EVALUATING POLICE OPERATIONS (1): A PROCESS AND OUTCOME EVALUATION OF OPERATION VENDAS

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PREFACE

This is the first in a series of evaluations of police operations being undertaken by the NSW Bureau of Crime Statistics and Research, to assist the NSW Police in their efforts to develop a more evidence-based approach to crime control. The present evaluation sought to determine whether it was possible to reduce the incidence of break and enter and motor vehicle theft in three patrols by increasing the collection of forensic evidence at crime scenes and devoting more resources to criminal investigation based on this evidence. In this initial phase of the research, police were not successful in achieving their intended outcomes. It would be a mistake, however, to treat this result as anything but a provisional finding. As the report shows, the collection, analysis and use of forensic evidence is an extremely complex process. It is also one that has only recently (and only very rarely) attracted the attention of researchers. It can take years of evaluated trials and research to develop effective remedies to illness and disease. There is no reason to expect the search for effective remedies to crime to be any different. The NSW Police are to be congratulated for their courage and determination in subjecting their crime control strategies to the scrutiny of independent research.

Dr Don Weatherburn

Director

March 2004

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EXECUTIVE SUMMARY

From May through July of 1999, senior officers at one NSW Local Area Command (LAC) conducted a relatively small-scale operation whereby police focussed their efforts on forensic evidence in an attempt to increase the rate at which property offenders were arrested. Building on the reputed success of this operation, the NSW Police Service recently undertook to extend some of the initiatives carried out under that trial, assess them in a broader geographical area and have them independently evaluated by the NSW Bureau of Crime Statistics and Research.

The aim of the new operation, code-named Vendas, was to reduce the volume of Break, Enter and Steal (BES) and Motor Vehicle Theft (MVT) incidents in three NSW Local Area Commands. The two mechanisms by which the operation sought to reduce crime were by increasing the absolute risk of apprehension and by improving the swiftness with which BES and MVT offenders were apprehended in the trial LACs. The operation employed three primary strategies to increase the volume and speed of arrests:

1. Evidence gatherers aimed to attend 100 per cent of BES and Recovered Stolen Motor Vehicle (RSMV) crime scenes. This was expected to increase the volume of forensic evidence collected from crime scenes, the volume of persons identified on forensic evidence, and the volume of persons arrested;

2. Police in each LAC aimed to reduce the time between the collection of fingerprint and DNA information and dissemination of a forensic identification back to the Command. This strategy was designed to reduce the time taken to arrest recidivist offenders; and

3. Police in each LAC also aimed to prioritise the investigation of suspects identified on fingerprint and DNA information. The prioritisation of forensic investigations was designed to increase both the volume and speed of arrests at the trial LACs.

In addition to these primary initiatives, several other strategies were implemented which might be expected to increase the risk of apprehension. Police planned to rigorously analyse modus operandi (MO) and pawnbroking data, and to distribute leaflets among victims of both BES and RSMV which were designed to improve crime scene preservation and to improve the quality of information collected from the victims of crime.

The present evaluation aimed to assess both the outcome of the operation on arrest and recorded crime rates and the process of implementing the operation, including an analysis of factors that facilitated or hindered those outcomes. Data were drawn from a number of sources, including: written materials prepared by NSW Police; field notes taken during the course of the operation; in-depth interviews with key informants; and quantitative data from both the Forensic and Police databases.

Although analyses were hampered by the short intervention period of seven months, there was no indication that the volume of BES or MVT incidents decreased in any of the LACs as a consequence of Vendas. Nor did the analyses reveal any increase in the rate of arrest for these types of crimes in any of the LACs. The lack of impact on the arrest rates occurred primarily because the operation did not increase identification rates by enough to produce measurable changes in arrest rates. Only one LAC (Brisbane Waters) recorded any increase in identification rates from BES crime scenes and this gradual increase

began before Vendas started, indicating that it was either being caused by anticipation effects, or something external to the initiatives carried out under Vendas. Only one LAC (Lake Illawarra) showed an increase in the offender identification rate at RSMV crime scenes.

