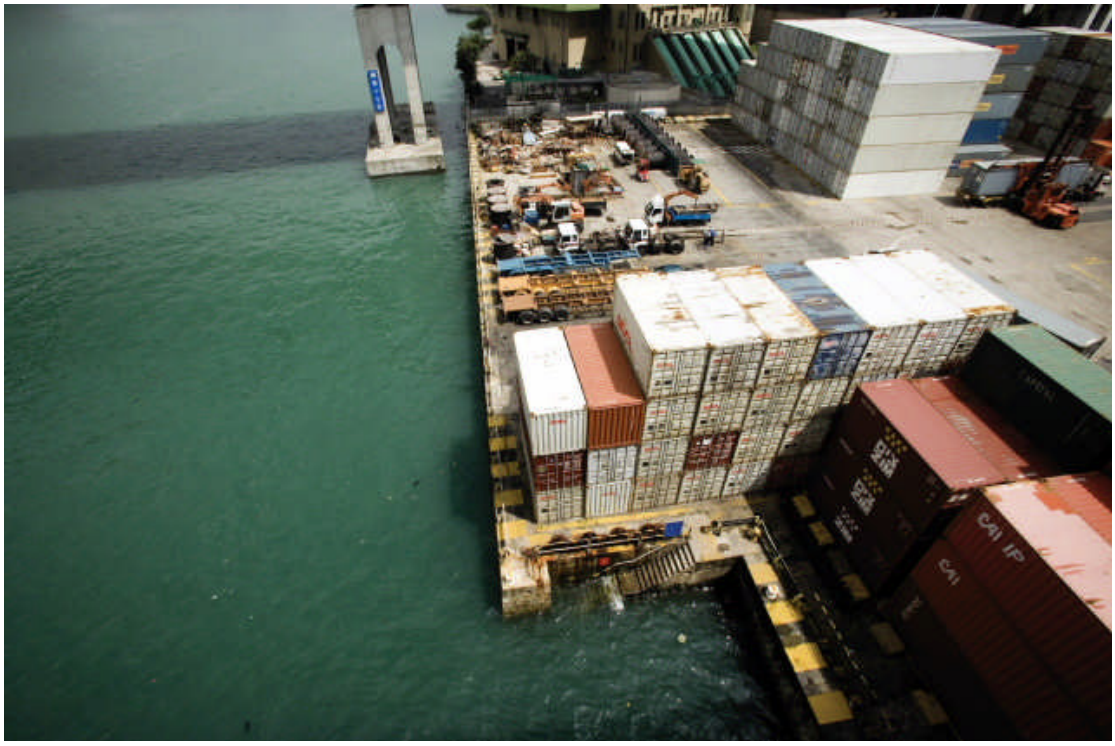
Australian Customs Service

Evaluation of the Performance and Impact of Technologies in Customs

Final Report – Executive Summary
Technologies 1 to 13

May 2008



1 Executive Summary

The Australian Customs Service (Customs) plays a vital role in preventing the illegal movement of people and harmful goods across the Australian border. To fulfil this role Customs must have the capacity to screen travellers, cargo, mail, aircrafts and vessels effectively and efficiently.

In order to ensure constant improvement of risk identification and intervention capabilities Customs initiated an evaluation of the performance and impact of currently deployed border technologies. PricewaterhouseCoopers was engaged to assist Customs in this evaluation by providing an independent comparative assessment of detection and operational support technologies currently deployed in Customs, against agreed criteria, to determine whether they are meeting business requirements.

The evaluation was managed within Customs by the Research and Development Branch, with high level oversight provided by a Project Board. The Project Board, chaired by the DCEO Border Enforcement, included senior representatives from the Cargo; Enforcement and Investigations; Passengers; People and Place; and Financial Services divisions.

The Project Board determined both the technologies included in the evaluation and the evaluation criteria that were used, and approved the project plan for the evaluation. Draft reports outlining the evaluation findings were also forwarded to the Project Board for comment on 4 March, 28 March and 24 April 2008.

This report provides an assessment of the 13 border technologies in scope, namely:

- Substance detection and identification technologies
    - Raman spectroscope (StreetLab)
    - Ion mobility spectrometers
        - Desktop (Itemiser3, Ionscan 500DT)
        - Handheld (Sabre 4000)
    - Immunoassay antibody based detectors (Biosens D)
    - Selected ion flow tube mass spectrometers (Voice 100)
    - Field test kits for drugs and precursors (NIK test kit, Narcopouch test kit, Narcotest kit, UNIDCP precursor tests, Drug ID immunoassay kit)
- X-ray equipment
    - Container
    - Pallet
    - Cabinet
    - Explosive detection x-ray
    - Mobile x-ray vans
    - BodyScan
- Radiation pagers and source identifiers (GR100 and GR135)

A brief summary of the items of technology within scope, the environments at which they are deployed and their primary uses can be seen in the table below.

