the system. This complexity deepens the further away from total economic activity one considers an impact because better quality information is typically available at a highly aggregated level.

53. In order to provide meaningful information to the Implementation Team, we have identified the broad characteristics of the impacts we expect to see and reviewed previous studies to assist select a simple, repeatable and effective approach to describing the impact of the initial presence.

What are the potential impact characteristics of the initiative?

54. There are two change headlines that should be expected:
   a. The direct effects of the presence of the Marines
   b. The indirect effects which flow from the direct effects in the wider economy

55. Direct effects are changes felt by those who are involved or engaged in the activity. The key metrics for the direct effect that are typically investigated include:
   a. Impacts in a region as result of changes to consumption or production
   b. Changes to employment and income
   c. Changes to population or the demographic profile

56. Indirect effects are those that are consequent upon the direct effects, and are typified by the impact of the use of the direct effects within the economy.

57. A second layer is where the changes will occur. These effects can occur:
   a. ‘Within the base’ where the effect will occur on the Robertson Barracks
   b. ‘Out of base’ where the effect will occur outside of Robertson Barracks, in the surrounding region or more widely within the Australian economy

58. For the presence, an important consideration is this timing of the changes. The two key time dimensions of the impact are:
   a. Short term effects, which in our assessment will relate to the company sized rotation presence
   b. Long term effects: which in our assessment relate to potential future states of the presence

59. To be clear the focus of our study is on assessing the economic effect of the initial presence, and in line with the Implementation Team’s request, we will identify but not assess potential long term effects. More detailed assessment of those effects would be appropriate when further details are agreed between the Australian and US Governments.

How will we make the economic assessment?

60. Our assessment proposes to estimate direct and indirect effects of the presence.
61. To estimate the direct effects we will continue to engage with the Defence Implementation Team, the representatives of the US Marine Corps in Australia and draw upon stakeholder feedback.

62. To assist with selecting a methodology for the indirect effects Noetic have reviewed several previous socio-economic and economic impact assessments, as they relate to similar types of events to the presence. For example, the presence has similar elements to tourism activity, fly-in fly-out labour forces and mining exploration. We have also scoped some international research on US presence in other markets to understand methodologies applied elsewhere.

63. Most studies use different methodologies to assess economic impacts. The range traverses primary survey collection through to input-output (I-O) multiplier and highly complex computable general equilibrium (CGE) models. Table 1 summarises some of the studies we have reviewed, including the title, the industry being assessed, the location, the type of analyst and the method employed.

64. Based on the availability of high quality I-O tables in Australia, our requirement to present straightforward and repeatable assessments and the scale of the region being assessed, to estimate the indirect effects we will employ I-O multiplier assessments.

Table 2: Prior studies assessed

<table>
<thead>
<tr>
<th>Study</th>
<th>Industry</th>
<th>Location</th>
<th>Type</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>McArthur River Mine Expansion Project</td>
<td>Mining</td>
<td>NT / Australia</td>
<td>Consultant</td>
<td>I-O multiplier with regional effects</td>
</tr>
<tr>
<td>Estimating the Economic Impacts of Festivals and Events: A Research Guide</td>
<td>Festivals and events</td>
<td>Snowy Mountains</td>
<td>NGO</td>
<td>Survey Modified Keynesian multiplier</td>
</tr>
<tr>
<td>The Economic Impact of Gambling on the Northern Territory</td>
<td>Gambling</td>
<td>NT</td>
<td>Consultant</td>
<td>Consumer and producer surplus</td>
</tr>
<tr>
<td>Economic Contribution of the Naval Bases in Sydney</td>
<td>Defence</td>
<td>Sydney/NSW</td>
<td>Consultant</td>
<td>Multi regional CGE</td>
</tr>
<tr>
<td>Socio-economic baseline and impact assessment Wonarrah Phosphate Project</td>
<td>Mineral exploration</td>
<td>NT</td>
<td>Consultant</td>
<td>Survey, risk assessment with Multipliers</td>
</tr>
<tr>
<td>King Island Scheelite Mine Economic impact assessment</td>
<td>Re-commissioning a mine site</td>
<td>Tasmania</td>
<td>Consultant</td>
<td>I-O multiplier</td>
</tr>
<tr>
<td>Economic Impact Study of ERAs operations in the Northern Territory</td>
<td>Mining</td>
<td>NT</td>
<td>Consultant</td>
<td>I-O Multiplier with regional effects</td>
</tr>
<tr>
<td>A socio-economic impact study of Defence force activity in central Queensland Australia</td>
<td>Defence</td>
<td>Central Queensland</td>
<td>Academic</td>
<td>Survey I-O Multiplier</td>
</tr>
</tbody>
</table>
About the Input-Output Method