The lack of substantial impact on identification rates was caused by the fact that there were only modest increases in the collection of fingerprints from crime scenes at the trial LACs. Brisbane Waters recorded significant increases in the collection of fingerprints from BES crime scenes and Lake Illawarra recorded an increase from RSMV crime scenes. This was despite the fact that there was a marked increase in attendance rates at RSMV crime scenes in all three LACs. Similarly, an increase in attendance at BES crime scenes at Lake Illawarra LAC did not translate into increases in fingerprint identification rates. These findings may indicate that there is a point of diminishing return for crime scene attendance, but only further research will elucidate this issue.

It was not possible to measure the speed at which suspects were arrested due to limitations in the available data and it is therefore possible that there were reductions in the time to arrest as a result of the operation. All LACs appear to have prioritised the investigation of forensic cases and, while there was little reliable data bearing on the turnaround time for forensic identifications, the extant data did suggest that there were improvements in the turnaround times of fingerprint identifications in at least one LAC. Clearly though, if Operation Vendas did serve to increase the speed with which offenders were arrested, this effect was not great enough to reduce the volume of crime in the trial Commands.

These conclusions were reached on the basis of a comparison of what happened over a few months before the introduction of Vendas with what happened over a period of several months after. The limited observation period and the fact that some of the key changes required as part of Vendas had begun before its formal introduction made it hard to detect Vendas-related changes in operational procedures after the date on which Vendas was formally implemented. From an experimental point of view, this made any evaluation of the potential value of increasing forensic activity very difficult to judge. The results are discussed in terms of future improvements in managing and evaluating complex police operations such as Vendas, including the importance of: establishing appropriate measures to gauge the success or otherwise of an operation; appropriate selection of trial sites; early involvement of evaluators; and documenting a comprehensive project plan to ensure that all aspects of the operation are implemented in a timely and efficient manner.

1. INTRODUCTION

Break, enter and steal (BES) and motor vehicle theft (MVT) constitute two of the most commonly reported crimes in New South Wales (NSW). In 2002 these two offence categories accounted for 20 per cent of all non-driving-related incidents recorded by police in NSW (Doak, Fitzgerald & Ramsay 2003). The volume of these incidents has had a corresponding effect on community attitudes to neighbourhood crime. The most recent NSW Crime and Safety Survey conducted by the Australian Bureau of Statistics suggested that in 2000/2001 about one in three people considered housebreaking to be a problem in their neighbourhood, while about one in four people considered car theft to be a problem in their neighbourhood (Australian Bureau of Statistics 2001). Understandably, then, in the interests of both crime reduction and community perceptions of safety, the identification and arrest of recidivist BES and MVT offenders is considered to be a key priority for the NSW Police Service.

One of the primary tools used by police services around the world to identify property theft offenders is to analyse forensic information left at the crime scene and latent fingerprints have traditionally been the gold standard of forensic analysis. Modern fingerprinting has come a long way since Herschel, Faulds, Galton and Henry began classifying fingerprints in the late 19th and early 20th Centuries (e.g. Faulds 1880; Galton 1888; 1892). Australia has had a National Automated Fingerprint Identification System (NAFIS) since 1986 which allows automatic matching of latent fingerprints against a large database of stored fingerprint files. A new NAFIS (known as NAFIS2) was implemented in 2001 which contains more than 24 million individual fingerprints, 4.8 million palm prints and 180,000 latent prints from unsolved crimes. NAFIS2 has recently been complemented by the introduction of 'LiveScan' terminals which electronically code fingerprints at the charging station using laser technology. This technology provides superior quality prints to the old technology and, because the terminals are linked with NAFIS2, they allow real-time matching of new fingerprints against stored offender files and against latent fingerprints from unsolved crimes.

