Submission 1.0

Australian Government
Department of Finance

COX PENINSULA REMEDIATION PROJECT

Cox Peninsula, Northern Territory

Submission to the
Parliamentary Standing Committee on Public Works

Department of Finance

Canberra, Australian Capital Territory

December 2014

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Contents

Executive Summary

1. This Submission presents the need, purpose, cost and value delivered from proposed land rehabilitation works to extinguish a significant Commonwealth health and safety liability by remediating contaminated land held by the Commonwealth on the Cox Peninsula, Northern Territory (NT).

2. The Commonwealth's land holdings at the Cox Peninsula pose a significant risk to human health through potential exposure to Asbestos Containing Material (ACM) and other contaminants such as pesticides, heavy metals and polychlorinated biphenyls (PCBs). Responsibility for the remediation of contamination on Commonwealth land resides with the Australian Government under the polluter pays principle, detailed in the *National Environment Protection Council Act 1994* (NEPC Act). The Commonwealth also has obligations under the *Work, Health and Safety Act 2011* (WHS Act) to ensure people who access the site can do so without risk to their health.

3. The Cox Peninsula is subject to Indigenous Land Claim 37 by the Kenbi Aboriginal People, lodged in 1979. The Commonwealth has undertaken to relinquish sites covered by the claim, and this commitment puts pressure on the timeframe for the necessary remediation work. In accordance with the Two Stage Capital Works Approval Process for Australian Government Construction Projects, a Detailed Business Case for remediation of the site has been completed.

4. The Detailed Business Case identified a land remediation strategy that will address the Commonwealth liability that exists as a result of contamination across Sections 32, 34 and 41 of the Cox Peninsula, sets out the recommended works program, and cost estimate for the works.

5. The Detailed Business Case was developed following an extensive, scientific, risk-based site investigation program which identified the nature and extent of contaminants, as well as quantifying the level and concentration across the site. The investigation program and subsequent remediation action plan have been developed in consultation with an accredited NT site auditor.

6. If the proposal is agreed, the contaminated material will be disposed of into an engineered sealed containment cell on the site, and non-contaminated material will be recycled as appropriate. This solution has been discussed with an extensive list of

stakeholders, including the NT Government and Northern Land Council, and has been informally agreed as being a suitable solution to the contamination on site.

7. If approved by the Parliamentary Committee on Public Works, the project will commence in March 2015, with completion estimated by 2018.

Need for the works

Background

1. This Submission relates to planned remediation works to Sections 32, 34 and 41 of the Cox Peninsula, located on the western side of Darwin Harbour, 130 kilometres by road and 10 kilometres by ferry from Darwin (refer to Figure 1).

Figure 1: Regional Overview of Cox Peninsula, indicating Commonwealth Crown Land Sections 32, 34 and 41

2. The Commonwealth has utilised 4,750 hectares of land on the Cox Peninsula for maritime, communications and Defence purposes for 70 years, resulting in extensive contamination across a wide area both below and at ground level. Asbestos is widespread and pesticides, heavy metals and polychlorinated biphenyls (PCBs) have been detected above safe levels at a number of sites on Cox Peninsula. This presents a potential health risk to site users and the local Indigenous community.

3. The waste which is present on Section 32, 34 and 41 ranges from inert and stable, to highly hazardous and potentially mobile. Asbestos is widespread and pesticides, heavy metals and PCBs have been detected above levels that present a health risk to site users and the local Indigenous community.

4. Without substantial remedial works, there is a further risk that in-ground contamination will migrate further and will impact local bore water. The quality of the water across much of the Peninsula is such that future extraction and use of this resource (such as drinking water) cannot be ruled out, therefore, its contamination represents a future liability if left unmanaged and allowed to migrate from the identified sources. Interaction of the groundwater and ephemeral surface water bodies, such as the wetlands (and associated ecosystems) in Section 32 is also another potential impact should contamination not be managed in the near future. Some of this bore water provides the only drinking water supply to the population of the Wagait township, the largest permanent community on the Peninsula.

5. The remediation of the land will facilitate progression of the long running Indigenous Land Claim No. 37 (Kenbi Land Claim) affecting much of the Cox Peninsula. In January 2009, the Australian Government welcomed the In Principle Agreement between the Northern Territory Government (NTG) and the Northern Land Council (NLC) to settle the Kenbi Land Claim. The NTG and NLC announced that it would move to finalise outstanding issues in relation to the Kenbi Land Claim, including the status of Australian Government facilities.

6. As contamination presents a significant health risk to those accessing the site (both authorised and unauthorised) Sections 32, 34 and 41 are fenced and display signs advising of the risks posed. Accordingly the land cannot be safely accessed or developed by its Traditional Owners under current circumstances.

7. As part of the Commonwealth Two Stage Capital Works Approval Process for Australian Government Construction Projects, a Detailed Business Case (DBC) for the remediation of the Cox Peninsula was developed by Finance. The DBC identified a land remediation strategy that will address the Commonwealth liability that exists as a result of contamination across Section 32, 34 and 41 of the Cox Peninsula, sets out the recommended work program, and P80 cost estimate for the works.

8. The DBC identified a preferred option for remediation for the site, being construction of an on-site containment cell for disposal of contaminated material, with non-contaminated material transported off site for disposal or recycling as appropriate.

Further detail about the preferred option is provided in the Project Details section of this submission.

9. As part of the DBC Project, a stakeholder engagement process was undertaken to engage with key stakeholder groups and build awareness of the remediation requirements, and to gain acceptance of the preferred remediation option. Due to the Kenbi Land Claim extending over a long period, some groups had become disengaged and it was important to work closely with these stakeholder groups to better understand their concerns. The approach adopted focussed on building an appreciation of the environmental, health and safety concerns at Cox Peninsula. A key objective was to ensure that the preferred remediation option was consistent with future land use aspirations.

Primary Objective

10. The primary objective of the Cox Peninsula Remediation Project is to remediate contamination across Sections 32, 34 and 41 of the Cox Peninsula (refer Figure 1, above) to extinguish the risk and liability to the Commonwealth that exist under current arrangements, and to enable progression of the longstanding Kenbi Land Claim.

Key Legislation

11. Responsibility for remediation of contamination on the Cox Peninsula resides with the Australian Government under the polluter pays principle, referenced in the *National Environment Protection Council Act 1994* (NEPC Act) and the *Work Health and Safety Act 2011* (WHS Act).

12. Underpinning the approach to the remediation and management of site contamination in the NT are principles outlined in the objectives of the primary environmental legislation dealing with contaminated sites, the *Waste Management and Pollution Control Act 1998*. The objectives of the Act are:

- to protect, and where practicable to restore and enhance the quality of, the territory environment by:
    - preventing pollution
    - reducing the likelihood of pollution occurring

- effectively responding to pollution
- avoiding and reducing the generation of waste
- increasing the re-use and re-cycling of waste
- effectively managing waste disposal

- to encourage ecologically sustainable development
- to facilitate the implementation of national environment protection measures made under the *National Environment Protection Council (Northern Territory) Act 1994*.

13. The Commonwealth has an obligation to remediate Sections 32, 34 and 41 in order to comply with its responsibilities under the WHS Act. Even if it were determined that no remediation should take place, site security and environmental controls would need to increase significantly to prevent unauthorised site access.

Site History and Sources of Contamination

14. Sections 32, 34, and 41 on Cox Peninsula have been in use by the Commonwealth for over 70 years. Sections 32 and 34 were extensively used by Radio Australia as receiver and communications facilities from World War II until the late 1990s. Over this same time period, Section 41 has been in use by the Australian Maritime Safety Authority (AMSA) and its predecessors in hosting the Charles Point Lighthouse as well as a remote World War II radar installation (Radar 105 Precinct). Figures 2 and 3 (below) refer.

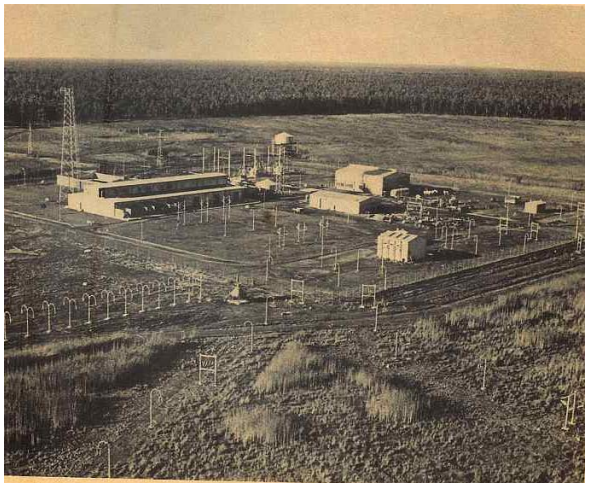

Figure 2: Former Radio Australia buildings (Section 34)
Photo taken 1966

Figure 3: Charles Point Lighthouse (Section 41)
Photo taken Circa 1910

16. A detailed accounting of waste across Sections 32, 34 and 41 is provided in Table 1, below.

Contamination of Section 32

17. Numerous informal tip sites were established in Section 32 to receive general waste generated by the Radio Australia receiver and transmitter sites over several decades of operations. These tip sites (see Appendix A Figure A4) also appear to have been used extensively to dispose of building materials, equipment and infrastructure gathered from across the greater Darwin area following Cyclone Tracy in 1974[1] (see Table 1 for detailed accounting of waste).

Contamination of Section 34

18. Waste is located on and near the surface, as well as within extensive subsurface filling which occurred at a number of informal tip sites. Two sites in particular (Tip sites 2 and 3 – Appendix A, Figure A10) originated as shallow borrow / quarry pits which were excavated from the bush for road base material across the region. Some 7,500m^3 of waste material has been deposited in these shallow pits to a depth of around two (2) metres including large volumes of bonded asbestos sheet and pipes. This has degraded extensively with free asbestos fibres now present throughout the profile, even at the surface. The presence of free asbestos is a particular public health concern, with high potential for the fibres to be mobilised by any disturbance.

19. In addition to this surface and in-ground contamination, a number of abandoned buildings and structures within the Radio Australia compound in Section 34 remain in place. These facilities present a hazard to members of the public due to their poor condition and potential to fail in an adverse weather event (See Appendix B – Photographs). These risks are further exacerbated by the following factors:

    a. Due to their age, these facilities contain asbestos cladding and insulation.

    b. As a result of previous remediation efforts, approximately 2,000 m^3 of hazardous material (primarily asbestos) is stored within some of the facilities on Section 34.

[1] PB, 2011a. Site History Investigation Report – Section 32 Cox Peninsula, NT. Parsons Brinckerhoff Report No. 10-0801-03-2171029A to UGL Process Solutions, 10 August 2011

c. These facilities have a high concentration of pesticides underneath their floor slabs. This was common practice during at the time these facilities were constructed.

Contamination of Section 41

20. The Charles Point Lighthouse and the abandoned World War II radar camp are the predominant sources of contaminated material in this section of the Peninsula (see Appendix A, Figures A3 and A14). Lead-based paint used on the lighthouse is now present throughout surrounding soils, and asbestos is present across the ground surface as well as in several stockpiles of contaminated material.

Table 1: Summary of waste and contamination present on Sections 32, 34 and 41, Cox Peninsula

Section	Waste Item	Quantity	Contaminants present
Section 32	Tip site and general stockpile waste	4,500m^3	Asbestos
	Contaminated soils	500m^3	Pesticides
	Buildings and structures (including footings)	650m^3	
	Underground services	Over 4,500m	PCBs, pesticides and asbestos
Section 34	Tip site and general stockpile waste	10,500m^3	PCBs, pesticides and asbestos
	Contaminated soils	1,600m^3	Pesticides
	Buildings and structures (including bagged contents)	2,000m^3	Asbestos, hazardous materials
	Underground services	Over 3,000m	PCBs, pesticides and asbestos
Section 41	Contaminated soils	250m^3	Heavy metals
	Stockpiles and general surface waste	100m^3	Asbestos

Current land uses

21. The Cox Peninsula continues to host important maritime and communication functions for the Commonwealth, albeit on a smaller scale than previously. The Charles Point Lighthouse remains operational on Section 41, as does an unmanned meteorological station that is operated by the Australian Government Bureau of Meteorology. A radio monitoring facility and High Frequency Direction Finding (HF/DF) facility is operated by the Australian Communications and Media Authority (ACMA) on Section 32[2], and an unregulated municipal landfill facility is operated by Wagait Shire Council.

Status of the Kenbi Land Claim

22. As noted above, the Cox Peninsula is subject to an Indigenous Land Claim by the Kenbi Aboriginal People. The Kenbi Land Claim (Claim 37) was lodged in March 1979, and is the oldest unresolved Land Claim under the *Aboriginal Land Rights (NT) Act 1976*. In 2000, the Aboriginal Land Commissioner recommended that a substantial area of the land claimed be granted as Aboriginal Land. In January 2009, the Australian Government welcomed the In-Principle Agreement between the NT Government and the NLC to settle the Claim and announced that it would move to finalise outstanding issues, including the status of Australian Government Facilities on the site.

23. The remediation of the Commonwealth lands on the Cox Peninsula will allow for the final resolution of the Kenbi Land Claim in accordance with the Aboriginal Land Commissioner's recommendation of December 2000.

Purpose of works

24. The primary objective of the Cox Peninsula Remediation Project is to implement a land remediation strategy that will address a quantified Commonwealth liability that exists as a result of widespread contamination across Sections 32, 34 and 41 of the Cox Peninsula.

[2] The HF/DF facility is one of three that together form a network of high frequency radio-location services across Australia. A buffer zone remains in place around this facility to minimise electromagnetic interference.

25. Delivering this outcome has the potential to unlock significant economic benefits for the land's Traditional Owners and pave the way for investment and development in an area identified as having an important role in the future growth of Darwin and the Northern Territory.