65. The I-O method relies upon a system of statistics developed to explain the economy in terms of the supply and use of goods within and between industries, and the end product of economic activity in terms of expenditure and income. They are an integral part of the system of national accounting that determines a nation’s economic income.

66. I-O tables summarise a snapshot of the transactions which occur in an economy at a moment in time. They capture the transactions that link particular industries together.

67. I-O multipliers can be estimates from I-O tables and measure a range of technical direct and indirect effect output and employment metrics. They provide a short hand way of assessing the impact of some form of stimulus in an economy.

68. The basic assessment maths of an I-O method are that the total economic impact is:
   a. The direct effect, plus
   b. The indirect production effect (how businesses who receive cash from the direct effect spend that within the economy), plus
   c. The induced consumption effect (how wage and salary earners who receive income from employment from the direct effect spend the funds within the economy)

69. The results of an IO analysis should not be seen as anything more than an approximation, with an intention of showing the broad magnitude and direction of the consequences of a change in activity from what might otherwise have occurred absent whatever the IO analysis is investigating.

70. A criticism of the I-O assessment is that it does not effectively deal with behavioural aspects of economic systems. Some of the key assumptions underpinning I-O analysis include constant prices, fixed technology, fixed import shares and relatively unlimited supplies of all resources, including labour and capital. Based on our understanding of the presence, the scale of the initial presence is unlikely to displace resources within the NT economy, will not be sufficient to affect prices within the regional or NT economies, is unlikely to affect import shares and will be in sectors that have relatively spare capacity. On this basis, for the short term assessment, I-O analysis is sufficient.

71. In the longer term scenario more detailed modelling alternatives may be appropriate, and the way impacts are developed in this report should allow for utilisation of the assumptions in latter assessments.

72. In an ideal world we would apply regional I-O multipliers to reflect the specific regional characteristics of the multiplier effects. In reality the highest quality I-O table in Australia is published by the Australian Bureau of Statistics at the whole of Australia level. Other tables exist, and where possible Noetic will draw upon extant tables produced for the Northern Territory. We note the advice New South Wales Treasury provide on regional I-O multipliers, where they suggest “State I-O tables tend to have bigger sampling errors and much more aggregated industry structures than the ABS national tables.”

**Question:** Are NT multipliers significantly different to those at the Australian level? Are the NT multipliers significantly different to the regions under consideration? Why?

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11 NSW Treasury 2009.
Question: Given the sectors of the economy likely to be effected are not all trade exposed, and have similar characteristics to the rest of Australia, would Australian multipliers in those sectors be sufficient for the analysis?

WHAT WILL THE PRESENCE DO TO THE NT ECONOMY?

73. The presence will generate some additional activity at the Robertson Barracks and within the region identified. These activities will impact upon specific sectors of the economy, across a group of economic activity types.

74. To be clear this assessment considers only the marginal impact of the presence. It is not an assessment of the economic impact of the Robertson Barracks more broadly. This type of assessment was undertaken by KPMG in 2010, which estimated that Robertson Barracks supported some 5900 jobs and $428 million in economic value add.  