The effectiveness of the forensic sciences in the identification of criminal offenders (and the elimination of innocent suspects) has undoubtedly been advanced by the recent advent of DNA profiling. DNA profiling has traditionally been carried out during the investigation of individual cases, where both a DNA sample from the crime scene and a DNA sample from a suspect are available for matching. The Commonwealth-funded agency which manages NAFIS2, known as CrimTrac, now also holds a national DNA database containing profiles of convicted offenders, suspects, and profiles linked to unsolved crime scenes. In NSW the Crimes (Forensic Procedures) Act 2000 allows for the collection of DNA from volunteers and, under some conditions, involuntary collection from convicted offenders and persons suspected of criminal conduct. While the national DNA database is still relatively small, its effectiveness is likely to increase as the number of unique persons maintained on the database grows.

Forensic identification technology such as NAFIS2 and LiveScan, and forensic techniques such as DNA profiling are designed to increase the likelihood and speed with which offenders are identified and subsequently charged with an offence. Criminological theory suggests that increasing the risk of apprehension will have an inverse effect on criminal activity by deterring or incapacitating potential offenders. Deterrence occurs when

individuals resist offending through fear of apprehension. There is general agreement among criminologists that elevating the certainty of apprehension suppresses most types of crime (e.g. Koper 1995; Logan 1975; Nagin 1998; Nagin & Pogarsky 2003; Paternoster 1989; Sampson & Cohen 1988; Waldo & Chiricos 1972). There is also evidence that incapacitation reduces crime, although its cost-effectiveness as a crime control tool is open to doubt (e.g. Chan 1995).

One potential way of enhancing deterrent and incapacitation effects is to increase the collection of fingerprint and DNA trace material from crime scenes. Theoretically at least, increasing the frequency with which forensic information is collected from crime scenes should result in more people being identified on the basis of that forensic evidence. This increase in identifications should then translate into an increase in arrests and reductions in crime brought about by the incapacitation of current offenders and the deterrence of potential offenders. Most early US and British research tended to suggest that the relationship between the collection of physical evidence, identification of suspects and arrest rates was poor or complicated at best (e.g. Greenwood, Chaiken & Petersilia 1977; Horvath & Meesig 1996; Ramsay 1987). However automated databases such as NAFIS2 and sophisticated analysis techniques like DNA profiling, which have only recently been constructed, might be expected to increase the efficiency of the forensic investigation process. The recent UK 'Pathfinder' project, while indicating that increasing attendance at crime scenes does not necessarily result in crime reduction, has provided modest support for the notion that increasing attendance rates at crime scenes may increase identification rates (Burrows et al. 2002).

The Forensic Services Group of the NSW Police Service have recently increased their efforts to maximise the collection of physical evidence from the scenes of high volume crimes such as BES and MVT. Prior to October 2001 all physical evidence gatherers, known as Scene of Crime Officers or SOCOs, were sworn police officers. The Forensic Services Group has now begun training civilian SOCOs to attend the scenes of high volume crimes such as BES, recovered stolen motor vehicles (RSMV), and steal from motor vehicle. There are currently 98 civilian positions across NSW.[1] Because civilian SOCOs do not have competing policing demands, this system should bring about an increase in forensic examinations at high-volume crime scenes, while also freeing up police time to concentrate on other policing initiatives.

Significant incapacitation effects might also be gained if the time between attendance at a crime scene by forensic experts and notification of the identity of that offender can be reduced (Blakey 2000). Because there are limited human resources at the laboratories where fingerprint and DNA information is processed, there are sometimes long delays in the turnaround time for fingerprint and DNA identifications. Intuitively, more rapid turnaround of forensic notifications should result in more rapid apprehension of offenders and reductions in crime brought about by the removal of that offender from the crime environment (Blakey 2000). In addition, classic deterrence theory suggests that increasing the perceived celerity, or swiftness, of punishment should result in both the offender and other potential offenders being deterred from engaging in criminal acts, although it should be noted that most research to date suggests that swifter punishment has little effect on actual or intended offending behaviour (see Nagin 1998 for a review).