26. The works align with several Commonwealth and NT Government policies, as described below.

Indigenous Advancement Strategy

27. All Australian governments have committed to improving the lives of Indigenous Australians, and in particular provide a better future for Indigenous children. A national integrated Indigenous Advancement Strategy has been agreed through the Council of Australian Governments (COAG).

28. The Indigenous Advancement Strategy is linked to a wider reform of Commonwealth-State financial relations. COAG's national agreements and partnerships, in areas such as education, housing and health, have a clear focus on overcoming Indigenous disadvantage. By supporting the resolution of the Kenbi Land Claim, this project will deliver significant socio-economic benefits to the Traditional Owners, including improved health outcomes, improved community development and improved economic outcomes.

29. This project also supports the goal of halving the gap in employment outcomes between Indigenous and other Australians by 2018. There is expected to be significant traditional owner participation in the remediation and management phases, and also during ongoing operation and maintenance for the preferred option.

Asbestos Safety and Eradication

30. The Asbestos Safety and Eradication Agency was established in 2013 to provide a national focus on asbestos issues, which go beyond workplace safety to encompass environmental and public health. The Agency is responsible for implementing the National Strategic Plan for Asbestos Awareness and Management. The overall aim of the Plan is to prevent exposure to asbestos fibres, in order to eliminate asbestos-related disease in Australia. Two of the goals of the National Strategic Plan for Asbestos Awareness and Management are:

a. Development and implementation of an asbestos removal program across Australia, which prioritises the removal of high risk Asbestos Containing Materials (ACMs).

b. Removal of all asbestos from all government occupied and controlled buildings by 2030.

31. This Project contributes directly to both of these goals, particularly as there will be ongoing Commonwealth operations at Cox Peninsula (via the AMSA lighthouse, and ACMA). The Project will remove all asbestos from Cox Peninsula, thereby preventing exposure to asbestos fibres and reducing the Commonwealth's liability.

Indigenous Participation

32. **'**Caring for our Country' is a Commonwealth Government program to support environmental management of natural resources by supporting Indigenous and non-Indigenous communities, farmers and other land managers to protect Australia's natural environment and sustainability. Funding Indigenous projects is part of 'Caring for our Country', and also contributes to COAG's commitment to Closing the Gap. This includes efforts to enhance the capacity of Indigenous communities to conserve and protect natural resources.

33. Throughout the Northern Territory, the Northern Land Council (NLC) Ranger groups are funded by the 'Caring for our Country' program. This provides a formalised structure for the transfer of traditional knowledge from old to young traditional owners, as well as being a vehicle for training and employment of young Indigenous people living in remote areas. At Cox Peninsula, the Kenbi Ranger Group has in the past been employed through the 'Caring for our Country Program' to provide comprehensive conservation and land management activities on the Cox Peninsula. Currently the Kenbi Ranger Group is funded by the Indigenous Land Corporation (ILC). The NLC auspices ILC funding for this group and has submitted an application to the ILC for further funding to June 2015. In the interim the NLC is supporting the Kenbi Ranger Group (Kenbi Rangers) with casual employment pending ILC funding decisions.

34. The Ranger Program has seen participants gain skills and competencies in fields such as, first aid, heavy machinery usage, animal trapping and crocodile management, vehicle servicing and engine maintenance. Rangers also undertake a range of work,

health and safety training as required. Rangers have also received ongoing access to opportunities for education, training, employment and business relating to natural resource management.

35. Recent risk mitigation works undertaken on the Cox Peninsula (see Previous Works section, below), have utilised the Kenbi Rangers for security, transport and labour services. Part of the mitigation works also includes a pilot vegetation regeneration project, which the Kenbi Rangers have been contracted to manage. This is an example of the tangible benefits the Commonwealth is committed to providing to the Kenbi Rangers and local community through remediation of the site.

36. The Cox Peninsula Remediation Project will provide additional opportunities for the Kenbi Rangers, such as a continued security presence at the site, provision of transport and labour for the duration of the project, management of vegetation rehabilitation projects across the site, and the management and maintenance of the rehabilitation containment infrastructure cell for at least 10 years[3].

37. As part of the DBC process the Department of Finance has also investigated Supply Nation opportunities for other assistance from Indigenous entities throughout the remediation project.

Growth in the Northern Territory

38. The Commonwealth Government is committed to better understanding development opportunities in the NT. The successful remediation of Cox Peninsula will create an environment that will foster and encourage development and potentially unlock growth in the area. The future development of the Cox Peninsula is consistent with long-term Northern Territory Government plans for the expansion of Darwin as the population grows.

Value for money

39. Significant cost efficiencies can be achieved in the remediation program by addressing the contamination and waste legacies associated with the ACMA

[3] In August 2013, the Department of Finance (Finance) engaged the Kenbi Rangers (through an open tender process) to provide security services, repairs and maintenance services for the Cox Peninsula site as part of ongoing site management responsibilities.

operations on Section 32 in conjunction with decontamination on Section 34 and Section 41. On Section 32 informal waste dumps and general demolition waste materials will need to be managed appropriately.

40. Recognising that much of the waste and contamination across Section 32 is the result of Commonwealth operations, consultation between Finance and ACMA has sought to develop a remediation strategy that addresses significant liabilities resulting from former Commonwealth activities.

41. In addition, the Commonwealth and PowerWater Corporation (owners of a now redundant electrical substation adjacent the Section 34 compound that formerly provided power to the radio transmitters) have agreed that since the redundant infrastructure is a legacy of former Radio Australia operations, the remediation of this compound should be undertaken by the Commonwealth as part of the Cox Peninsula remediation project (See Appendix A, Figure A11).

Previous works

42. A remediation program was attempted in 2010 to target areas of contamination across Section 34. Works were completed in and around the compound at Section 34 to remove materials around former underground and above ground storage tanks and to remove waste and asbestos materials from tip site areas.

43. Large volumes of scrap metal waste and contaminated soils were removed from the site, and significant quantities of asbestos containing materials were buried in temporary earth-covered mounds. However, due to greater volumes of waste being identified than originally estimated, project cost escalated and the timeframe for remedial activities were projected to extend beyond the end of the 2010 dry season. As a result, the remediation program was concluded (at the end of the 2010 dry season) and temporary controls and measures were adopted to manage risks relating to materials that had been excavated and screened. These temporary controls and measures included placing asbestos contaminated materials in bags and storing these in buildings within the Section 34 compound. It was recognised that future remediation works would need to address large areas of the site that were not remediated as part of the 2010 program and that the asbestos bags and buried asbestos waste would need to be managed appropriately (See Appendix A, Figure A5).

44. A Risk Mitigation Project, subject of a PWC Medium Works Notification in June 2014, is currently underway at Cox Peninsula. While the Detailed Business Case was being considered and funding appropriated for the remediation project, an adverse weather event such as a cyclone or other severe storm during the NT wet season posed a significant risk to the Commonwealth, as it could spread the contaminated material further across the site. Priority tasks to mitigate the identified risks prior to the next NT wet season commenced in November 2014. The tasks being undertaken on the site are:

- Relocate the ACMs temporarily stored within dilapidated buildings, to more secure containers on site;
- Decontaminate and then demolish dilapidated buildings;
- Install environmental and security controls to minimise the migration of contamination or prevent those accessing the site from being exposed to asbestos and other hazardous material;
- Remove asbestos from the ground surface and cap relevant areas with clean material to provide a buffer to underlying contamination.

45. Cost savings and efficiencies were to be gained by including these works with the full remediation project, but until approval was provided for the larger project it was necessary to extract the priority mitigation tasks and complete them while weather in the NT was favourable. At the completion of the risk mitigation project, due in mid December 2014, contamination will be more secure than when previously stored in the dilapidated buildings, but will remain in containers on site, and as such will still need to be relocated as part of the preferred remediation option.

46. The remediation project is not simply an extension of the previously undertaken risk mitigation works. It is a much larger project that will remove contaminants as much as practicable and ensure the site is able to be used in line with future use aspirations, rather than securing contaminants on the site.

Project stakeholders

47. A stakeholder engagement process was undertaken during the development of the Detailed Business Case to engage with key stakeholder groups and build awareness of the remediation requirements, and to gain acceptance of the preferred remediation option. Due to the Kenbi Land Claim extending over a long period, some groups

had become disengaged and it was important to work closely with these stakeholder groups to better understand their concerns. The approach adopted focussed on building an appreciation of the environmental, health and safety concerns at Cox Peninsula. A key objective was to ensure that the preferred remediation option is consistent with future land use aspirations.

48. To this end, the stakeholder engagement process successfully engaged with multiple governmental and non-governmental stakeholders that have an interest in the Cox Peninsula Remediation Project, and undertook the appropriate level of consultation with Indigenous representative groups, Traditional Owners, and those directly impacted by the Claim.

49. Key project stakeholders with whom consultation occurred include:

    a. Department of the Prime Minister and Cabinet (PM&C)
    b. Australian Communications and Media Authority (ACMA)
    c. Australian Maritime Safety Authority (AMSA)
    d. Department of the Environment
    e. Northern Territory Government (NTG)
    f. Northern Land Council (NLC)
    g. Northern Territory MPs
    h. Northern Territory Environment Protection Agency (EPA)
    i. The Larrakia Development Corporation (LDC)
    j. The Traditional Owners
    k. Wagait Shire Council
    l. The Kenbi Ranger Group

Project Details

Options development / assessment

50. The preferred remediation option was informed by the following processes:

    a. Stakeholder Consultation and engagement with key stakeholder groups including the NLC, LDC, NTG and ACMA to determine project requirements which would facilitate transfer of the land

    b. Compilation of technical land contamination data:

        i. Historical investigation data and data gap analysis

        ii. a detailed onsite waste audit and contamination investigation program

    c. A multi-criteria assessment (MCA) process including socioeconomic analysis, cost benefit analysis, risk assessment and risk cost analysis of the resulting remediation options

51. The evaluation criteria applied in the MCA process identified the relevant site constraints and opportunities, areas of concern, stakeholder interests, and other factors applicable to the rehabilitation of the site. These criteria were classified according to four categories, allowing multiple distinct but related criteria and requirements to be included in the assessment. The key inputs to the MCA process are illustrated in Figure .

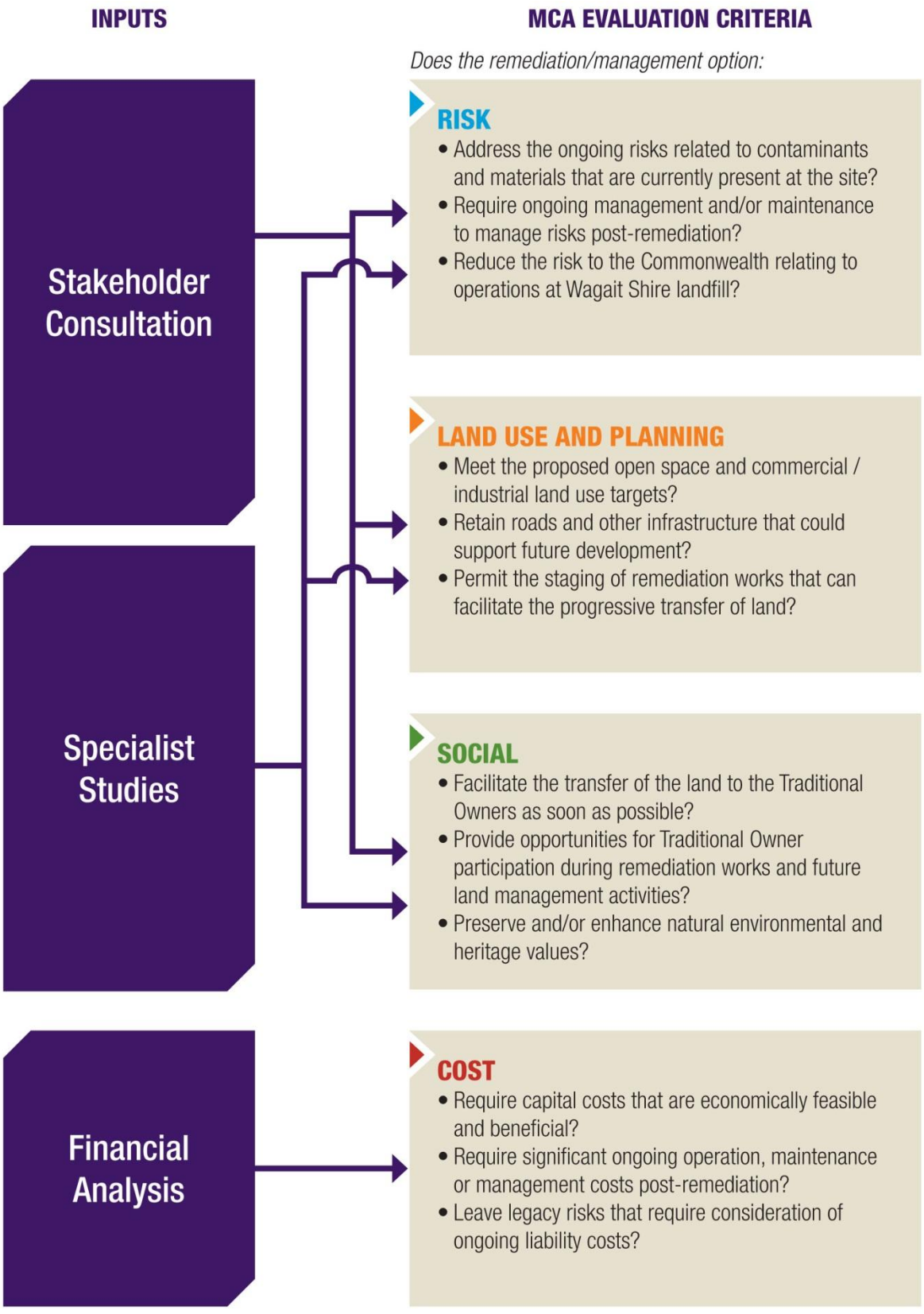

Figure 4: Multi Criteria Analysis - Cox Peninsula Remediation Options

52. Over 20 remediation options were assessed initially at the 'screen' stage, with two remediation options identified as providing value for money while significantly addressing the public risk of exposure to asbestos. These two options were:

a. On-site containment of waste materials – whereby contaminated material be disposed of in an engineered sealed 'containment cell' on Commonwealth land within the existing industrial compound on Section 34 and for appropriate non-contaminated material be recycled where suitable, and

b. Off-site disposal of waste materials – transport of contaminated material to a facility or facilities licenced to receive the particular type of contaminated material.