75. The way we present the assessment is to summarise the potential changes of the initiative and the likely sectors to be impacted. These are preliminary considerations, based upon desktop research.

76. We have developed a preliminary assessment matrix at Annex A. This is a slightly more detailed representation of the impact, the sector, whether it will be positive or negative, the location of the impact and whether we believe they can be quantified.

Summary of direct effects

77. The key parameters of the initial rotation are discussed at ‘Understanding the initiative’.

78. The direct effects will depend upon what the Marines do and do not do while on rotation. Also, it will be informed by the activities of the Australian Defence Force (ADF) personnel.

79. The summary demographic detail of Marines assists in understanding what the company might look like. As at December 2011, 62 per cent of Marines were under 25 years of age, 21 per cent were under the age of 21, 48.9 per cent are married and 93.15 per cent are male. The key observation is that the demographic profile of all Marines suggests that the company sized rotation will include largely young men with a generous proportion who have family commitments.

80. The incomes that are earned by any Marine depend upon their rank and years of experience. For example, anyone enlisted in the broad US Marine Corps receives a salary ranging from US$1491 per month to US$7311 per month. For Officers the range starts at US$3558.60 per month up to US$19,239.90 per month. These salaries apply across the Corps.

81. We understand that while on rotation the US Marines will:
   a. Be on active duty for a substantial proportion of time in each working day
   b. Be on ‘Liberty’, effectively free-time, during the non-active duty time. Note that while on rotation, Marines will have a controlled program of Liberty
   c. Bring all necessary military equipment and consumables. This does not extend to personal consumable items

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12 KPMG EconTECH 2010.
13 Marine Corps Community Services (MCCS) 2011, various pages.
82. While on active duty the Marines will train with Australian Defence Force members, train unilaterally and engage in exercises.

83. Similarly, we understand that while on rotation the US Marines will not:
   a. Be off-base without a 'Liberty Buddy'
   b. Be permitted to stay off-Barracks
   c. Initially require specific mechanised equipment

84. The ADF members at Robertson are expected to perform and be configured largely as if it is business as usual. There may be a shift in the routines to accommodate cooperative training opportunities, however it is not expected that additional members would be shifted into Robertson. There may be slight additional activity in general services like food preparation, however we are assuming this will fit inside existing capacity at Robertson, rather than being a net increase in activity.

85. The likely short term effects are proposed as:
   a. The purchase of basic lifestyle supplies and services (where available). This would be through on-Barracks supply stores and shops in the regional community
   b. The purchase of transport services to transition to and from the Barracks
   c. The purchase of hospitality and recreation services
   d. The purchase of transactional services
   e. The purchase of communications services

86. These direct effects will have consequences across a range of sectors based upon the multiplier effects.

87. There may be some additional maintenance services required within the Robertson Barracks. There will also be slightly additional meal supply.

88. The cooperation will enhance the productivity of the ADF and the Marines. The nature of the cooperation means that each force will become familiar with the other forces tactics, techniques and procedures. The productivity benefit would be strongest in deployed situations where the forces cooperate. There is also a learning benefit to the ADF in terms of highly specialised skills such as amphibious capacity, which is training the ADF may otherwise need to purchase. In the longer term this may transpire into additional training capacity for the wider NT Defence sector.

89. In the longer term scenario the volume of impacts identified would increase tenfold in terms of personnel.

   \textit{Question: Are there other likely impacts in the short term? Are the ones that are selected credible? If more are suggested, what are the linkages in terms of the assessment matrix?}

The sectoral effects

90. Based on previous studies, our understanding of the presence and a scan of the high level impacts, the sectors that will be most likely impacted upon in the short term include:
   a. Retail Trade
   b. Accommodation, Cafes and Restaurants
   c. Transport, Postal and Warehousing
The types of impact in these sectors will typically be an increase in turnover through additional consumption or better utilisation. As these are not typically trade exposed industries, and include a largely local focus in their production, much of the additional activity should be positive and be retained within the region.