Of course, increasing collection rates and reducing turnaround times for forensic evidence will not actually reduce crime unless they result in higher rates of suspect identification and arrest. The investigation of suspects identified on the basis of forensic evidence for crimes such as BES or MVT has traditionally been limited by the fact that investigative

resources in most Local Area Commands (LACs) are limited and other investigations are usually accorded a higher priority. Senior NSW Police have recently recognised that many LACs allocate their General Duties (GD) police to investigate suspects who have been identified on the basis of fingerprint or DNA evidence. Because these officers often lack both the time and investigative experience required to follow up these identifications, many cases have remained inactive until the perpetrator has been identified or arrested on unrelated matters. Failure to proactively investigate forensic cases is likely to have an adverse effect on crime because recidivist offenders will continue to commit crime until they are caught by the police. The problem of unutilised forensic evidence is not unique to the NSW Police Service. A recent review of the forensic sciences undertaken by the Home Office in London acknowledged that fingerprint and DNA identifications often disappear into "a black hole and are not acted upon" (Blakey 2000, page 31).

Given the increased forensic capability offered by civilian SOCOs, and the potential incapacitation and deterrent benefits offered by increasing the likelihood and speed of arrest based on forensic identifications, the NSW Police concluded that a more focused effort on the collection, analysis and investigation of forensic evidence from volume crime scenes was required. From May through July of 1999, senior officers at the Bankstown LAC conducted a relatively small-scale operation, code-named Newburgh, targeting BES and MVT offenders. By increasing crime scene examinations and prioritising the intelligence gathering and investigation of forensic identifications, Operation Newburgh was credited with having identified and charged a large number of recidivist theft offenders. However because no formal process or outcome evaluation was conducted, the apparent successes of Operation Newburgh were not independently confirmed.

The NSW Police recently undertook to extend some of the initiatives carried out under Operation Newburgh, trial them in a broader geographical area, and have them independently evaluated by the NSW Bureau of Crime Statistics and Research. Three NSW LACs were chosen to trial the operation: Brisbane Waters, Lake Illawarra and Miranda. A six month trial operation, code-named Operation Vendas, was officially launched by the Deputy Commissioner of Police (Support) on July 1, 2002. This initial trial period was later extended and the operation was officially brought to a close on January 31, 2003. The main aim of the operation was stipulated in the Operation Vendas User Information Pack[2], and was conveyed by the Mission statement:

> "To aim for 100 per cent attendance to Break and Enter (attempted and actual) and Recovered Stolen Motor Vehicle crime scenes by SOCOs, this will lead to the identification, investigation, and arrest of the recidivist offenders in the Miranda, Brisbane Waters and Lake Illawarra Commands."

In other words, the NSW Police aimed to attend every BES and RSMV incident at the three trial Commands, thereby increasing the collection of fingerprint and DNA evidence from these crime scenes. The implicit assumption was that there would be a corresponding increase in persons identified on the basis of forensic evidence and in the number of offenders arrested and, consequently, a reduction in crime. In addition to increasing the volume of arrests, however, the operation aimed to increase the speed of arrest by prioritising the rapid return of fingerprint and DNA identifications to the LAC who would, in turn, provide a prioritised investigative response to those identifications. Several supporting initiatives were introduced, including the systematic analysis of intelligence information, the distribution of leaflets providing information on how to preserve the crime scene and the distribution of 'neighbourhood canvassing forms'. These initiatives are described in more detail later in this report.

2. LACS INVOLVED IN THE OPERATION

As noted earlier, three LACs were invited by the Deputy Commissioner (Support) to take part in the trial: Brisbane Waters, Lake Illawarra and Miranda. Brisbane Waters and Lake Illawarra were chosen because they have traditionally had high rates of BES and MVT, relative to the rest of NSW. Miranda has somewhat lower rates of these crimes, and one informant suggested that Miranda was chosen as a trial site because it provided a useful metropolitan comparison to the other two rural areas. The following descriptions of the three trial LACs were obtained from the Analysis of the Crime Environment (ACE) reports routinely compiled by each LACs' intelligence office.