53. Both of these options were compared against the base case "do nothing" option. A robust technical feasibility assessment of the two remediation options was undertaken with the options then assessed against the agreed assessment criteria. In summary the following analysis was undertaken:

    a. Identification of remediation technologies and waste management strategies available

    b. Preliminary screening assessment of potential options for technical and implementation feasibility and capability for meeting the rehabilitation criteria;

    c. Development and description of feasible remediation and management strategies available for the site;

    d. Application of a robust multi-criteria analysis of potential options, using the outputs of stakeholder;

    e. consultation and engagement process and site contamination and waste investigations; and

    f. Identification and development of preferred remediation and/or management strategies.

Rationale for the preferred option

54. Based on the multi-criteria analysis undertaken, the on-site containment cell option was evaluated as best meeting the assessment criteria that were developed in consultation with key stakeholder groups. Both the off-site and on-site remediation options met many of the key evaluation criteria, whilst meeting the agreed remediation targets of open space and commercial/ industrial.

55. The on-site containment cell option was considered a superior option based on a number of performance characteristics:

    a. The cost is significantly less ($7.2 million lower) than the alternative;

    b. The environmental impact is reduced with fewer truck movements through the neighbouring communities and a significantly reduced carbon footprint;

    c. The option allows for the management of materials on-site which provides greater opportunities for Indigenous participation during construction due to a larger proportion of the works involving material tracking and management on site;

    d. Demonstrates industry best practice for a remediation project in limiting the disposal of wastes by effectively managing materials on site;

    e. The ongoing environmental controls in the Section 34 compound will provide employment opportunities for Indigenous groups;

    f. Provides a solution that can be staged to facilitate the progressive transfer of land;

    g. Allows for upgrade works at the Wagait Shire Tip to improve waste management operations and reduce any potential impact on the adjacent wetland and Savannah areas;

    h. Provides for an administrative building in the Section 34 compound to support ongoing land management, training and environmental monitoring activities;

    i. Provides enhanced ongoing land management opportunities for Traditional Owners; and

56. The whole of life cost methodology includes the initial capital outlay and ongoing operating costs. A whole of life cost has been calculated for the Base Case and each of the project options.

Design of the preferred option

57. The purpose of the on-site containment cell is to encapsulate waste material in a manner that minimises the impact upon the environment and protects human health, both under current and future land use scenarios. The functional design for the containment cell has been undertaken in consideration of the Northern Territory Environmental Protection Authority document titled *Guidelines for the Siting, Design*

and Management of Solid Waste Disposal Sites in the Northern Territory published in January 2013, as well as current best practice.

58. The key design principles for the containment cell are:

    a. The 74 metre x74 metre cell will be excavated to a depth of 8 metres below ground level (taking note of local seasonal groundwater levels);

    b. The cell will be lined with an impermeable geosynthetic clay liner (GCL);

    c. The encapsulated material will be capped with a GCL to minimise surface water ingress in to the cell, thereby reducing rates of leachate generation;

    d. the cell will incorporate provisions for venting of accumulated gas including a gas collection layer and landfill gas venting wells;

    e. the cell it will be contoured to encourage surface water runoff towards the edges;

    f. As some water may still permeate through the GCL cap over time, a drainage layer will be placed immediately on top of this liner to further promote lateral movement of surface water towards the edges of the cell;

    g. Since it may not be possible to eliminate surface water ingress and leachate generation entirely, the cell will also incorporate a leachate collection system.

59. Figure 5 (below) provides an illustration of the proposed containment cell cross section.

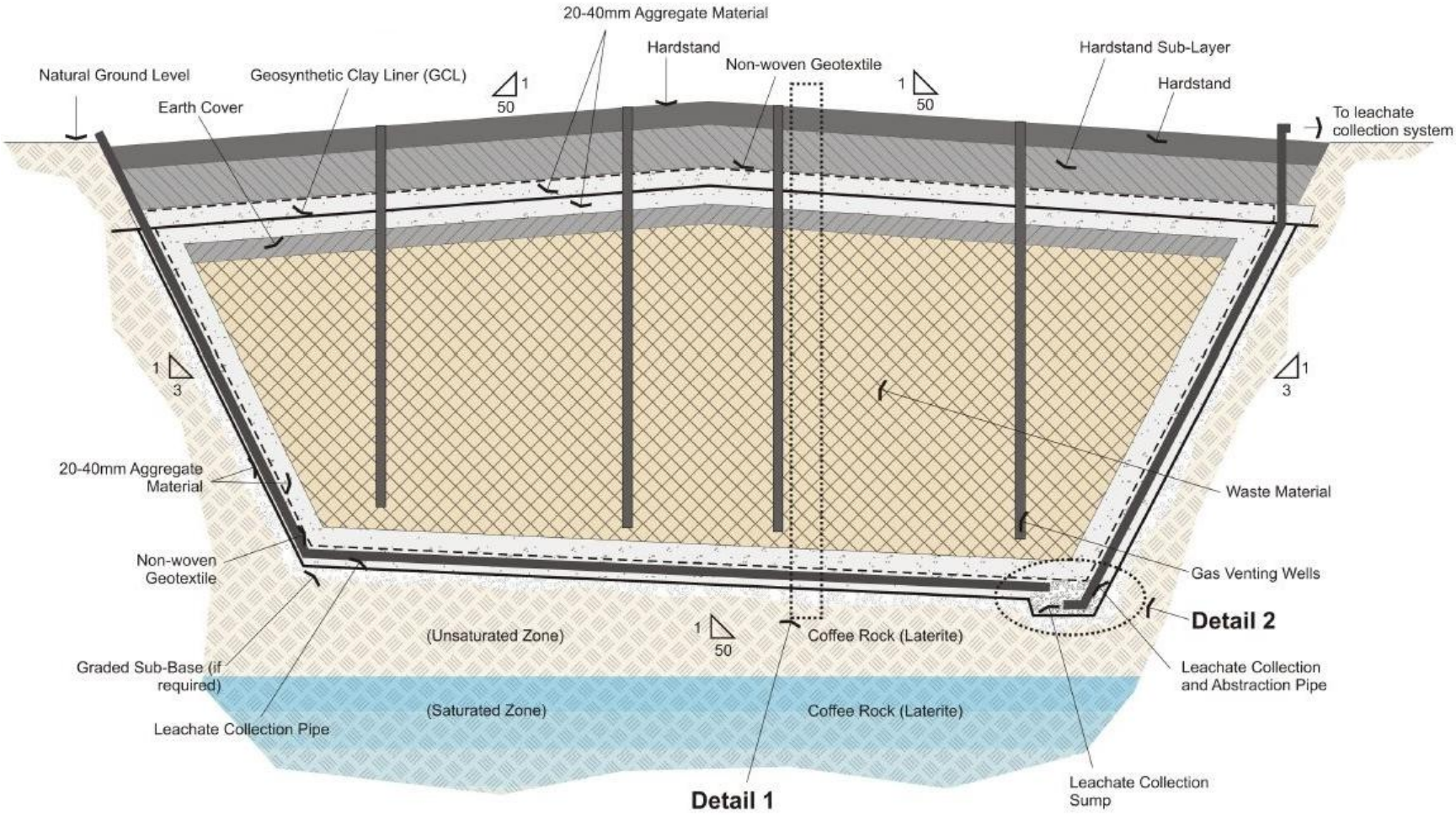

Figure 5: Proposed containment cell cross section

60. Figure 6 presents a detailed cross section and design details of the containment cell, showing the profile section and proposed leachate collection system principles which would be incorporated.

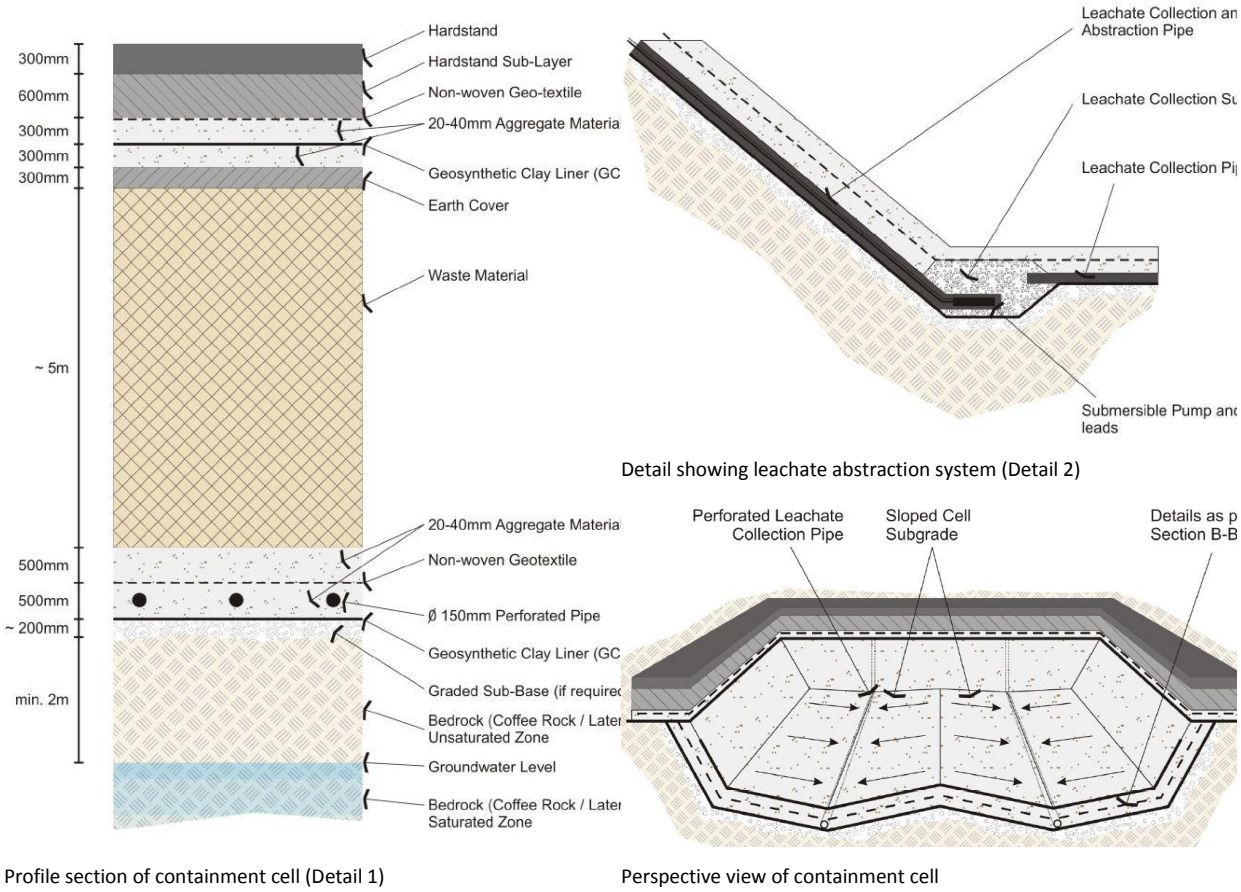

Figure 6: Containment cell cross sections and design details

Siting for the preferred option - containment cell

61. The current Section 34 compound has been selected as the preferred location for the containment cell. There are a number of reasons why this location has been selected. These include:

    a. Proximity to the most significant tip sites (Tip Site 1/1A, Tip Site 2 and Tip Site 3) and other sources of waste (Section 34 compound). This reduces both transport distances and associated costs, and risks associated with the movement of soils impacted by hazardous materials (particularly fibrous asbestos);

b. The site is located within an area that has been disturbed previously. As such, the need for extensive native vegetation clearance will be minimised;

c. The presence of an existing roadway provides good access to the containment cell during construction, filling and capping of the cell;

d. The Section 34 compound has been identified as an area that may be zoned in the future for commercial/industrial use. This future use is compatible with the placement of a containment cell;

e. The Section 34 compound represents the preferred location for a transfer station for the sorting and pre-treatment of material at the site prior to either off-site disposal or containment. As such, the location of the containment cell nearby makes practical sense; and

f. The observed soil profile and groundwater levels at the nominated location are considered suitable for the construction of a containment cell. Similarly, the area is also largely flat.

g. Figure **7** (below) indicates the location of the proposed containment cell.