There would undoubtedly be wider economic effects at the margin of other industries, given the interrelationships inherent in NT economy, such as the agricultural sector impact from additional restaurant consumption, however these wider effects will not be identified in this assessment.

**Question: Are there other sectors likely to be directly impacted upon for the initial rotations?**

In the longer term, if an expanded MAGTF sized rotational presence becomes a reality, a number of changes about the way the initiative is implemented suggest further sectors could be affected, including:

- Construction – additional infrastructure requirements
- Manufacturing - larger scale indirect effect
- Health care and social services – higher chance of emergency and specialist health need
- Mining – potential displacement of inputs or price effects in labour
- Agriculture Forestry and fishing - potential displacement of inputs or price effects in labour
- Electricity, gas, water and waste water services – significant additional consumption
- Rental, hiring and real estate services – potential legacy population effect
- Repairs and maintenance – support and maintenance of military equipment

The impact in the sectors spanning both the short and long term would also be much deeper in a longer term situation due to the additional population.

**Question: Are there other sectors likely to be impacted upon in the longer term, where some early signal about the impacts might assist with policy development?**

**THE EFFECT ON GOVERNMENT**

Within the system of economic transactions, government is a special ‘industry’. Typically income to government is a leakage from the economy, while expenditures of government are injections back into an economy. In an aggregate sense, economists like to believe that the net position of government on the economy is zero, where the leakages are matched by the injections. At a smaller scale however the impact of activities will occur differently, and change the distribution of the resource flows of government.

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Noetic note that in the system of national accounts, some of the values for Construction, Manufacturing and Repairs and Maintenance may be counted across the wholesale and retail trade categories, and potentially within the count of Defence activity in public administration. This list identifies the industries of most likely impact.
96. There are two layers of Government that are most likely to be affected: the Australian Government and the NT Government. Based on the structure of the initiative the local government level may be affected indirectly. The US Government will also be impacted, however that is beyond the scope of this assessment.

97. In the longer term, the Governments of Western Australia and Queensland, and the associated local governments may also be impacted upon if a MAGTF rotation involved Australian facilities beyond the Northern Territory, but remaining in the Northern geographic zone.

98. This section considers the issues for potential revenue and expense effects of the presence for the Australian and NT Government.

**Question:** How might the local layer of Government be affected by the presence? Will it affect revenues, and if so, which ones? Would there be a consequent effect on service provision, if so, which services?

**Australian Government**

99. The Australian Government is not likely to be greatly affected by the initial presence.

100. In terms of expenditure:
    a. Marines will not access any mainstream public services meaning there will be no immediate impact upon service delivery or availability
    b. There are no new infrastructure requirements to enable the rotations
    c. The Marine Corps will bring essential hardware consumables
    d. Cost recovery mechanisms are being negotiated for particular activities where there may be a cost impost on day-to-day operations at the Barracks (for example food, accommodation and on base facilities)

101. Looking specifically at Defence, it is understood that any net cost of the presence will be absorbed within the existing Defence budget. If this is sourced from a location outside of existing NT Defence expenditures, there would be a relative transfer from the losing jurisdiction to the NT jurisdiction; however the net impact on Defence would be zero.

102. In terms of revenue:
    a. Any additional revenue will be entirely dependent upon the direct and indirect economic impact of the presence. The expectation is that the revenue effects will be minor
    b. The heads of revenue which may experience minor increases would be those associated with direction transactions such as excise revenues, and the impact of direct and indirect activity that generates additional company and income tax receipts

103. A key issue for Defence would be whether the presence is utilising unmet capacity, or whether resources are being displaced to accommodate the presence.

104. Beyond revenue and expenses, there may be some additional activity in relation to the management of the international relationship. This will not be quantifiable.
105. Longer term, the effects of a potential MAGTF scale rotation might place pressure on a range of areas of Commonwealth responsibility, or at least generate a call for support from the NT Government. Without specific details of the MAGTF this cannot be estimated reliably, but is identified as an issue.