Brisbane Waters

Brisbane Waters LAC is a rural Command located 80km north of Sydney on the Central Coast of NSW. The LAC is very large, covering an area of more than 1000km^2, and is bounded by the Hawkesbury River in the south, the Judge Dowling Ranges to the west, Ourimbah in the north and the Tasman Sea in the east. At the 2001 Census this LAC had an estimated population of 154,587 people, most of whom live on the coastal area of the Command. The population of the Brisbane Waters LAC largely consists of permanent Central Coast residents who commute to Sydney for work, although a number of people who reside in Sydney have holiday homes on the Central Coast. Retail, light industry, service and tourism drive the local economy.

The main city, Gosford, has a number of licensed premises, shopping centres, and major bus and rail terminals which affect population flow to the area. A large number of property crimes are committed in Gosford and the other main towns in the LAC (Woy Woy and Terrigal), but the Peninsula area of the Command also has a high density of property crimes. According to the Brisbane Waters ACE report, this is because the Peninsula area has a greater number of aged and low-income people in comparison to the rest of the LAC.

Brisbane Waters has reasonably high levels of both BES and MVT offences compared to the rest of NSW. The Gosford Local Government Area (LGA), whose boundaries are aligned with those of the Brisbane Waters LAC, rated 38th of 154 LGAs in terms of BES (dwelling), 64th for BES (non-dwelling) and 37th for MVT in 2001 (NSW Bureau of Crime Statistics and Research).[3] The LAC is serviced by police stations in Gosford, Terrigal and Woy Woy. As at June 2002, there were 220 authorised police officers in the Brisbane Waters LAC, one for every 703 people living in the LAC.

Lake Illawarra

Lake Illawarra is located approximately 100km south of Sydney on the south-east coast of NSW. It covers an area of approximately 770km^2 and is bounded by the Shoalhaven LAC to the south, the Illawarra escarpment to the west, Wollongong LAC to the north and the Tasman Sea to the east. Lake Illawarra includes three LGAs: Kiama, Shellharbour and part of Wollongong. At the 2001 Census the official population count was 144,160 people, most of whom live in the main suburbs of Albion Park, Dapto, Kiama, Port Kembla, Unanderra/Berkeley, Warilla and Warrawong. The region has a high immigrant population, initially attracted to the area by employment at the BHP Steelworks at Port Kembla. The Port Kembla Steelworks have gradually cut back on staffing levels, contributing to unemployment in the area. The LAC has a high number of people living in Department of Housing accommodation and a high level of youth unemployment.

Motor vehicle theft has been a major crime problem in the Lake Illawarra LAC. In 2001 the Wollongong and Shellharbour LGAs were ranked 4th and 5th highest in terms of MVT out of 154 LGAs in NSW. These two LGAs also have high rates of BES incidents, ranking 8th and 25th for BES – dwelling and 15th and 58th for BES – non-dwelling incidents of the 154 LGAs (NSW Bureau of Crime Statistics and Research).[4] Lake Illawarra is serviced by police stations in Albion Park, Berkeley, Dapto, Gerringong, Kiama, Port Kembla, Unanderra and Warilla. As at January 2003 there were 207 authorised police officers in the Command, or one police officer for every 696 people living in the LAC.

Miranda

Miranda LAC is a metropolitan Command located approximately 30km south of Sydney and is much smaller than the other two trial LACs, covering an area of less than 80km^2. Miranda is bounded by the Port Hacking River to the south, the Princes Highway to the west, Botany Bay to the north and the Tasman sea to the east. At the 2001 Census, this LAC had an estimated population of 77,870, almost half the population of each of the other two trial LACs. Miranda tends to have a more transient and seasonal population as more people come to the area during summer months to visit Cronulla, which is the only metropolitan beach suburb in Sydney with a train station within walking distance of the beach.