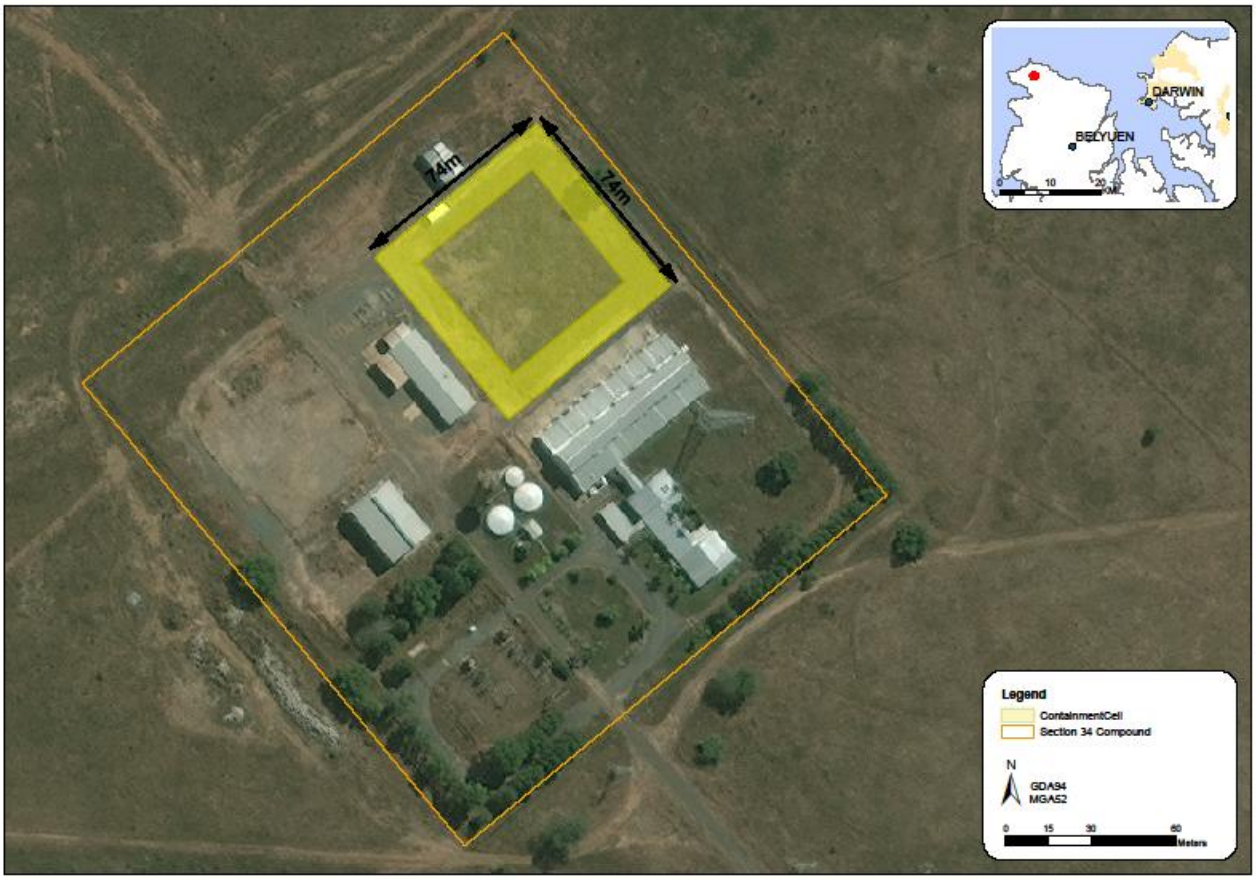

Figure 7: Containment cell location (shown within the boundary of the Section 34 Compound)

62. The remediation works at Cox Peninsula will be staged, with works taking place over a series of sequential stages over three consecutive dry seasons, commencing in the first year in Section 34, finalising excavation works in the same Section and Section 41 in year 2, and completing works in Section 32 in year 3. The stages of work are presented in pictorial form in Appendix A.

Development of the Option Costs

63. In order to identify the preferred remedial option for the site, and to develop accurate cost estimates, Finance undertook a targeted program of technical field investigations across Sections 32, 34 and 41.

64. The investigations provided further certainty around the volume and classifications of waste within the informal tip sites on Section 32 and 34, along with the distribution and significance of pesticide contamination below some building slabs. The investigations also examined the extent of underground services (including the use of PCBs and pesticides sheaths and asbestos conduits during construction) as well as

whether groundwater had been contaminated as a result of former use of Sections 32, 34 and 41.

65. The preferred option recommends that contaminated material be disposed of in an engineered sealed 'containment cell' on Commonwealth land within the existing industrial compound on Section 34 and for appropriate non-contaminated material to be recycled where suitable.

66. Following these investigations, detailed costings were prepared. A probabilistic model was used to estimate the risk provision to an 80% confidence level (ie. there is an 80% chance that this cost figure will not be exceeded in practice, based on all potential cost outcomes envisaged by the model). As previously described, these two risk costs are added to the Base Estimate to determine the P80 Capital Cost Estimate, resulting in a capital cost that would only be exceeded in 20% of cases. A risk provision has been calculated for the Project Options.

67. In accordance with Department of Finance Guidance, Capital costs were prepared for each option at P80 cost confidence. These consisted of:

    a. Base estimate of the capital costs

    b. Risk provision including inherent and contingent risk costs

    c. Cost escalation

    d. Operating costs

68. The Base Estimate is the likely capital cost, which includes an elemental breakdown of the tasks and materials required to remediate the sites[4].

69. The risk mitigation works undertaken in 2014 have so far proven the P80 cost estimate to be an accurate representation of the cost of future remediation works.

[4] As a result of the detailed investigations undertaken, the costing estimates are substantially reduced from those originally developed in the Initial Business Case completed in early 2012. It is an estimate of the costs based the detailed investigations undertaken and on the expected price and quantity of tasks/materials/people required. Consideration was given to the potential for 'optimism bias' in the face of uncertainty and a third party cost plan reviewer, Rider Levett Bucknall, was engaged to perform an independent review to ensure reliable cost assumptions were applied.

Risk Provision

70. A provision for risk costs is included in the P80 costing to account for any uncertainty associated with the base estimate and other contingent risks. The risk cost includes two key elements, inherent risks and contingent risks as defined below:

    a. **Inherent Risk** is a provision for risk contained in the components of the base estimate that are expected to occur. In this way the inherent risks includes the "known unknowns". Specifically, this risk incorporates a likelihood that the volume of waste has been mis-estimated or that prices for labour and materials assumed in the base estimate are incorrect.

    b. **Contingent Risk** – This is a provision for discrete risks which have been identified as possible risks to the project or the base case, and are not included in the scope of works and the likely costs. These risks are event based risks that are not certain to occur and can be considered the "unknown unknowns".

71. A probabilistic estimate of the above risks was carried out incorporating input from specialists in relevant technical fields (land rehabilitation, logistics, quantity surveying, construction management).

Cost escalation

72. Cost escalation is included in the capital cost estimate to account for the potential rise in prices for building materials and labour that may occur over the life of the project. The inclusion of a cost escalation provision results in a nominal capital cost that is reflective of the total cost in each year that the cost will be incurred. The escalation rates adopted for the project were as follows:

    a. Building Price Index (BPI) – This rate is assumed to be 4% cumulative growth on an annual basis and is applied to the upfront capital cost estimate. The growth rate is based on Jacobs internal data and experience.

    b. Consumer Price Index (CPI) – This rate is assumed to be 2.5% cumulative growth on an annual basis and is applied to the operating costs. The growth rate is based on the RBA's target inflation rate.

Operating costs

73. Operating costs include those costs which are incurred in managing the site on an ongoing basis. These include security contracts, staff costs for implementation of environmental management costs and groundwater monitoring. The operating costs are based on an assumed project lifespan for all options of 20 years.

Costs of the preferred option

74. The cost estimate for the preferred remediation option from the Detailed Business Case is $31.8 million over four years. This estimate led to a provision of $31.5 million over three years being allocated to the Contingency Reserve.

75. The approved funding is $16.0 million in financial year 2014-15, $12.0 million in financial year 2015-1 6 and $3.5 million in financial year 2016-17. Ongoing operating costs are not part of the funding request; these will be absorbed by future Departmental funding. A summary is provided in Table 2, below.

Nominal costs (Out turned)					
	2014-15	**2015-16**	**2016-17**	**2017-18**	**Ongoing**
Capital costs (P80)	$ 16.0 m	$ 12.0 m	$ 3.5 m	-	-
Operating costs	-	-	-	$ 0.13 m	$ 0.14 m
Total	$ 16.0 m	$ 12.0 m	$ 3.5 m	$ 0.13 m	$ 0.14 m

Table 2: Funding

Delivery strategy

76. A Project Manager/Contract Administrator (PM/CA) was appointed by Finance in 2013 to conduct site investigations and develop the Detailed Business Case and supporting evidence for the Parliamentary Standing Committee on Public Works (PWC) submission for the Project.

77. As part of the investigations associated with government approvals to date, the PM/CA also developed a preliminary design of the preferred remediation option.

78. In order to deliver this Project, Finance intends to

    a. appoint the PM/CA to manage the proposed works and administration of the contract for construction. The PM/CA would then also provide technical advice on the design during the construction phase.

b. appoint a Remediation Contractor, using the construct-only delivery method and the Finance General Remediation Contract in 2015 to deliver procurement of trades and construction of the proposed works.

79. A construct-only contract is appropriate as the contractor will be provided with a fully documented design at time of tendering, with no further design documentation necessary. Once design of the preferred remediation option is completed by the PM/CA, Finance will call for tenders from contractors to undertake construction in accordance with the design as documented.

Proposed delivery timetable

80. Subject to Parliamentary clearance, construction works are planned to commence at Cox Peninsula from March 2015 and conclude by June 2018, with a defects and liability period extending for 12 months from commissioning. The wet season in the NT generally occurs from October-April each year, and so remediation works at Cox Peninsula will generally be completed between April and October in any given year. Figure (below) provides a high level program of the proposed works.

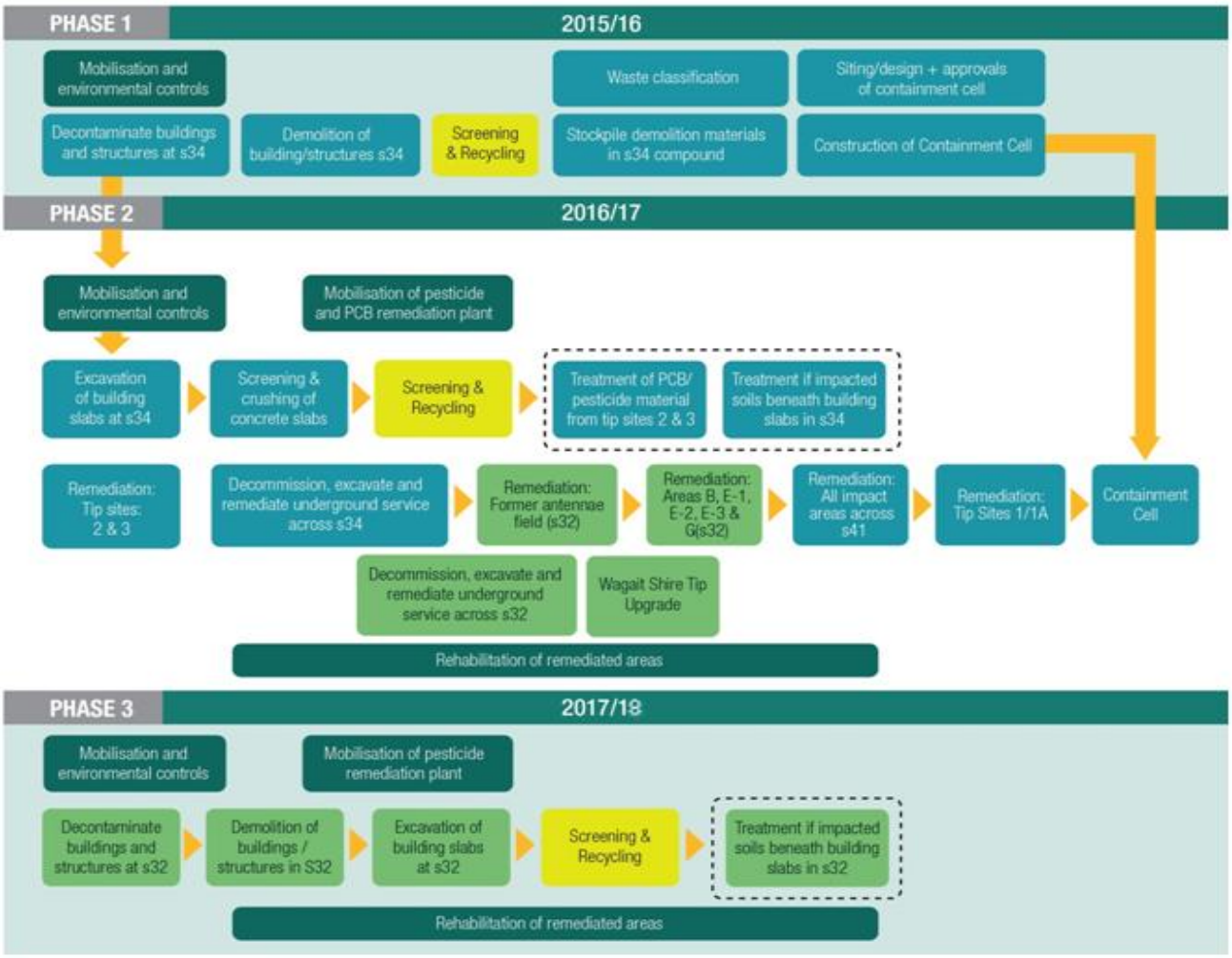

Figure 8: Cox Peninsula Remediation Project - Task Interface Diagram

Recommendations

81. It is recommended that the Parliamentary Standing Committee on Public Works:

a. Notes the risks to the Commonwealth if the Cox Peninsula is not remediated, and the basis for the risk assumptions;

b. Notes the basis for the selection of the preferred remediation option, including value for money, stakeholder support and risk management;

c. Notes the capital cost estimate, provided in Submission 1.1, to undertake the required works, and the basis for the cost estimate for the preferred option;

d. Notes the connection between the remediation of the Cox Peninsula and the resolution of the Kenbi Land Claim, the longest running in Australia and the importance of provide a foundation for future Indigenous infrastructure development in the Northern Territory; and

e. Approves for construction the Cox Peninsula Remediation Project as outlined in this Submission.