	Air Cargo / Bond	Airport Operations	Container Examination Facility	Post	Waterfront/Enforcement Operations	Uses
StreetLab	√	√	√	√	√	Analysis of small samples of pills, powders, gels, pastes, solids and liquids to identify the composition of a substance at a presumptive level based on a library of known substances.
Itemiser3/Ionscan 500DT	√	√	√	√	√	Presumptive testing for the occurrence of drugs and explosive traces based on a library of known substances.
Sabre 4000	√				√	Handheld, portable presumptive testing for the occurrence of drugs and explosive traces based on a library of known substances.
Biosens D		√	√	√		Antibody based trace verification unit for positive alarms for explosives experienced with the Itemiser3/Ionscan 500DT.
Voice 100			√			Analysis and measurement of the fumigant levels within sea containers prior to physical examination
Container x-ray			√			Mass screening tool to x-ray large shipping containers, which is operated while the container is loaded on the back of a truck.
Pallet x-ray			√			Mass screening tool to x-ray large items without the need to unpack the items into smaller components.
Cabinet x-ray	√	√	√	√	√	Mass screening tool to x-ray a range of small to medium items. Most widely deployed x-ray technology.
Explosive detection x-ray				√		Specialised cabinet x-ray that is designed to highlight the areas of an image that have characteristics similar to explosives.
Mobile x-ray vans	√				√	Allows mobile capability to x-ray smaller items at a variety of locations.
BodyScan		√				X-ray designed to penetrate the clothing of an individual to reveal any concealed objects which may be prohibited.
Radiation pager and source identifier (GR100 and GR135)	√	√	√	√	√	Radiation pagers (GR100) monitor radiation levels, while source identifiers (GR135) identify the type and source of the radiation.
Field test kits for drugs and precursors	√	√	√	√	√	Comprise of four types of test kits (Narc Kits, Drug ID Kit, Drugwipe Kit and UNIDCP Kit) which have the capability to presumptively identify a range of prohibited substances.

Technologies deployed in a layered approach for the identification and verification of threats

RESPONSES	THREATS				
	Drugs & Drug Precursors	**Explosives**	**Guns & Other Prohibited Imports**	**Radiation**	**Chemicals**
1. Screening					
Wide area surveillance, either of an area or a stream of goods or people	Dogs **X-rays** **Ion mobility spectrometry (Itemiser3/ Ionscan 500DT, Sabre 4000)** **Immunoassay trace detectors (Drugwipes)** **Selected ion flow tube mass spectrometry (Voice100) (vapour only)**	Dogs **X-rays** **Explosive Detection X-rays** **Ion mobility spectrometry (Itemiser3/ Ionscan 500DT, Sabre 4000)**	Dogs **X-rays** Advanced metal detection system	**GR100 radiation pager**	**Selected ion flow tube mass spectrometry (Voice100)**
2. Examination					
Testing of selected items for additional indicators	**Ion mobility spectrometry (Itemiser3/ Ionscan 500DT, Sabre 4000)** **Raman spectrometry (StreetLab)** **Immunoassay trace detectors (Drugwipes/ Biosens)** **Wet chemical test kits (NIK, Narcopouch, NarcoTest, UN drug precursor test kit**, NARKII) **Immunoassay identifier test strips (DrugID)** Infrared spectrometry (HazMatID) **X-rays** **X-ray (Bodyscan)**	**Ion mobility spectrometry (Itemiser3/ Ionscan 500DT, Sabre 4000)** **Immunoassay trace detector (Biosens)** **X-rays** **Explosive Detection X-rays** **X-ray (Bodyscan)**	**X-ray (Bodyscan)** Electronic examination	**GR135 Radiation source identifier**	**Raman spectrometry (StreetLab)** Infrared spectrometry (HazMatID)
3. Presumptive Verification					
Complementary use of one or more additional technologies to provide a higher level of confidence in the testing results	Technologies listed above used as appropriate to complement the initial examination	Technologies listed above used as appropriate to complement the initial examination	Computer forensics	Not applicable	Technologies listed above used as appropriate to complement the initial examination
4. Confirmation					
Confirmation of threat	Specialist laboratory testing	Specialist response agencies	Specialist response agencies	Specialist response agencies	Specialist response agencies

Technologies in bold are within the scope of the evaluation.

PricewaterhouseCoopers has gathered empirical and anecdotal evidence from a number of sources, including:

- background information from Research and Development Branch
- a series of regional site visits
- an on-line survey, which allowed for bulk data gathering (472 responses were received).

Over the past decade many new technologies have been introduced, particularly in response to the Government's priority for their rapid deployment to protect the Australian community. Comments in this Evaluation concerning particular technologies need to be read in this light.

In addition, it is important to note that there is a limited range of technologies available to meet Customs' requirements and that the selected technologies are deployed in a range of different operating environments. In a general sense, these factors also must be taken into account in the interpretation of views of particular Officers on the efficiency and effectiveness of particular items of technology.

Given these factors and constraints, in general the border technologies currently deployed by Customs provides the intended capabilities. However, it was consistently found that the level of training and awareness of Operators impacted the effectiveness of the border technology capability. In particular Operator awareness impacted regularity of use and appropriate operation of technology, which had flow on effects to robustness of technology, value for money and consequently in some cases the ability to meet an identified business need. This is illustrated in the following discussion of:

- systemic themes (that span a number of technologies)
- technology specific findings and recommendations
- evaluation criterion 10 as it relates to the CATO role and criteria 15 – 17 which relate to all technologies.