Miranda LAC is made up of 13 suburbs, all falling under the umbrella of the Sutherland Shire Council. It contains four railway stations, all on the Sydney Metropolitan electronic network, and several main arterial roads, making access to and from the area very easy. The Miranda ACE report suggests that the mid- to high-income residents living in suburbs such as Cronulla may entice criminal activity in the area.

Compared to the other LACs, Miranda has a moderate to low rate of BES and a moderate rate of MVT. In 2001 the entire Sutherland Shire LGA had a rate of BES (dwelling) that ranked 66th out of 154 LGAs in NSW, a BES (non-dwelling) rate that ranked 4th lowest and a MVT rate that ranked 42nd out of 154 LGAs. The LAC is serviced by police stations in both Cronulla and Miranda. In 2002 there were 133 authorised police in the Miranda LAC, giving a police-to-resident ratio of one police officer for every 585 residents.

3. EVALUATION METHODOLOGY

As noted earlier, the NSW Bureau of Crime Statistics and Research was invited to independently evaluate the outcomes of Operation Vendas. The evaluation aimed to provide both a process and an outcome evaluation of the operation, incorporating four main components:

(1) A description of the pre-Vendas procedures for collecting and analysing forensic information and the procedures for disseminating suspect identifications;

(2) A description of the changes proposed under Vendas;

(3) An analysis of whether those changes successfully increased the speed or volume of arrests and/or reduced crime; and

(4) A discussion of the process factors that either contributed to, or hindered, the outcomes of the operation.

Because the information required to describe the pre-Vendas procedures (component (1) above) had not been formally documented, information was gleaned from informal personal communication with officers involved in the operation, from field-notes collected throughout the course of the operation, and from in-depth semi-structured interviews (and, in one case only, a focus group) carried out three months after the operation had commenced. One interviewer conducted all of these in-depth interviews and the Crime Managers, Crime Coordinators, at least one intelligence analyst, at least one SOCO and at least one person representing investigations were interviewed from each of the three LACs. All Brisbane Waters interviews were conducted at Gosford Police Station, Miranda interviews at Miranda Police Station and Lake Illawarra interviews at Dapto and Warilla Police Stations. Interviews were conducted in a quiet room at the local police station and were tape-recorded and transcribed at the completion of interviewing. Before each interview began, the interviewer fully described the nature of the project, what would be discussed, the participants' right to withdraw from the research at any stage and without any disadvantage, that the interview would be used for research purposes only and that respondents would remain anonymous throughout. Respondents were sent a copy of their transcribed interview and were encouraged to provide feedback about the content of that transcription, or any issues that may have arisen out of the interview process. No officers wished to make any amendments or withdraw their comments from the research.

The Vendas procedures were detailed in a written document prepared by NSW Police and this was distributed to all groups involved in the operation on the day it was launched. This pack, entitled the Operation Vendas User Information Pack, also documented the responsibilities of each member of the operation. This booklet was used to describe the changes proposed under Vendas (component (2) above).

The outcome measures (component (3) above) were assessed by extracting and analysing trends in recorded crime and arrest rates from the NSW Police COPS database. The means by which these data were analysed are described later in this report and will not be described in any detail here.

Finally, the degree to which the procedural changes were implemented under Vendas (component (4) above) was assessed by drawing together a number of data sources,

including: quantitative data from the forensic database bearing on the volume of crime scenes attended by SOCOs, the volume of physical evidence collected and the number of suspects identified on the basis of that evidence; data collated manually at each LAC bearing on the time taken to disseminate forensic identifications; informal communication with officers involved; detailed field-notes; and the in-depth interviews with key personnel described above.

4. STANDARD OPERATING PROCEDURES BEFORE VENDAS

Before detailing the changes made to the police standard operating procedures (SOPs), it is necessary to describe how and when forensic information is usually collected from a BES or RSMV crime scene, and how this information is dealt with once collected. Figure 1 shows this process diagrammatically and identifies the points (labelled A through D, and marked with a '**') at which Operation Vendas aimed to improve these procedures. Each of these points were identified by senior members of the NSW Police Service as areas for improvement and the specific changes proposed under Vendas to address these weaknesses are described in the ensuing section (Section 5).