Appendix A – Figures

- Figure A1 - Section 32 Layout
- Figure A2 - Section 34 Layout
- Figure A3 - Section 41 Layout
- Figure A4 - Section 32 Tip Sites
- Figure A5 - Section 32 Compound (Figure Areas of Interest)
- Figure A6 - Section 32 Antannae Footings (Large arrays)
- Figure A7 - Section 32 Antennae Footings (Small arrays)
- Figure A8 - Section 32 Underground Services
- Figure A9 - Section 32 Existing Bores
- Figure A10 - Section 34 Tip sites
- Figure A11 - Section 34 Compound (Areas of Interest)
- Figure A12 - Section 34 Underground Services
- Figure A13 - Section 34 and 41 Existing Bores
- Figure A14 - Section 41 Areas of Interest

The Cox Peninsula Remediation Project
Submission 1

686000 688000 690000 692000

8622000 8620000 8618000

Current Wagait Shire community landfill

Northern tip site

Former Radio Australia receiver station site

ACMA HF/DF site

Eastern cleared area

Radio Australia cleared site

Southern cleared area

COX PENINSULA ROAD

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GDA94 MGA52

JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A1 - Section 32 Layout

Cox Peninsula, NT

SCALE 1:20,000

0 500 1,000

Meters

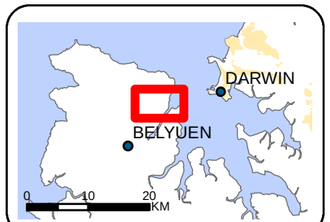
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\Report Maps\VW07225_FigA1_S32_Layout.mxd

Legend

- Section boundary
- Area of Interest
- Road

DATA SOURCES
SKM 2013; Geoscience Australia, 2006;
Imagery: ©2013 DigitalGlobe;
GeoEye,June 2002 and April 2001



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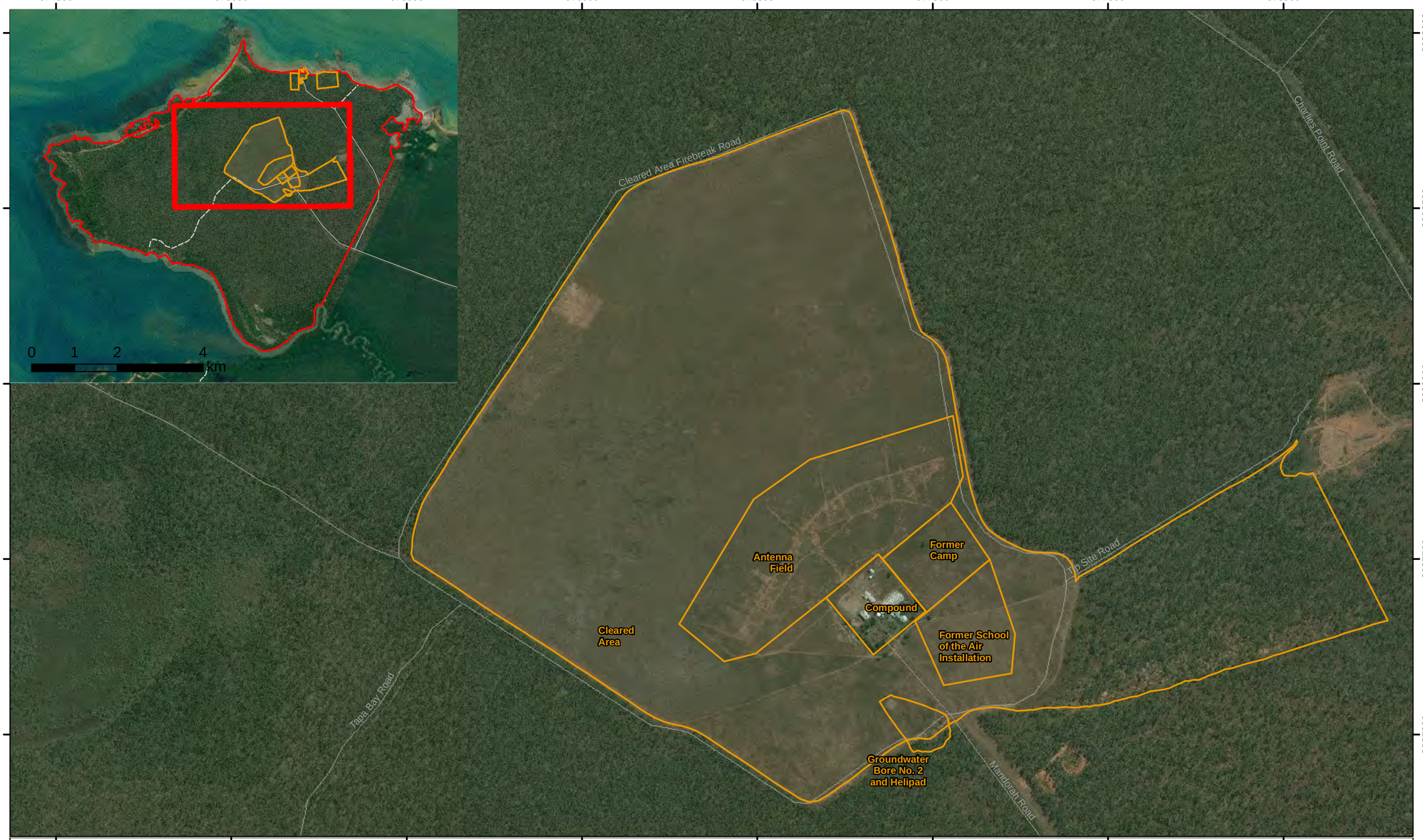

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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A2 - Section 34 Layout

Cox Peninsula, NT

SCALE 1:10,000

0 200 400 600
Meters

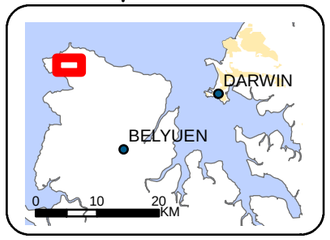
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\Report Maps\VW07225_FigA2_S34_Layout.mxd

Legend

- Section boundary
- Area of Interest
- Road

DATA SOURCES
SKM, 2013; Geoscience Australia, 2006;
Imagery: ©2013 DigitalGlobe;
GeoEye,June 2002 and April 2001



677000
677500
678000
8630000
8629500

Fence (Charles Point)
Concrete Slab (Charles Point)
Charles Point Lighthouse Precinct
Eastern Cleared Area
RP Additional
Radar Precinct
Charles Point Road

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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A3 - Section 41 Layout

Cox Peninsula, NT

SCALE 1:4,000

0 100 200
Meters

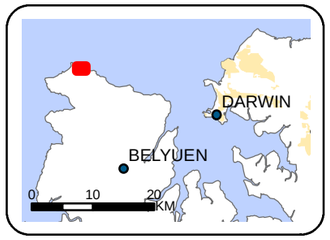
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\Report Maps\VW07225_FigA3_S41_Layout.mxd

Legend

- Area of Interest
- Section 34
- Section 41
- Road

DATA SOURCES
SKM, 2013; Geoscience Australia, 2006;
Imagery: ©2013 DigitalGlobe;
GeoEye,June 2002 and April 2001



687000 688000 689000 690000 691000

8621000 8620000 8619000

E-3: Cleared Area Tip Site
B: Northern Tip Site
E-2: Cleared Area Tip Site
E-1: Cleared Area Tip Site
G-1: Southern Tip Site
COX PENINSULA ROAD

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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A4 - Section 32 Tip Sites

Cox Peninsula, NT

SCALE 1:12,000

0 200 400 600
Meters

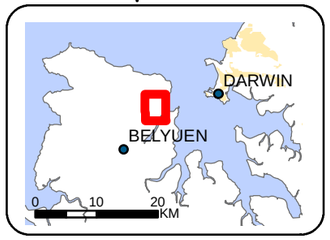
MAP LOCATION

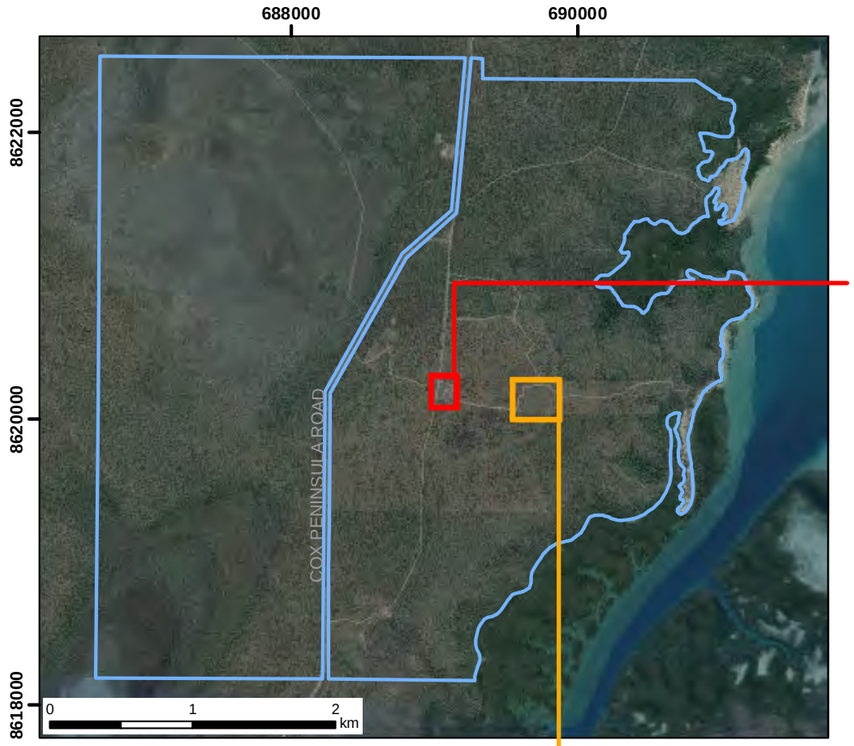
I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\Report Maps\VW07225_FigA4_S32_TipSites.mxd

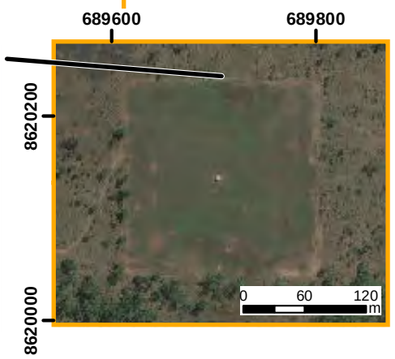
Legend

- Section boundary
- Tip Sites
- Road

DATA SOURCES
SKM, 2013; Geoscience Australia, 2006;
Imagery: ©2013 DigitalGlobe;
GeoEye,June 2002 and April 2001







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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A5 - Section 32 Compound (Areas of Interest)

Cox Peninsula, NT

SCALE 1:1,000

0 20 40 60
Meters

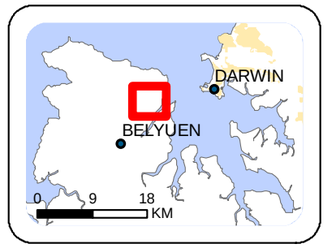
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\PhotoMaps\VW07225_Section32_Compound_AOIs.mxd

Legend

- Section 32 Boundary
- Pesticide Contaminated Soil (Below Slabs)
- Road

DATE SOURCES:
SKM, 2013; Geoscience Australia; 2006
Imagery: ©2013 DigitalGlobe; GeoEye, June 2002 and April 2001



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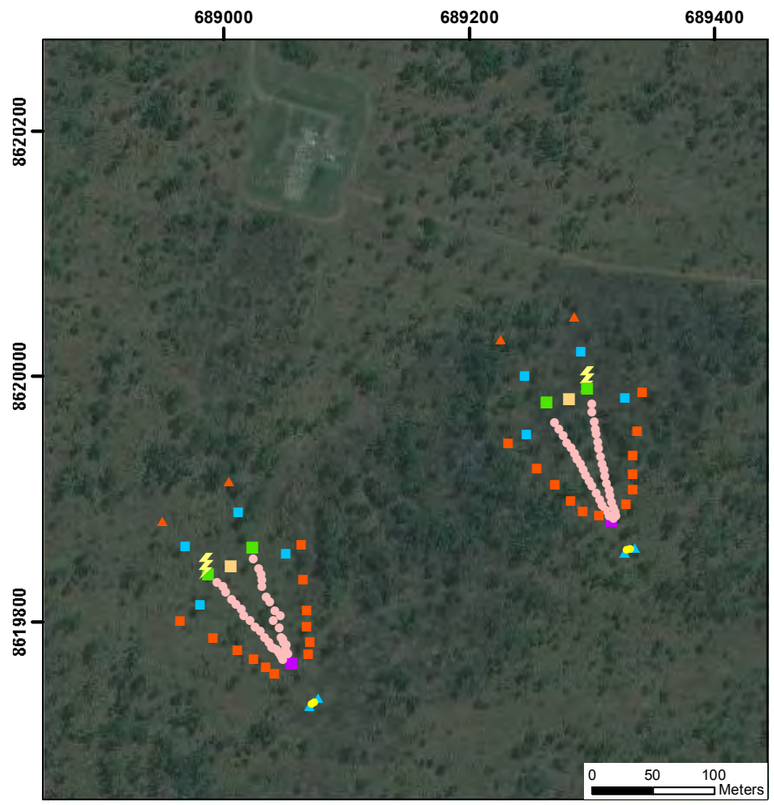