Systemic Themes and Benefits Realisation

Several systemic themes that are relevant to more than one item of technology emerge from this evaluation.

Implementation of the recommendations made in this report will benefit Customs or Customs staff in the following key areas:

- Increasing awareness of issues, concepts and policies related to correct operation of technologies – may be measured through improvement in understanding of Operators as to why, when and how to use technology.
- Ensuring technologies deployed are appropriate for specific locations – may be measured through improved performance metrics of newly deployed technologies (performance metrics will be specific to sites and technologies).
- Improving the effectiveness of training – may be measured through improved responses on feedback received from training and increased understanding of Operators as to why, when and how to use technology.
- Increasing the number of trained Operators and CATOs – may be measured through increased site productivity levels.
- Enhancing the procurement processes (including consumables) – may be measured through reduced acquisition costs (for consumables), and improved performance metrics of newly deployed technologies (performance metrics will be specific to sites and technologies).
- Operating improvements – may be measured through improved performance metrics of deployed technologies (performance metrics will be specific to sites and technologies).

A detailed benefits realisation plan can be found at Appendix A.

Raman Spectroscope (StreetLab)

The StreetLab is a Raman Spectrometer machine that was introduced to Customs in October 2005 for the rapid, non-destructive identification of solid and liquid chemical substances. The StreetLab is a widely dispersed technology within Customs and is operated across all Customs environments. The StreetLab can analyse the composition of a substance at a presumptive level based on a library of known substances, and is the only technology outside of the UNIDCP Kit that can detect precursor chemicals. The StreetLab is used less frequently than trace detection items of technology.

With a $30,000 acquisition cost, and low on-going maintenance costs, the StreetLab is considered good value for money.

Technology specific recommendations

1. Clarify guidance on best practice sample sizes for the testing of substances on the StreetLab and communicate this to all operational areas.
2. Investigate options for increasing flash memory capacity of the StreetLab.
3. Clarify guidance on best practice threshold predicted time periods for the processing of samples in the StreetLab.
4. Investigate options for the provision of authorised samples of drugs to the regions for training purposes, including consideration of risks and administrative costs; incorporate case studies in training to demonstrate the effectiveness of the technologies.
5. Communicate explosive testing policies to Operators and CATOs in relation to the StreetLab to minimise OH&S risk associated with the testing of unidentified substances.
6. Examine StreetLab usage rates at individual sites to determine whether Narcopouches and the Voice 100 sufficiently cover the operational needs of the area.
7. Increase targeted training of CATOs and Operators in order to provide more resources for adherence to preventative maintenance schedules.
8. Increase regularity of email correspondence with CATOs regarding current issues and practices involving the StreetLab.

Itemiser3 / Ionscan 500DT

The Itemiser3 and Ionscan 500DT are stationary Ion Mobility Spectrometers. The Itemiser3 was introduced to Customs in November 2005 while the Ionscan 500DT was introduced in late 2007. Both items were procured to provide the capability of detecting traces of drugs and explosives in the same mode (ie. a dual mode capability).

Due to similarities between the two items of equipment they have been analysed together. These items were the most widely deployed technologies observed and received the highest number of survey responses.

With an $85,000 acquisition cost and low on-going maintenance costs, the Itemiser3 / Ionscan 500DT were considered value for money, especially in a passenger environment. The technology has higher costs per use in sea cargo environments where use is not as frequent.

Technology specific recommendations

9. Where possible ensure the Itemiser3/Ionscan 500DT is accommodated and operated in a temperature controlled environment away from heavy foot traffic.
10. Continue to review the most appropriate sites for deployment of the Ionscan 500DT.
11. Reinforce the concept of trace detection to users, including breaking down the perceived requirement for there to be a strong linkage between a trace detection and subsequent substance find.

12. Investigate options for the provision of authorised samples of drugs to the regions for training purposes, including consideration of risks and administrative costs; incorporate case studies in training to demonstrate the effectiveness of the technologies.
13. Assess the viability and likely usage rates of the Itemiser3/Ionscan 500DT in regard to the different operating environments during the deployment process.
14. Reassess the training curriculum to ensure the best mix between simulated practice and theoretical teaching.

Sabre 4000

The Sabre 4000 is a portable Ion Mobility Spectrometer that was introduced to Customs in April 2006 for trace detection of drugs, explosives and chemical warfare agents/toxic industrial chemicals in offsite operations. The Sabre 4000 operates on the same principles as the Itemiser3 / Ionscan 500DT. It is less widely dispersed however, being located primarily at Enforcement Operations, Waterfront and Air Cargo facilities. The Sabre 4000 was used less frequently than other trace detection technologies.

With a $40,000 acquisition cost, high ongoing maintenance and consumable costs and relatively low frequency of use, the Sabre 4000 is expensive to operate. The Sabre 4000 only provides value for money where remote sampling using the Itemiser3 / Ionscan 500DT is not possible within the timeframe in which the ship, cargo or passenger will be present in port.