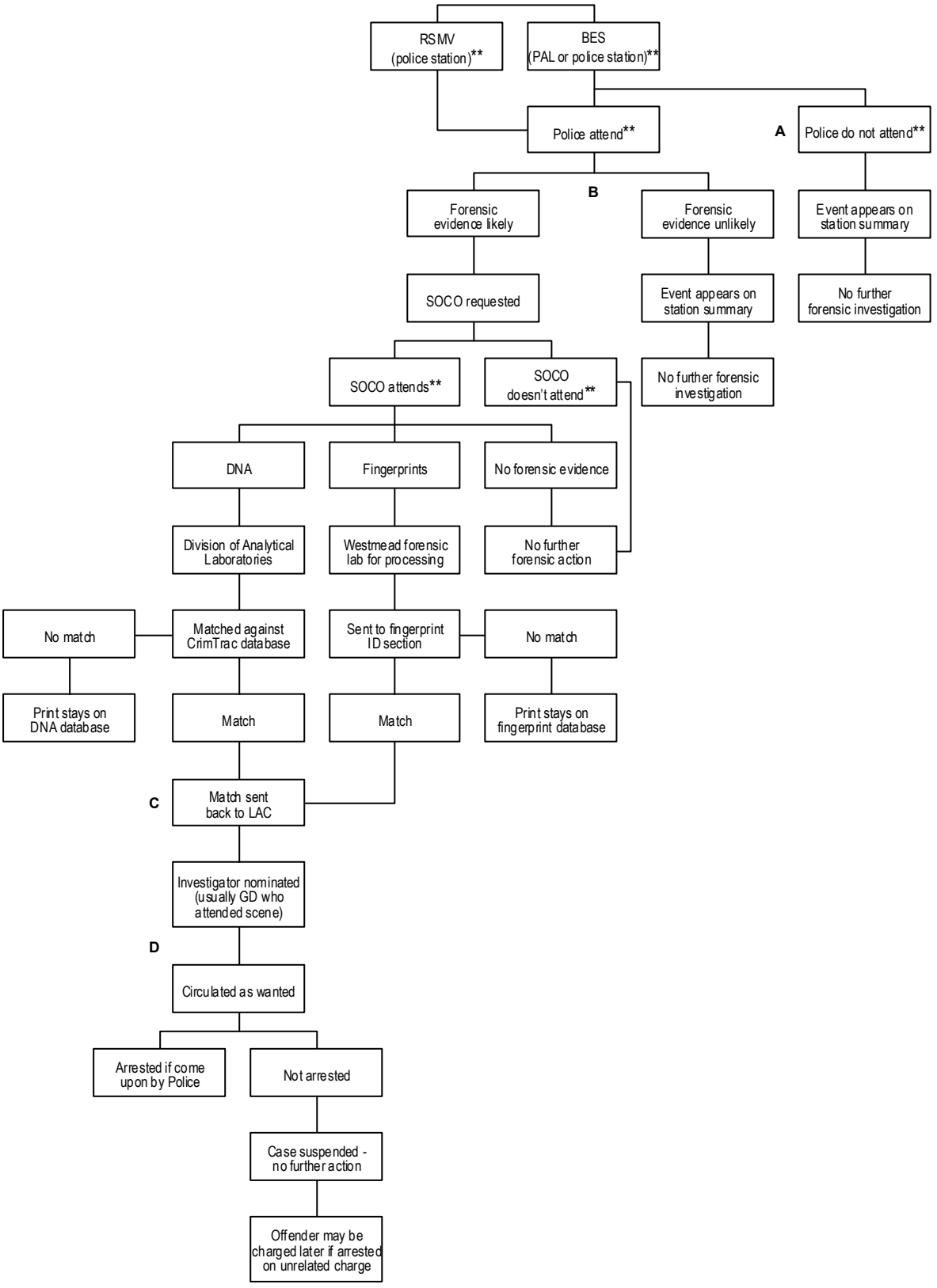
Recording a crime

Police can receive a report of a BES or located stolen motor vehicle either through the Police Assistance Line (PAL) or at the police station. PAL is a 24-hour toll-free call centre whose role is to take reports of crimes where there are no traumatised victims and where the victim does not want or need the police to attend the crime scene. Most BES reports are received through PAL (about 65% in the first month of Operation Vendas) and most located stolen motor vehicles are reported to the station (about 99% in the first month of the operation).