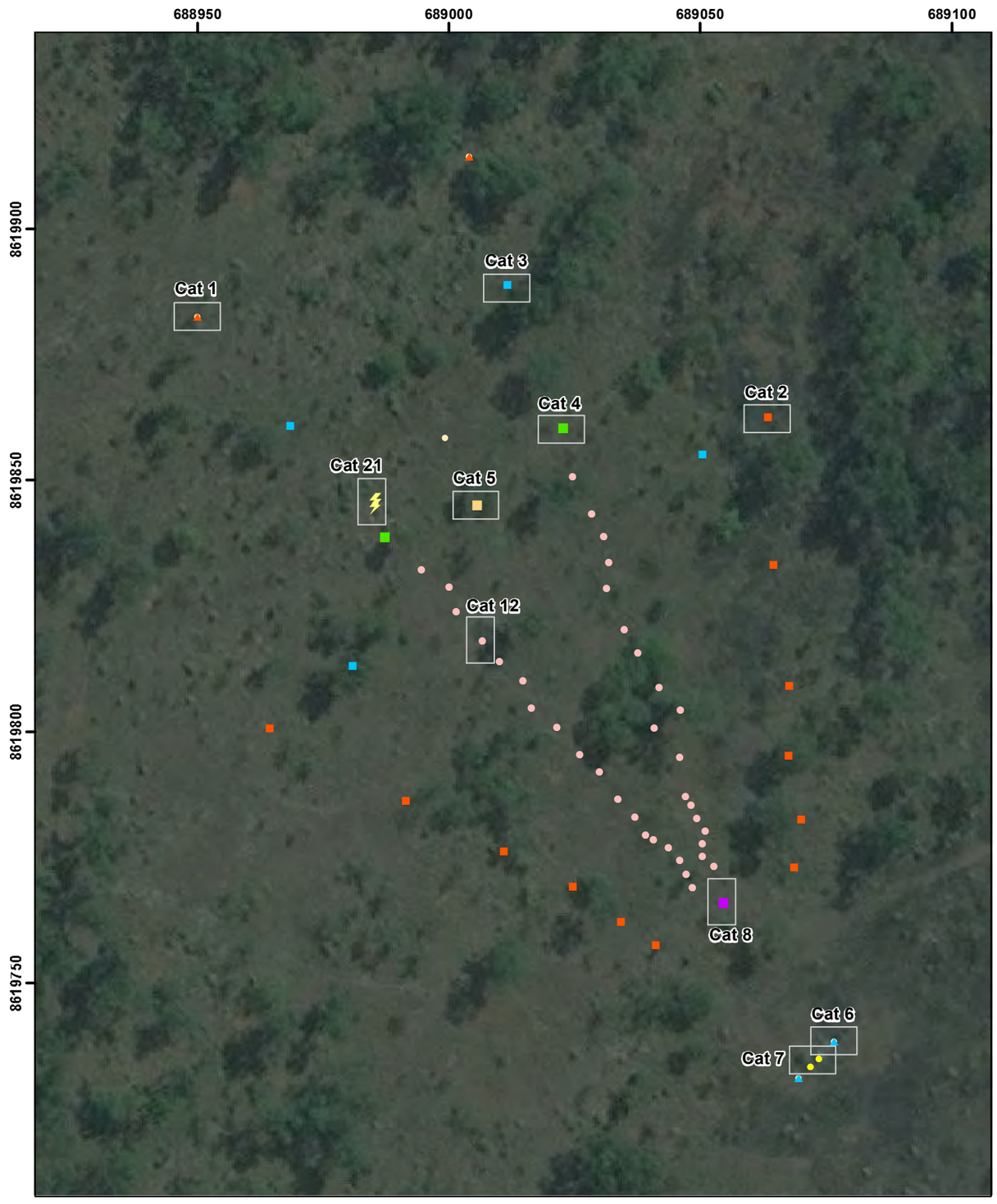

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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

A6 - Section 32 Antennae Footings (Large Arrays)

Cox Peninsula, NT

SCALE 1:1,000

0 20 40 60
Meters

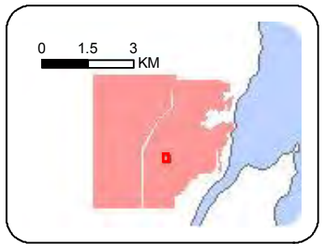
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\RemOp VW07225_Arrays_Large.mxd

Legend

Category 1 2 3 4 5 6 7 8 12 21

Sources: © Commonwealth of Australia (Geoscience Australia) 2006 Geodata 250,000
Imagery: ©2013 DigitalGlobe Incorporated, Longmont CO USA; GeoEye, June 2002 and April 2001



689200
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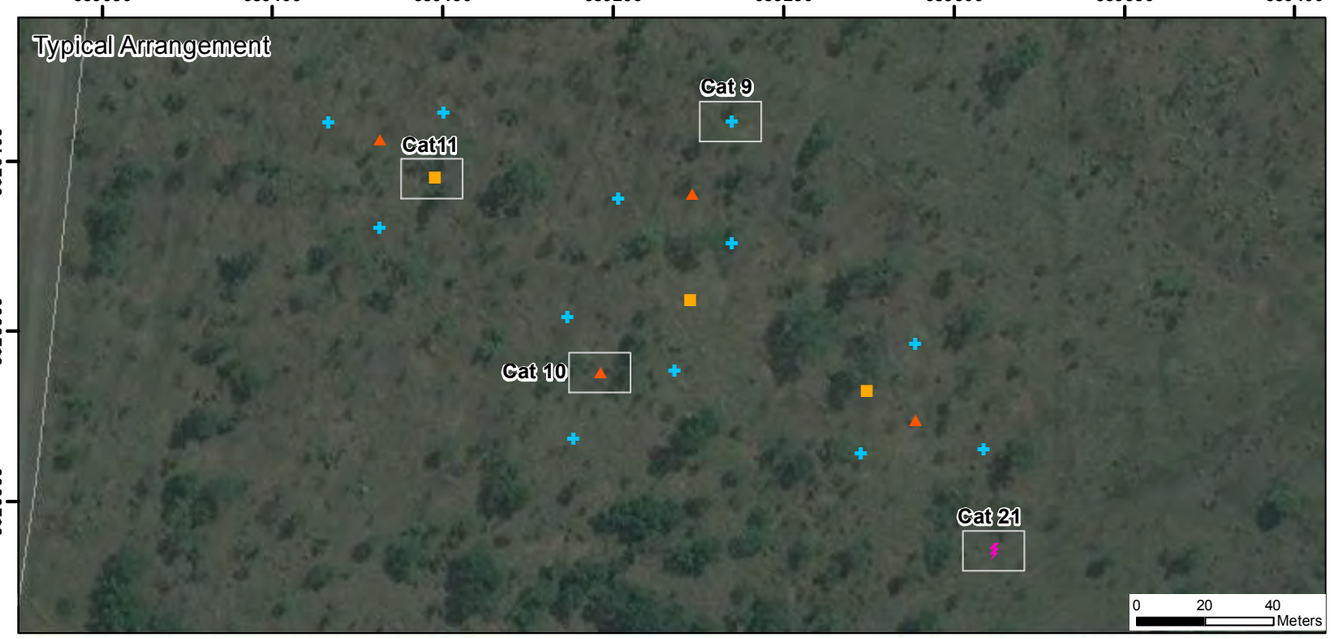
8620400
8620000

689050
689100
689150
689200
689250
689300
689350
689400
8620400
8620350
8620300



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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	ML	WR	MN	A3

A7 - Section 32 Antennae Footings (Small Arrays)

Cox Peninsula, NT

SCALE 1:4,000

0 100 200
Meters

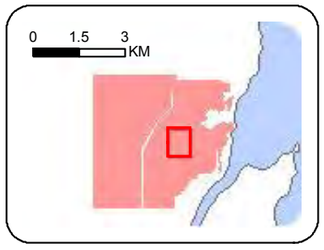
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\RemOp VW07225_Arrays_Small.mxd

Legend

Category
- 9
- 10
- 11
- 21

Sources: © Commonwealth of Australia (Geoscience Australia) 2006 Geodata 250,000
Imagery: ©2013 DigitalGlobe Incorporated, Longmont CO USA; GeoEye, June 2002 and April 2001



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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A8 - Section 32 Underground Services

Cox Peninsula, NT

SCALE 1:8,000

0 100 200 300
Meters

MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\Report Maps\VW07225_FigA8_S32_UG_Services.mxd

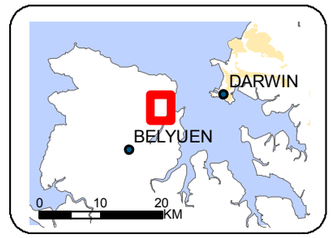
Legend

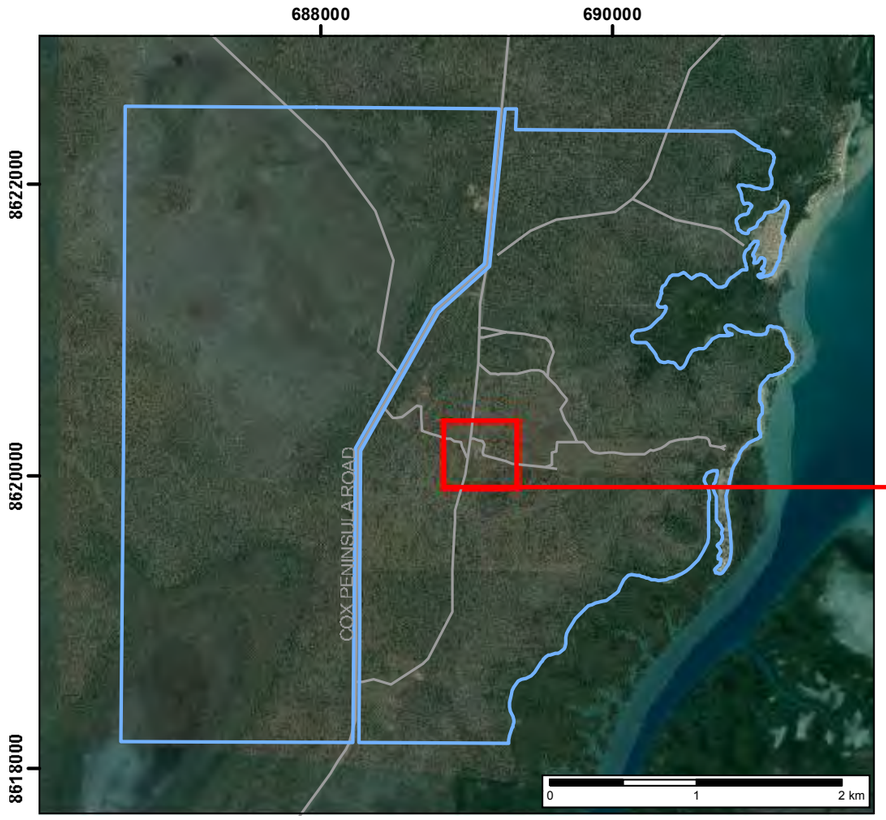
Underground Asset (Locations Not Known)

Group

Cables

DATA SOURCES
SKM, 2013; Geoscience Australia, 2006;
Imagery: ©2013 DigitalGlobe;
GeoEye,June 2002 and April 2001





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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A9 - Section 32 Existing Bores

Cox Peninsula, NT

SCALE 1:2,000

0 60 120
Meters

MAP LOCATION

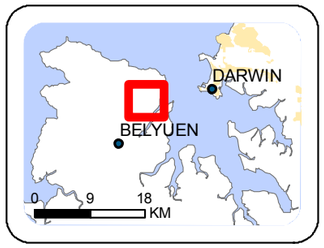
Created: 21 Nov 2013

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\PhotoMaps\VW07225_Section32_Bores.mxd

Legend

- Section 32 Boundary
- Bore
- Road

DATE SOURCES:
SKM, 2013; Geoscience Australia; 2006
Imagery: ©2013 DigitalGlobe; GeoEye, June 2002 and April 2001



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673000 673500 674000 674500 675000 675500 676000 676500 677000 677500 678000 678500

8629000 8628500 8628000 8627500 8627000 8626500 8626000

Tip Site 5
Hooley's Beach Road
Cleared Area Firebreak Road
Charlies Point Road
Barge Landing Track
Tip Site 1 & 1A
Tip Site 6
Tip Site Road
Tip Site 7
Tip Site 4
Tapa Bay Road
Tip Site 2 & 3
Mandorah Road

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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A10 - Section 34 Tip Sites

Cox Peninsula, NT

SCALE 1:14,000

0 200 400 600
Meters

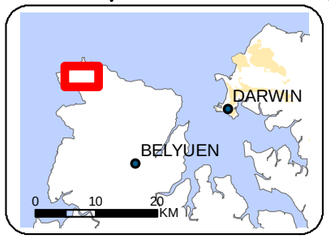
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\Report Maps\VW07225_FigA10_S34_TipSites.mxd

Legend

- Section boundary
- Tip Sites
- Road

DATA SOURCES
SKM, 2013; Geoscience Australia, 2006;
Imagery: ©2013 DigitalGlobe;
GeoEye,June 2002 and April 2001



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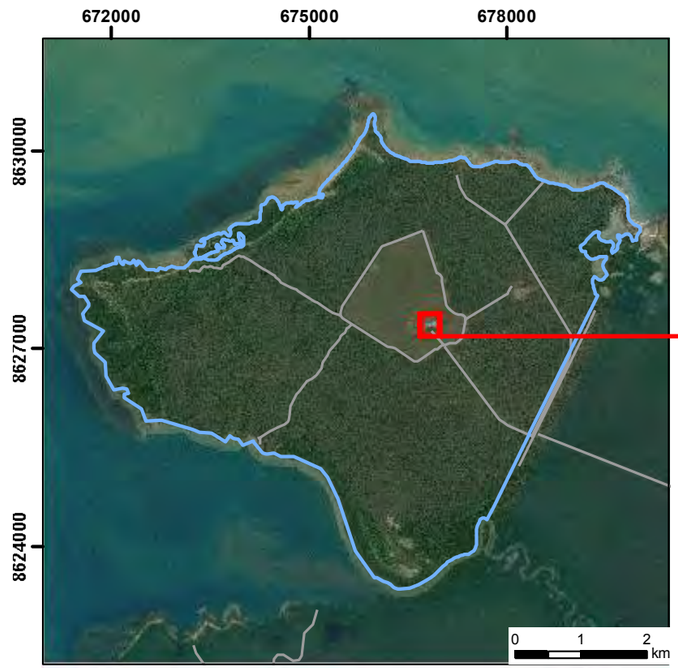