Technology specific recommendations

15. Review site deployment of the Sabre to determine whether the Itemiser3/Ionscan 500DT and Drugwipes sufficiently cover the operational needs of the area.
16. Reinforce the best practice swabbing techniques for the use of the Sabre.
17. Reinforce the concept of trace detection to users, including breaking down the perceived requirement for there to be a strong linkage between a trace detection and subsequent substance find.
18. Reinforce the need for sites to lodge remedial maintenance forms with Border Technologies Section in the event of a Sabre breakdown to allow Border Technologies to have a greater awareness of technology performance.
19. Increase targeted training of CATOs and Operators in order to provide more resources for adherence to preventative maintenance schedules.
20. Increase regularity of correspondence with CATOs regarding current issues and practices involving the Sabre.

Biosens D

The Biosens D was introduced to Customs in February 2006 in response to the need to have highly accurate trace detection technology to complement existing Ion Mobility Spectrometry technology such as the Itemiser3/Ionscan 500DT. In particular the Biosens D was intended to be a trace verification unit for positive explosive alarms experienced with the Itemiser3. In this context it fulfils an important OH&S role.

With a $70,000 acquisition cost, high preventative maintenance levels, frequent consumable replacement and low levels of use the Biosens D there are issues with respect to an overall value for money assessment. However, these issues may be seen as the necessary cost of deploying the required explosives confirmation capability.

Technology specific recommendations

21. Clarify and communicate the usage policy of the Biosens D widely to Operators, CATOs and Supervisors.

22. Conduct a follow up review of Biosens after implementing all other recommendations to determine whether the Biosens D is satisfying business needs.
23. Reinforce the maintenance requirements of the Biosens D to enable a more informed conclusion to be drawn in relation to its reliability.
24. Increase targeted training to boost the number of qualified Operators and CATOs on the Biosens D and to provide more resources for adherence to preventative maintenance schedules.

Voice 100

The Voice100 was introduced to container examination facilities across Australia in mid 2005 to detect toxic chemicals in cargo containers to protect national security and meet Customs commitments to officer safety and timely cargo container screening.

With a $350,000 acquisition cost, and based on the service it provides in the CEF environment, improvements compared with the previous technology used to perform the same function and the costs associated with maintenance, the Voice 100 appears to represent value for money.

Technology specific recommendations

25. Update the standard operating procedures to indicate the dual mode capacity of the Voice 100.
26. Increase targeted training of CATOs and Operators in order to provide more resources for adherence to preventative maintenance schedules.

Container x-ray

The container x-ray is a mass screening tool which allows Customs to x-ray large (up to 40 feet long) shipping containers without removing the container from the back of the truck on which it is being transported. Customs currently owns four container x-rays which are located at Container Examination Facilities in Fremantle, Melbourne, Sydney and Brisbane.

The container x-ray was introduced to Customs in November 2002 from funding received under the Government's *Tough on Drugs, Protecting our Borders* and *Maritime Security* initiatives. As an element of the overall Sea Cargo Container Examination Facility program the objectives were to assist in:

- Preventing the flow of illicit drugs and other harmful goods into Australia
- Minimising revenue losses from smuggling and other revenue evasion in sea cargo
- Increasing the volume of sea cargo inspected
- Protecting legitimate industry from non-compliant importers and exporters through detection and deterrence
- Improving the security of sea cargo trade in Australia with minimal disruption to industry.

While there is an acquisition cost of approximately $3 million and considerable ongoing costs, given its ability to mass screen shipping containers, the container x-ray represents value for money in the sea cargo environment.

Technology specific recommendations

27. Review the training curriculum to assess whether the balance of practical aspects and the theoretical components are appropriate.
28. During x-ray training and annual recertification use images that are specific to the technology.

29. Establish a structured process whereby inexperienced users of the container x-ray are supervised by experienced users during initial use.

Pallet x-ray

The pallet x-ray was introduced to Customs in November 2002 as a mass screening tool for use in the sea cargo environment. It allows Customs to x-ray large items, including by the pallet, without the need to unpack the items into smaller components. Pallet x-rays are located at Container Examination Facilities in Fremantle, Melbourne, Sydney, Brisbane and Adelaide. The machines are from three different manufacturers. Additionally, the pallet x-ray located at Adelaide differs from those at the other CEFs in that it is a more powerful unit.

With an acquisition cost of approximately $2 million and its ability to mass screen large items, the pallet x-ray represents value for money in the sea cargo environment. There are issues however, regarding the maintenance and down time of pallet x-rays which impact its availability for use and results in an overall lower value for money assessment.