Question: Might other areas of the Australian government be affected, if so, which areas?

Northern Territory Government

106. The NT Government is not likely to be greatly affected by the initial presence.

107. In terms of expenditure:
   a. Marines will not access mainstream public services meaning there will be no immediate impact upon service delivery or availability
   b. There are no new infrastructure requirements to enable the rotations
   c. Cost recovery mechanisms are being negotiated for particular areas where there may be contact between Marines and the NT Government. For example emergency health care and specialist services would be supplied on a cost-recovery basis out of the Royal Darwin Hospital

108. In terms of revenue:
   a. Any additional revenue will be entirely dependent upon the direct and indirect economic impact of the presence. The expectation is that the revenue effects will be minor
   b. The heads of revenue which may experience minor increases would be GST transfers (if there is a pool effect), payroll tax from businesses paying additional wages, some additional revenue through taxes and fees on certain activities like recreational permits or gambling taxes and perhaps revenues from sales of goods and services. It is not anticipated that the level of stimulus provided from the presence would induce capital purchases which generate stamp duties or property transaction fees

109. Outside of the direct revenue and expense effects, there may be productivity and utilisation benefits for specific NT Government investments. For example, the NT Government is investing in a state-of-the-art Defence Support Hub near the Robertson Barracks. As systems and processes bed down, additional on-base activity should assist with capacity utilisation at such a facility. Similarly the Department of Business and Employment have published an extensive Defence Industry Strategy, and capability development induced by the presence should support future skills development within the region to support the Strategy.

110. Depending upon the rules of engagement, having additional capacity at Robertson Barracks could provide a strategic advantage in the event of further natural disasters.

111. Over the long term the profile of NT Government effects are likely to be different. If a rotational force of 2,500 personnel materialises this will not change the direct mainstream expenditure assumptions, but may induce additional need for infrastructure expenditures and will almost certainly have a material impact on revenue through growth in economic activity. These will not be assessed as part of this review; however the NT Government may wish to consider how a larger force would impact upon its demand for public resources.

112. In the longer term scenario there may also be capacity constraints or regulation issues that affect the NT Government in the form of road networks, waterway usage and airspace regulation. Again, these are hypothetical at this point in time, but warrant further discussion.
**Question:** Are other areas of the NT Government potentially affected by the presence, and if so, how?

**SUMMARY**

**Conclusion**

113. This issues paper identifies a range of matters that are being considered in determining the economic impact of the presence in the NT.

114. In the short run, the precise change to the NT economy will be an additional 200-250 US Marines being rotated through an existing Australian base for no more than six months at a time. In the longer run this may be increased to 2500 US Marine personnel, however the focus of our assessment is the initial presence.

115. Based on our preliminary research we expect that in the short term there will be a fairly small and positive impact on the base, the region and the NT economy. This will be driven by small additional consumption transactions.

116. We expect that in the short term there will be some reorganisation of government resources, which would be a net zero impact in terms of wider economic activity.

117. In the longer term, more research would be required about the way in which a MAGTF would be structured and implemented before a general assessment of impacts could be achieved. It is clear however, that a presence of 2500 would generate substantially more activity than a presence of up to 250 persons.

**What happens next?**

118. To progress the assessment Noetic seeks feedback from stakeholders with knowledge in defence industry and personnel, the Northern Territory economy (particularly the regional areas affected by the presence), economic assessment and any other perspective relevant to the scope of the assessment.

119. This paper forms the basis of direct consultation with stakeholders. This includes stakeholders we will engage in targeted discussions within the Northern Territory and those who we will target through email and telephone discussions.

120. We are seeking feedback from stakeholders on the questions raised in this paper. If there are views on aspects where a question is not raised, we would value that feedback as well.