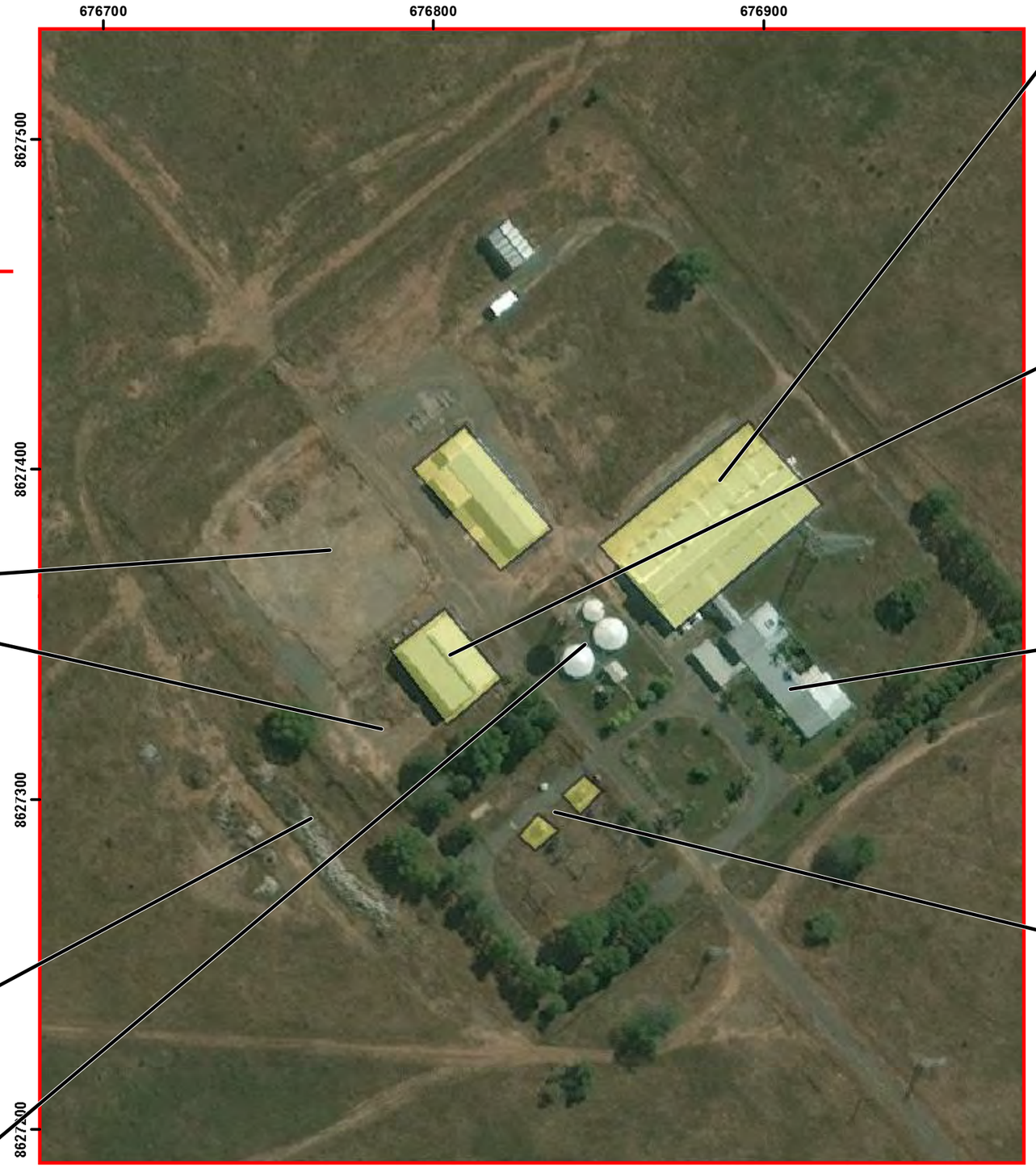

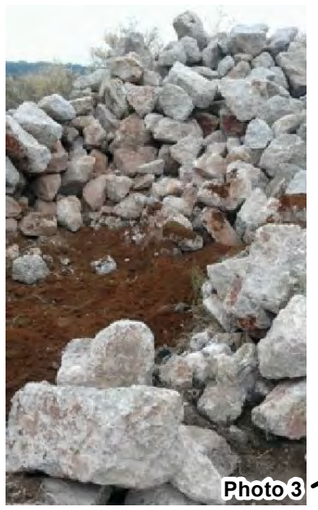

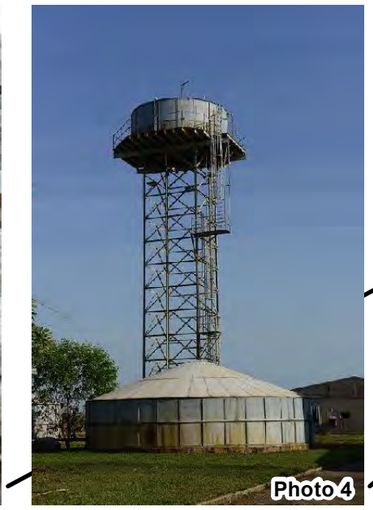

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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A11 - Section 34 Compound (Areas of Interest)
Cox Peninsula, NT

SCALE 1:1,500

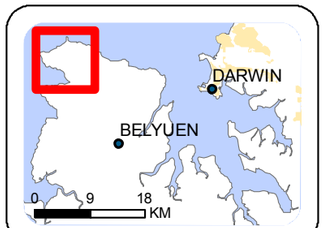
0 20 40 60 80
Meters

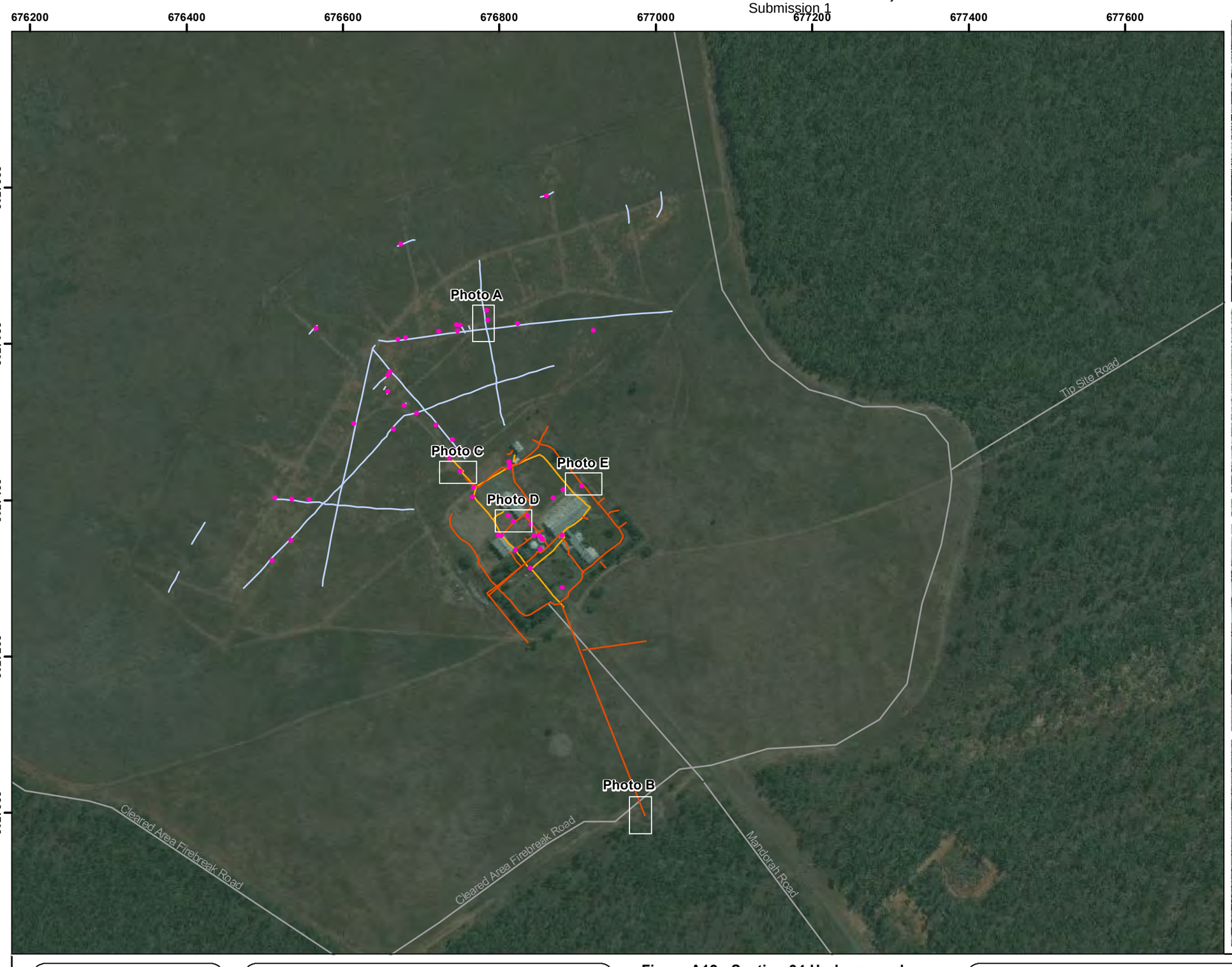
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\PhotoMaps\VW07225_Section34_Compound_AOIs.mxd

Legend
- Section 34 Boundary
- Pesticide Contaminated Soil (Below Slabs)
- Road

DATE SOURCES:
SKM, 2013; Geoscience Australia; 2006
Imagery: ©2013 DigitalGlobe; GeoEye, June 2002 and April 2001





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JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A12 - Section 34 Underground Services

Cox Peninsula, NT

SCALE 1:5,000

0 100 200 300
Meters

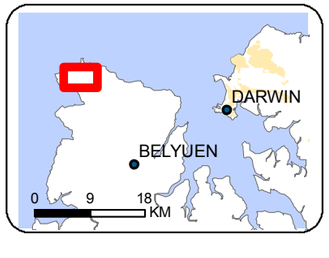
MAP LOCATION

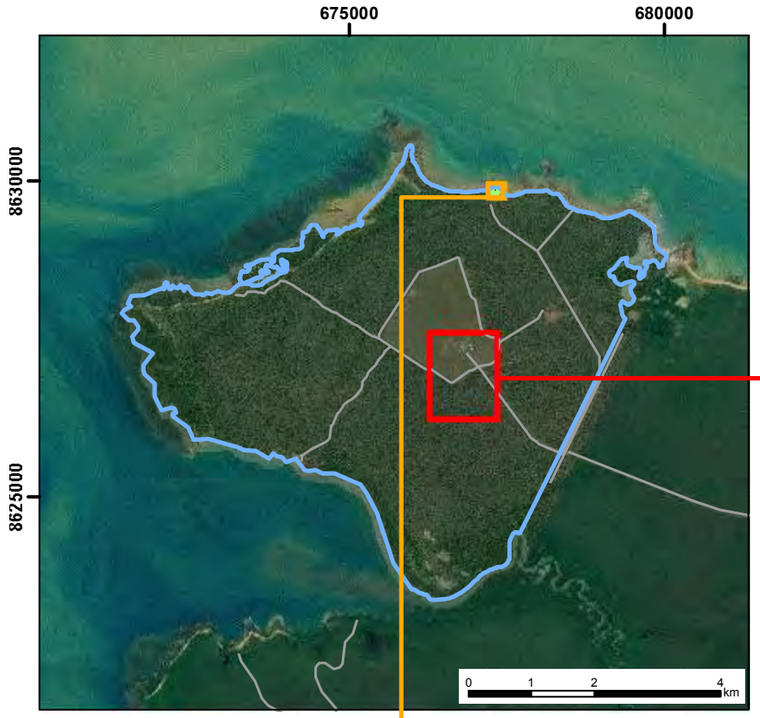
I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\Report Maps\VW07225_FigA12_S34_UG_Services.mxd