Technology specific recommendations

30. Compile a summary of strengths, weaknesses and general characteristics for the range of deployed pallet x-ray models, to help inform the acquisition of appropriate models of pallet x-rays in the future.
31. Research and Development Branch to take a more active role in the central management of maintenance contracts, including enforcement of obligations.
32. Emphasis should be placed on the maintenance deliverables during the procurement process when Customs seeks to replace the current pallet x-rays.
33. Review the training curriculum to assess whether the balance of practical aspects and the theoretical components are appropriate.
34. During x-ray training and annual recertification use images that are specific to the technology.
35. Assess the number of Operators required per site for the pallet x-ray to establish whether additional training programs are required.
36. Research and Development Branch to liaise with CEFs to establish what sort of central support they require or expect in relation to the pallet x-ray.

Cabinet x-ray

Cabinet x-rays have been used by Customs since the 1990s. The x-rays were introduced as the primary inspection method enabling Customs to inspect mandated proportions of cargo and passenger consignments.

It is the most broadly deployed x-ray technology in Customs and allows for mass screening and targeted examination of a range of small to medium items (such as baggage, parcels or small articles of air cargo) across all environments.

A number of cabinet x-ray makes and models are deployed by Customs, with corresponding variation in the particular characteristics of machines, such as image quality, which can impact preferences for use.

With an acquisition cost of approximately $100,000 and wide deployment across Customs environments, the cabinet x-ray represents value for money.

Technology specific recommendations

37. Compile a summary of strengths, weaknesses and general characteristics for the range of deployed cabinet x-ray models, to help inform the acquisition of appropriate models of cabinet x-rays in the future.

38. Establish a structured process whereby inexperienced users of cabinet x-rays are supervised by experienced users during initial use.
39. Reinforce to CATOs the need to conduct cabinet x-ray recertification training for certified officers.
40. During x-ray training and annual recertification use images that are specific to the technology.

Explosives detection x-ray

Explosive detection x-rays (EDXs) are a specialised cabinet x-ray designed to highlight specific areas of an image which have characteristics similar to those of explosives.

Customs deployed EDXs to major international postal facilities in Melbourne and Sydney in the 2005/06 financial year to deliver a Government election commitment for the capability to detect and interdict explosives and explosive devices at the border.

With an acquisition cost of approximately $400,000, and difficulties arising from its deployment in the Post environment, there are issues with respect to an overall value for money assessment. However, these issues may be seen as the necessary cost of deploying the required explosives detection capability.

Technology specific recommendations

41. Collect data on the proportion of items referred for secondary inspection and the proportion of find rates from the EDX and other cabinet x-rays to confirm if image analysis on the EDX is reducing the need for secondary inspection or increasing the find rate.
42. Review the implementation and use of EDX image sharing software at Melbourne Post and determine if there are 'lessons learned' that can be used at the Sydney Post.
43. Review the implementation of the current EDX software upgrade to ensure that appropriately improved image quality has been delivered for the detection of multiple threats.
44. Reinforce the need for CATOs to utilise the EDX training image library during training sessions, with the assessment image library to be used solely for certification testing and not as a training tool
45. During x-ray training and annual recertification use images that are specific to the technology.
46. Review arrangement and resource commitments for Customs involvement in training AQIS staff in use of EDX.
47. Research and Development Branch to liaise with Post sites to establish what sort of support they require or expect in relation to EDX.

Mobile X-ray Units

Mobile x-ray units (MXUs) were introduced to Customs in the late 1990s, with new models coming on stream between 2000 and 2002. The MXU provides Customs with the capacity to x-ray smaller items, including cargo and luggage, at a variety of locations. The x-ray unit is mounted on the back of a van, which does not require a specialised licence to drive. Customs currently owns 17 MXUs (of which five new units are currently being deployed.) The MXUs are generally located at District Offices or Air Cargo sites.

With an acquisition cost of approximately $350,000 and the ability to conduct x-ray scanning in remote locations, MXUs represent value for money.

Technology specific recommendations

48. Consider whether the MXUs in Hobart and Townsville are priorities for replacement.

49. Reinforce to CATOs the need to conduct mobile x-ray recertification training for certified officers.
50. Review the training curriculum to assess whether the balance between practical aspects of the x-ray training and the theoretical components are appropriate.
51. During x-ray training and annual recertification use images that are specific to the technology.
52. Offer the opportunity for Operators of MXUs to undertake formal driver training.

BodyScan

The BodyScan is an x-ray machine which penetrates a person's clothing without penetrating the skin. The objective is to show concealed objects that may be prohibited. Customs purchased a single BodyScan machine in 1999 for use at Sydney Airport in response to a recommendation from the Privacy Commissioner.

The BodyScan introduced an option for passengers to be searched for concealments without being touched by a Customs officer.

Currently there are very few Customs Officers trained in the operation of the BodyScan, and the unit is stored in a room between the two main arrival halls, away from the area where passenger examinations are usually conducted. The BodyScan has not been operated for several years.

Due to the lack of utilisation of the BodyScan it was agreed that the BodyScan would not be evaluated against the evaluation criteria. It is clearly not contributing to any business need.

Technology specific recommendations

53. Due to the failure of the BodyScan to meet any identified business needs, consider its removal from its current deployment at Sydney Airport.

Radiation pagers and source identifiers

In 2005/06 Customs identified a requirement for the ability to detect, measure and identify sources of radiation at the border. This capability was important to Customs capacity to discharge its responsibilities in the areas of National Security and protection of officers and members of the public.