121. The consultation period will open on 18 May and close for submissions on 29 May 2012. Further comments can be received beyond that date, but will not be incorporated into the feedback summary.

122. If you wish to comment on this issues paper, please direct your input to:

Noetic Solutions

Locked Bag 3001, DEAKIN WEST ACT 2600, Australia

Phone: +61 2 6234 7777
## ANNEX A

### Preliminary Assessment Matrix

<table>
<thead>
<tr>
<th>Activity</th>
<th>Sector</th>
<th>Type</th>
<th>Direction (+/-)</th>
<th>Direct/Indirect</th>
<th>Quantifiable</th>
<th>Location</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifestyle supplies and services</td>
<td>Retail trade</td>
<td>Consumption</td>
<td>+</td>
<td>Direct</td>
<td>✓</td>
<td>Base, Region</td>
<td>Short</td>
</tr>
<tr>
<td>Transport services</td>
<td>Transport, postal and warehousing</td>
<td>Consumption</td>
<td>+</td>
<td>Direct</td>
<td>✓</td>
<td>Region</td>
<td>Short</td>
</tr>
<tr>
<td>Hospitality and recreation</td>
<td>retail trade; Accommodation, cafes and restaurants; Arts and recreation services</td>
<td>Consumption</td>
<td>+</td>
<td>Direct</td>
<td>✓</td>
<td>Region</td>
<td>Short</td>
</tr>
<tr>
<td>Transactional services</td>
<td>Finance and Insurance Services</td>
<td>Consumption</td>
<td>+</td>
<td>Direct</td>
<td>✓</td>
<td>NT, Australia</td>
<td>Short</td>
</tr>
<tr>
<td>Communications services</td>
<td>Information, media and telecommunications</td>
<td>Consumption</td>
<td>+</td>
<td>Direct</td>
<td>✓</td>
<td>NT, Australia</td>
<td>Short</td>
</tr>
<tr>
<td>Productivity increase</td>
<td>Public administration and safety (Defence)</td>
<td>Productivity</td>
<td>+</td>
<td>Direct</td>
<td>✗</td>
<td>Australia</td>
<td>Short and Long</td>
</tr>
<tr>
<td>Activity</td>
<td>Sector</td>
<td>Type</td>
<td>Direction (+/-)</td>
<td>Direct/Indirect</td>
<td>Quantifiable</td>
<td>Location</td>
<td>Timing</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------</td>
<td>-------------------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>--------------</td>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Induced consumption</td>
<td>Various</td>
<td>Consumption</td>
<td>+</td>
<td>Indirect</td>
<td>✓</td>
<td>Base, Region, NT</td>
<td>Short</td>
</tr>
<tr>
<td>Production effect</td>
<td>Various</td>
<td>Production</td>
<td>+</td>
<td>Indirect</td>
<td>✓</td>
<td>Base, Region, NT</td>
<td>Short</td>
</tr>
<tr>
<td>Australian Government taxation</td>
<td>Public administration and safety</td>
<td>Income</td>
<td>+</td>
<td>Indirect</td>
<td>✓</td>
<td>Australia</td>
<td>Short</td>
</tr>
<tr>
<td>NT Government taxation</td>
<td>Public administration and safety</td>
<td>Income</td>
<td>+</td>
<td>Indirect</td>
<td>✓</td>
<td>NT</td>
<td>Short</td>
</tr>
</tbody>
</table>

**Legend**

**Activity**: description of the change which alters economic activity  
**Sector**: the approximate Australian New Zealand Standard Industry Classification industry name  
**Type**: the nature of the effect, for example employment, consumption, production, , population, productivity  
**Direction**: a positive or a negative effect  
**Direct/Indirect**: Identifies the particular type of effect the activity will have.  
**Quantifiable**: identifies if a value is likely to be available  
**Location**: identifies whether it is the base, the region, the Territory or Australia  
**Timing**: the term over which the effect is likely, being either the short or the long term.
REFERENCES


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