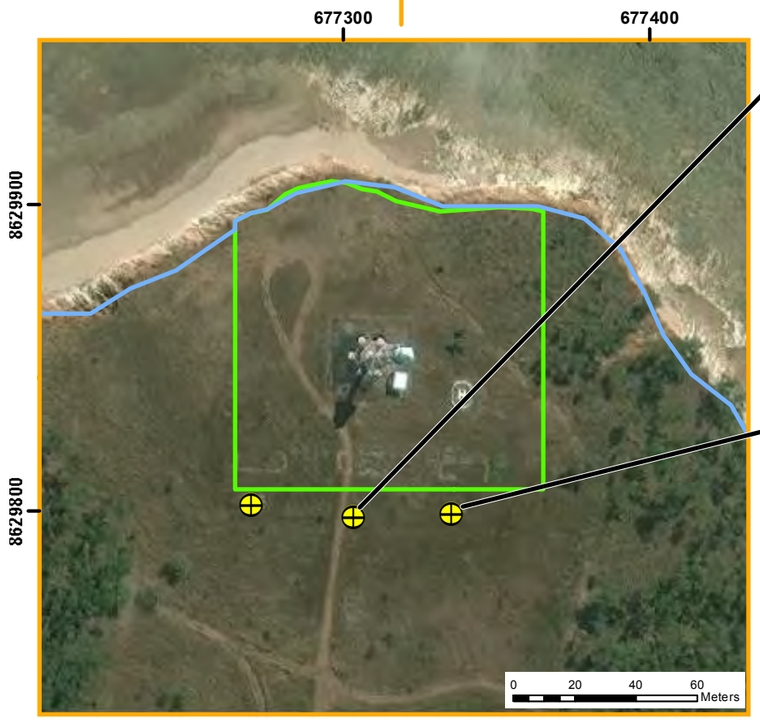
Legend

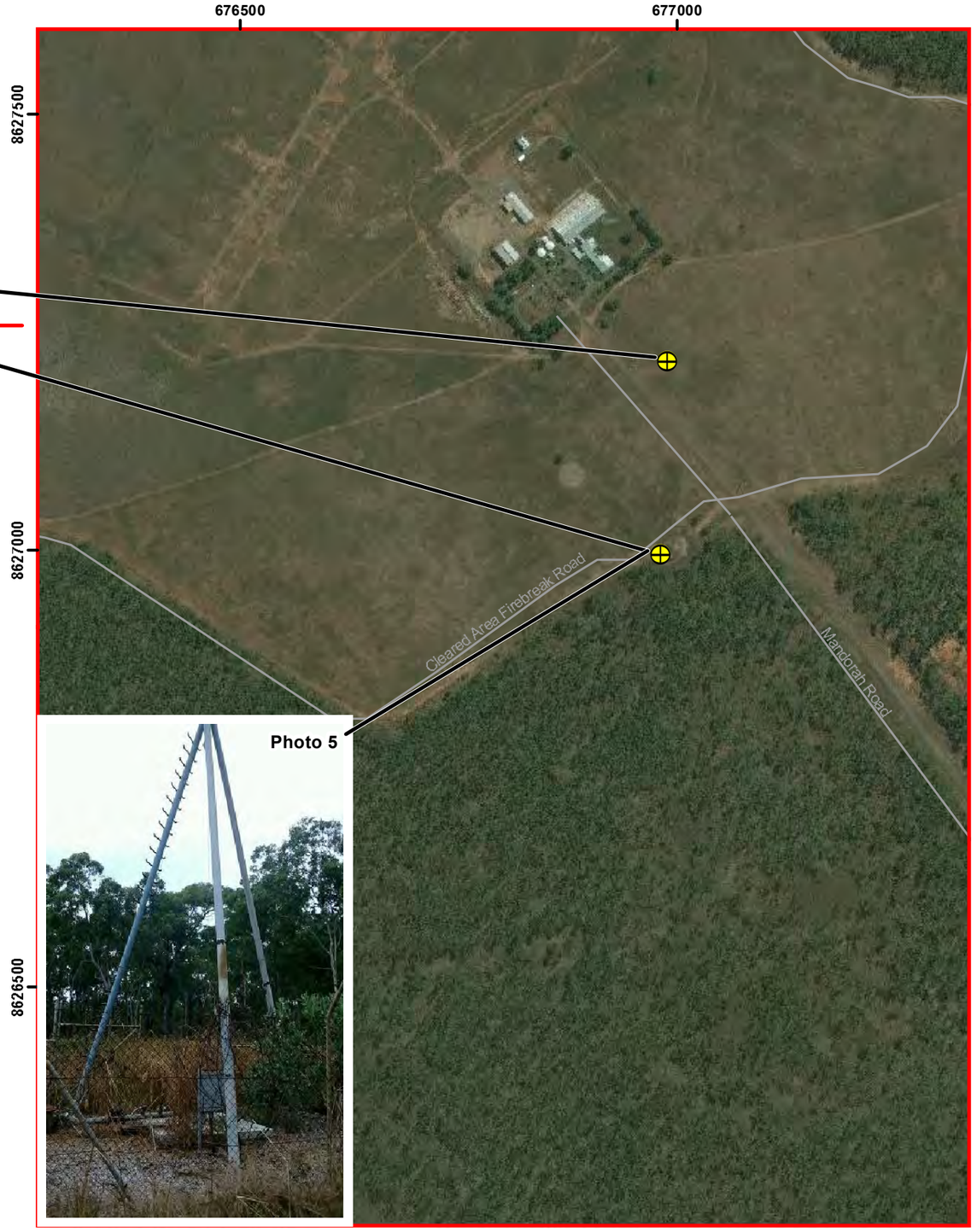
- Trenching Locations
- Communications
- Power
- Cables
- Roads

DATA SOURCES
SKM, 2013; Geoscience Australia, 2006;
Imagery: ©2013 DigitalGlobe;
GeoEye,June 2002 and April 2001









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MGA52

JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A13 - Section 34 and 41 Existing Bores

Cox Peninsula, NT

SCALE 1:6,000

0 100 200 300
Meters

MAP LOCATION

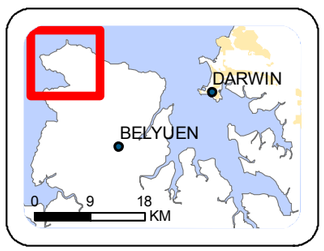
Created: 21 Nov 2013

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\PhotoMaps\VW07225_Section34_41_Bores.mxd

Legend

- Section 34 Boundary
- Section 41 Boundary
- Bore
- Road

DATE SOURCES:
SKM, 2013; Geoscience Australia; 2006
Imagery: ©2013 DigitalGlobe; GeoEye, June 2002 and April 2001



The Cox Peninsula Remediation Project
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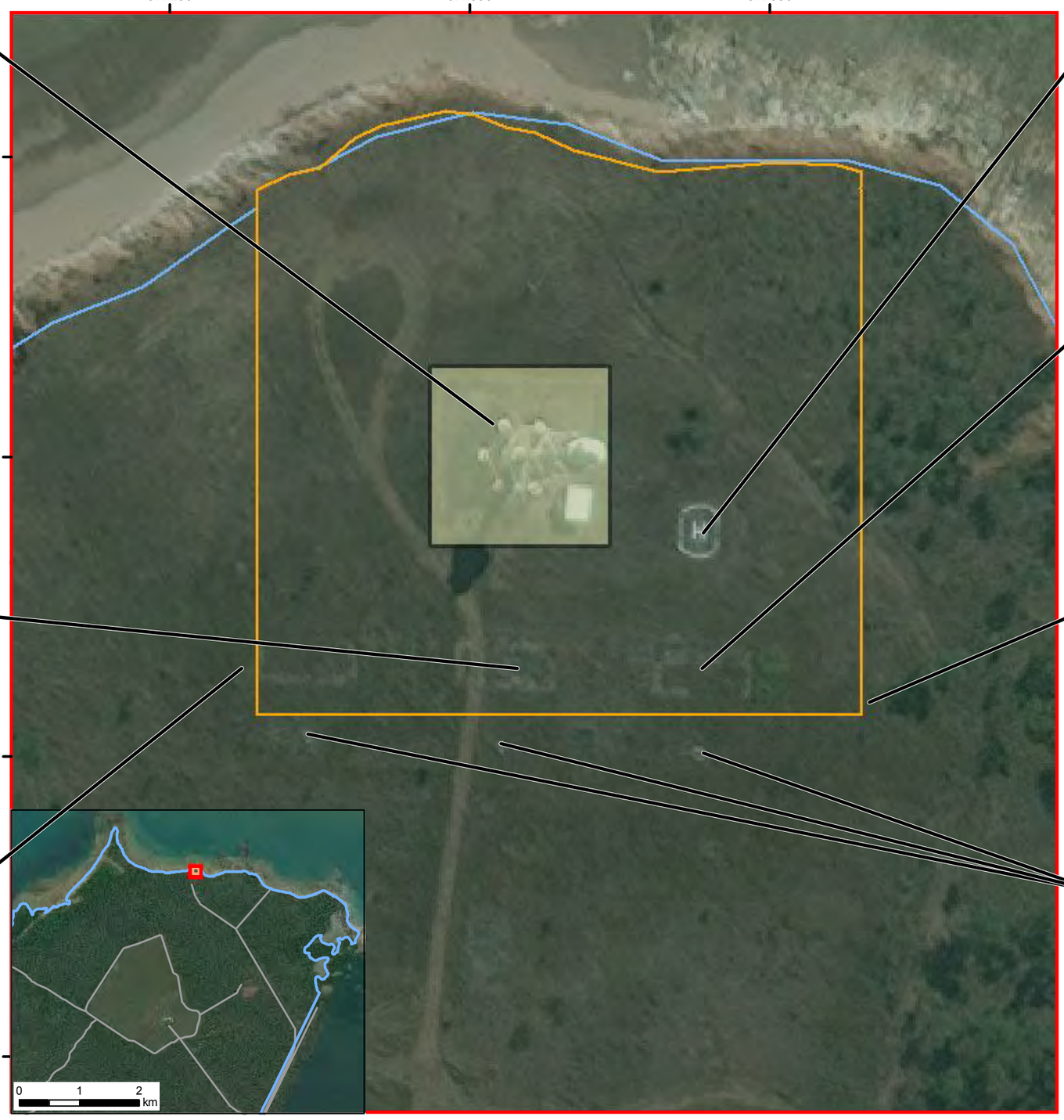

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MGA52

JOB NO	MAPPED	REVIEW	PM	SIZE
VW07225	AF	WR	MN	A3

Figure A14 - Section 41 Areas of Interest

Cox Peninsula, NT

SCALE 1:800

0 25 50
Meters

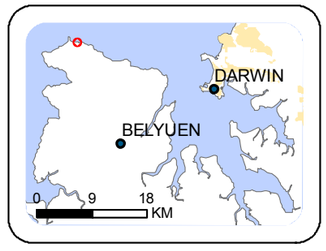
MAP LOCATION

I:\VWES\Projects\VW07225\Technical\Spatial\ArcGIS\PhotoMaps\VW07225_CL_Photos_Section41.mxd

Legend

- Section 41 Boundary
- Section 34 Boundary
- Lead Impacted Soil Around Lighthouse
- Road

DATE SOURCES:
SKM, 2013; Geoscience Australia; 2006
Imagery: ©2013 DigitalGlobe; GeoEye, June 2002 and April 2001



Appendix B – Preferred Option (Containment Cell) Proposed Staging of Delivery

A detailed remediation action plan has been developed, which along with the master works program provides a blue print for the preferred remediation plan. The process is summarised in the following figures.

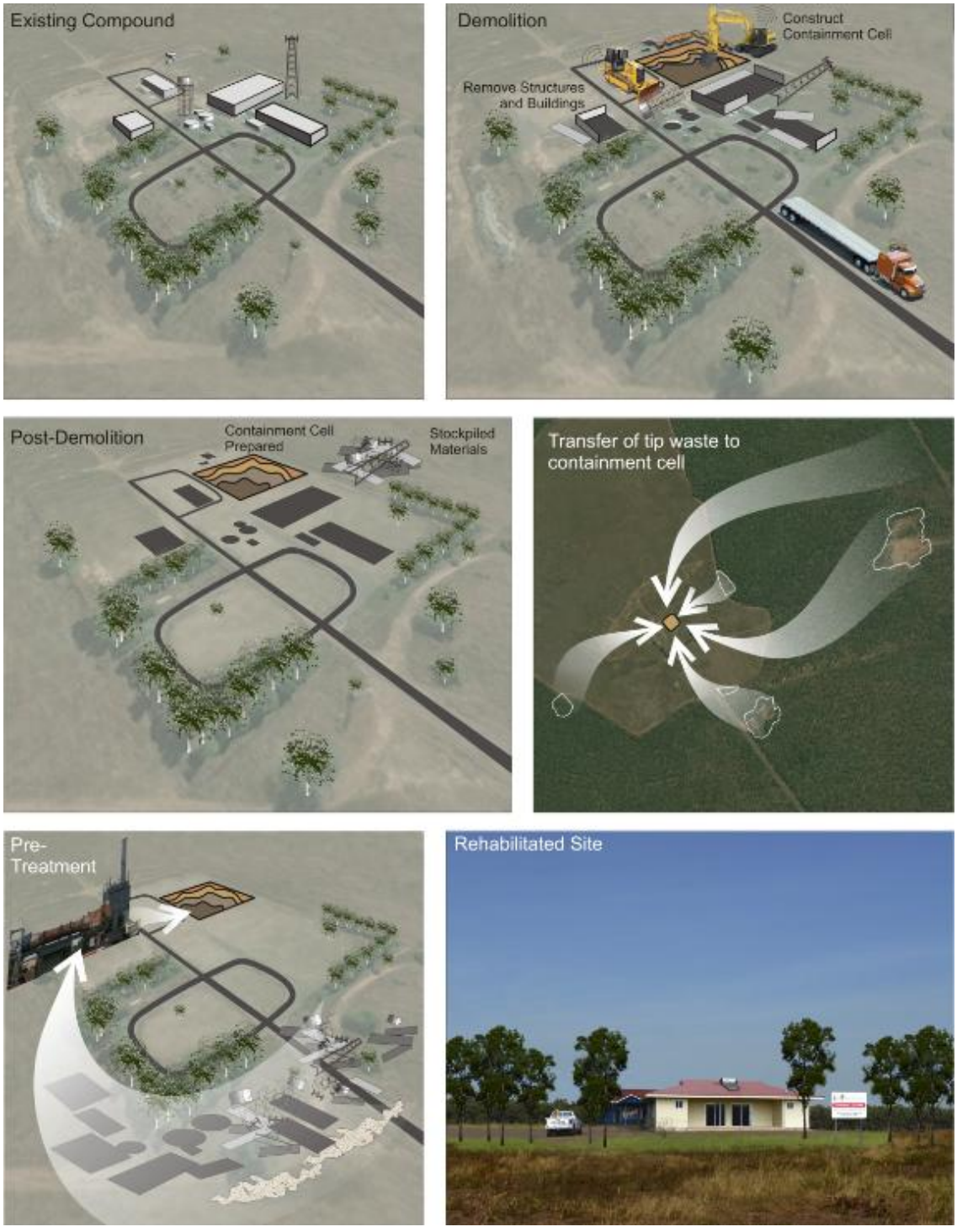


Figure 9: Section 34 and 41 remediation process

Figure 10: Section 32 remediation process