Radiation pagers (GR 100) are designed to detect high radiation levels and source identifiers (GR 135) are designed to identify the type and source of the radiation. Radiation pagers and source identifiers are deployed across all Customs environments.

The GR100 and GR135 provide peace of mind to Customs Officers and protection against potentially hazardous radiation leakages or threats. With an acquisition cost of approximately $5,000, and the protection it provides Customs Officers against radiation leaks or threats, if consistently and frequently used, the GR100 represents value for money. However, given its cost of $25,000 and its a very limited record of use, consideration should be given to the continued deployment of the GR135, noting the need for verification of potential threats detected by the GR100.

Technology specific recommendations

54. Communicate broadly standard operating procedures and OH&S guidelines for the GR100 and GR135, including use of this technology in different environments.
55. Review the need for deployment and use of the GR135 noting the need for the verification of detections on the GR100.
56. Review GR100/GR135 training package and investigate the possibility of incorporating it into x-ray training.

57. Communicate standard operating procedures and OH&S guidelines to clarify if any personal protective equipment is required for the use of the GR100/GR135, with particular focus on the operation of the GR135.
58. Establish and communicate a standard policy relating to which Operators should be trained in the use of the GR100/GR135 – ie possibly all x-ray Operators should be trained in the use of the GR100.

Field Test Kits

Customs has four types of field test kits, namely Narc Kits, Drug ID Kits, Drugwipe Kits and UNIDCP Kits. The Narc Kits and Drug ID Kits are single use narcotic substance detection devices, while the Drugwipe Kits are single use narcotic trace detection devices and the UNIDCP Kits test are substance detection devices for drugs and precursors. As agreed in the project plan, due to the similarities between the kits, these technologies were evaluated together.

Narc Kits appear to be meeting an identified need in a cost effective manner, while Drugwipe Kits are partially meeting such a need, and Drug ID Kits and UNIDCP kits appear not to be meeting an identified need in a cost effective manner due to their high acquisition costs and limited use.

All kits are easily used and robust and all kits except the UNIDCP Kits provide results in a timely manner. Officers have confidence in all kits and they are not subject to breakdown. Field test kits are not capable of detecting multiple threats.

Technology specific recommendations

59. Provide instructions to regional sites on the most cost effective operational uses of the Drugwipe.
60. Review site deployment of UNIDCP Kits to determine whether hit rates and operational time settings make the use of the StreetLab and an ongoing arrangement with an external laboratory more appropriate for the identification of precursors.
61. Review the use of Drug IDs across all regions.
62. Develop a formal training curriculum for CATOs and Operators in Narc Kits and Drugwipes and implement this across all regions.
63. Increase targeted training of CATOs for UNIDCP Kits to enable increases in the number of qualified Operators.
64. Formalise supplier agreements to allow for prompt delivery of Field Test Kits to all regional sites.
65. Reinforce the need to use personal protective equipment while operating Field Test Kits.

Criterion 10 and CATO Role

Evaluation criterion 10 relates to the time and costs involved in trainer training. While criterion 10 has been addressed for each technology individually a number of general issues and trends have emerged in relation to the CATO role. As a result, a broad discussion of the CATO role is provided in this report.

During site visits and through survey responses a number of issues were raised in relation to the effectiveness of the CATO role as it is currently structured.

- **Certification requirements of CATOs** – the perceived requirement to complete the Certificate IV in Training and Assessment, has negative implications on both the availability and interest of staff to become CATOs. Questions were raised as to the value in CATOs attaining this qualification, and how it is applied in the CATO role. Staffing Branch confirmed that the Certificate IV is not a requirement of CATOs, however, it is a preference in order to maintain high standards of

training[1]. It was suggested that other training delivery models could be investigated in order to maintain high standards of training, without all CATOs having the Certificate IV qualification.

- **Responsibilities of CATOs** – there are no consistently agreed and defined responsibilities of CATOs. During site visits it was apparent that there was variation in both the activities performed by CATOs, and the manner in which the same activities were performed. There is currently no monitoring or assessment process to ensure that CATOs are delivering an adequate level of service to their site.

- **Ability to conduct role of Customs Officer and CATO** – CATO responsibilities are conducted by individuals who are also fulfilling the duties of a Customs Officer. Strong concerns were raised as to whether it is possible to adequately carry out CATO duties and the duties of a Customs Officer concurrently due to the time commitment of each. In general, CATO duties are not completed in time constrained situations. This issue was particularly emphasised at sites reporting staff shortages.

- **Supervision of Customs Officers using technology** – CATOs and site managers frequently commented on the desirability of CATOs monitoring and supervising Customs Officers in the use of technology. However, due to time constraints, they rarely had the opportunity to do so. This raises the question of who is monitoring and supervising users of technology. In general Supervisors are not trained in the use of technology, and therefore are not equipped to ensure Operators are using technology appropriately. Human error was frequently indicated as a cause for technology breakdown, and site visits demonstrated that there is a significant lack of awareness about why, when and how to use various technologies.

- **Selection criteria for potential CATOs** – there are no defined criteria for selection of CATOs, which may lead to inappropriate candidates being put forward for the role.

- **Recognition of importance of CATO role** – the importance of the CATO role in understanding of technology, ensuring technology is in working order and training Officers in use of technology was recognised during site visits. Despite the importance of the CATO role in contributing to the dayto-day operation of sites, there is no formal recognition of the role. The 'voluntary' nature of the CATO role poses difficulties in monitoring and enforcing accountabilities which directly impacts the effectiveness of the role.

Recommendations

66. Investigate feasibility of alternative CATO qualification and training delivery models which would maintain high standards of training while reducing the impact on sites and individual participants.
67. Define the responsibilities of the CATO role.
68. Establish process for ensuring feedback is received by Border Technologies Section concerning changes to training packages made by CATOs.

[1] 1 As the Australian Customs Service is a Registered Training Organisation, where nationally recognised competency based training is provided, that training must be delivered and participants competency assessed by a trainer with the Certificate IV in Training and Assessment. However, the training delivered by CATOs is not nationally recognised training and therefore the Certificate IV is not a requirement.

69. Establish performance measures, an annual monitoring and assessment programme for CATOs and associated resource requirements. This may be most effectively conducted by Border Technologies Section.
70. Conduct a detailed analysis of the time commitment of CATOs in carrying out their defined duties, to determine if it is possible for CATOs to continue their Customs Officer duties in addition to CATO duties. Based on this analysis, and having regard to the resource implications, determine if the CATO role should be a separate role.
71. Establish a monitoring and supervision framework for Officers using technology, including defining who has accountability for ensuring that technology is being correctly operated, applied and interpreted; consideration of central roles and responsibilities; and quantification of associated resource requirements.
72. Develop a plan for technology awareness training for Supervisors and other managers.
73. Establish a list of selection criteria for CATOs that are linked to the responsibilities defined for the role.

Criteria 15 - 17

Evaluation criteria 15 – 17 were considered in relation to all items of technology, rather than specific items. Broad comments against these criteria and relevant recommendations are summarised below:

Criterion 15 – Technology deployment methodology
The technology deployment methodology applied by Customs is generally well managed. There are however still a number of areas where improvement may be possible, including in relation to:

- **Consultation process –** it was frequently indicated that sites would like to have a greater level of consultation prior to the implementation of new technologies. Border Technologies has responded to this with the development of a draft Practice Statement outlining the technology trials framework aimed at formalising the consultation process. Further consideration of suitable locations for conducting trials and clarity in initial and ongoing costs of acquisition are suggested additions to the draft Practice Statement.

- **Procurement of consumables –** there is a lack of a consistent and centrally managed procurement process for technology consumables and field test kits. Establishing a central procurement process would increase purchasing power, reduce inventory obsolescence and allow greater monitoring of use of consumables and field test kits for specific sites.

- **Co-ordination of technology utilisation –** it was reported that Operators tend to use technologies that they find ‘easiest’ to use, fastest at processing or requiring minimal maintenance. This has lead to technology being used in circumstances that were not appropriate. It was also indicated that there is confusion amongst Operators and Supervisors as to how each piece of technology contributes to achievement of operational objectives. There is no ‘big picture’ summary of how all the deployed technologies interrelate and the circumstances of their use.

- **Maintenance and technology support –** site management are generally unaware of contractual obligations on behalf of each provider. As a result sites are not providing necessary information to Border Technologies Section, and therefore Border Technologies are not aware if maintenance providers are meeting their contractual obligations prior to paying invoices.

- **Equipment lifecycles –** site management indicated that they were generally not aware of equipment lifecycles and replacement plans in relation to border

technologies. This causes difficulties in effective future planning for the training of CATOs and Operators and in negotiating for available floor space and accommodations requirements in shared facilities.

- **Non-compliant operational practices by Operators –** a number of situations were reported where operational practices in relation to technology do not accord with instructions and requirements set out in training curriculum for technology. This may be occurring due to forgetting training instructions, or due to a lack of effective supervision during technology use.

Recommendations

74. In determining the location/s for trials of future technologies, sites should be chosen which will provide the greatest measure of the robustness of the technology in terms of climatic conditions and usage rates.
75. During the trial process for new technology, provide sites with a specific breakdown of the maintenance, consumable and accommodation costs that will be covered by Research and Development Branch versus the costs which must be covered by the site itself.
76. Establish a centralised point for the procurement of all consumables and test kits and communicate the need to utilise this central procurement point to all sites.
77. Issue flowcharts to all regions identifying the correct order of use for each operational technology and provide training to site Operators and Supervisors in the co-ordination of border technologies towards the achievement of operational outcomes.
78. Provide information to site management on the contractual obligations of manufacturers/providers in relation to deployed technologies to enable effective monitoring of contractual performance at a regional level.
79. Communicate information on equipment lifecycles and future procurement plans to the regions in the form of capital equipment plan.

Criterion 16 – Deterrent benefits

In terms of deterrent benefits of the items of technology, it was evident that public knowledge and/or visibility of the operation of the technology is important. This included visibility through media exposure of border technologies through such avenues as Channel Seven's *Border Security* and media coverage, as well as the operation of the Sabre 4000 during ship searches which operators reported as having deterrent benefits.

Recommendations

80. Customs should continue to seek favourable media coverage in relation to the operation of items of border technologies through such shows as *Border Security* as well as news coverage.

Criterion 17 – Future investment strategy

Any future investment strategy in relation to border technology items should include consideration of:

- **Lessons learned from previous investments –** ensure that the strengths, weaknesses and general characteristics of currently deployed technologies are clearly understood and considered in the acquisition of future technologies

- **Current and future operational demands –** consultation with regional sites and the business will help to clarify the current and future operational demands

- **Current and future developments in border technology –** research and liaising with the academic and scientific community will clarify current and future border technology options

- **Rigorous and structured approach to whole of life technology costs** – could be achieved through detailing the following:
  - A detailed set of criteria against which potential acquisitions are evaluated
  - Full life-cycle costs of future acquisitions
  - A methodology and measures for monitoring the progress and results of investments.

Recommendations

81. Establish a clear understanding of current and future operational demands and technology supply options.
82. On the basis of operational demands and supply options develop a structured capital equipment plan including whole of life costs.

Next steps

In order to achieve the benefits outlined in the detailed benefits realisation plan a structured approach must be taken to the co-ordination and implementation of the recommendations.

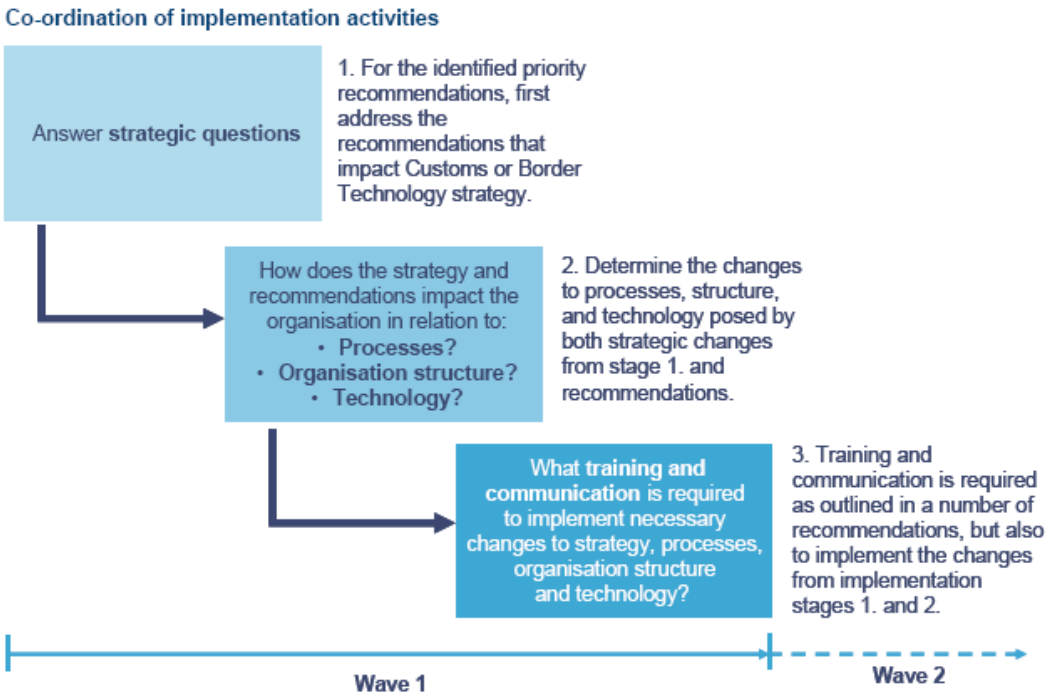
The following steps outline a suggested approach to implementation of recommendations.

a) Ratify recommendations with the business

b) Prioritise recommendations into waves of activities. For example this may be based on one of the following dimensions:

- Systemic themes, as outlined in this report (eg, Increasing awareness of issues, concepts and policies for correct operation; Ensuring technologies deployed are appropriate for specific locations or Improving effectiveness of training)
- Impact or importance to the business
- Environment (ie Post, Passenger Operations, Air Cargo etc.)
- Geographical locations
- Type of technology (ie mass screening, trace detection, x-ray, verification)

c) Create an implementation plan, based on the prioritised recommendations. The diagram below provides an approach to implementation of recommendations.


Co-ordination of implementation activities
Answer strategic questions
1. For the identified priority recommendations, first address the recommendations that impact Customs or Border Technology strategy.
How does the strategy and recommendations impact the organisation in relation to:
• Processes?
• Organisation structure?
• Technology?
2. Determine the changes to processes, structure, and technology posed by both strategic changes from stage 1. and recommendations.
What training and communication is required to implement necessary changes to strategy, processes, organisation structure and technology?
3. Training and communication is required as outlined in a number of recommendations, but also to implement the changes from implementation stages 1. and 2.
Wave 1
Wave 2