Whenever a report is taken an Event report is created on the Computerised Operational Policing System (COPS) database. This Event report holds all of the relevant information about the incident being reported. PAL operators and police are encouraged to record as much information as possible at the Event creation stage because this information can be crucial for the investigation of the crime being reported and for the investigation of other crimes committed by the same offender. PAL and police officers are strongly encouraged to record modus operandi (MO) information. MO refers to the offender's 'method of operation', including point of entry to the premises, types of goods stolen, and activities undertaken while inside the property. There is a mandatory field for MO information but it can also be recorded in the Event narrative (the text field for general comments) or in intelligence reports put on the COPS system by police, SOCOs and intelligence analysts themselves. MO information can be used to link separate incidents that are likely to have been committed by the same offender. Historically, however, the way in which MO information is recorded and extracted from COPS has been a problem for the NSW Police Service. Some police officers view the Event creation process as very laborious and often put in the minimum amount of information required to complete the Event, both in the special MO screen and in the Event narratives, making it very difficult for analysts to retrieve any meaningful information from the Events themselves.

The lack of MO information available from the COPS Events is an area of weakness that has been identified by police. In fact, NSW Police have identified many points along the chain of standard police practice where better communication, recording and system improvements could enhance the collection of MO information, and these are all marked with a '**' in Figure 1.

Figure 1: Forensic SOPs prior to Operation Vendas



** *represents points where the collection of MO data could be improved*

A, B, C, D *represent other points at which the operation aimed to improve procedures*

Attending a crime scene

When a victim reports a crime to either PAL or the police station, they jointly decide with the PAL operator or police officer whether and when a police officer should attend the crime scene. For insurance reasons, every time police receive a report of a located stolen motor vehicle a police officer is dispatched to the scene to 'recover' that vehicle. Police do not have to attend the scene of a BES, and they often do not attend unless the victim specifically requests them to or they feel that they are likely to find physical evidence such as blood or fingerprints at the crime scene. It is apparent from Figure 1 that SOCOs do not usually attend the scene without police attending first. If SOCOs do not attend, then any potential physical evidence is lost forever.

In terms of forensic procedures, the fact that police (and therefore SOCOs) do not attend all BES crime scenes has been identified by police as a weakness in their SOPs (labelled 'A' in Figure 1). The decision about the availability of physical evidence is a joint one between the PAL operator/police officer and the victim. Neither party is forensically experienced and therefore neither party is strongly qualified to make such a decision. Not only is physical evidence potentially lost from every crime scene not attended by police, but potential intelligence or MO information is also lost. While a lot of MO information can be recorded at the time of Event creation, a lot is not recorded, including information that the victim might not recognise but which might have been noticed by a police officer had one been present. In addition to the loss of MO data, the potential to gather any information from the victim's neighbours is also lost when police do not attend a crime scene.

If a police officer does attend the crime scene they make an assessment about whether the crime scene is likely to yield forensic information. If they feel that there is not likely to be any forensic evidence, they do not request SOCO attendance and no further forensic investigation takes place.[5] If GDs do feel that there is a high likelihood of finding fingerprints or DNA trace material at a crime scene they request SOCO attendance. SOCOs then attend, record MO data in their notebooks, and conduct a forensic examination, most often by taking fingerprints and looking for objects that might contain DNA material. If there are no signs of evidence, no further forensic analysis takes place. The fact that GD police officers make assessments about whether SOCOs should attend a crime is a second area of the SOPs that has been identified as a weakness (labelled 'B' in Figure 1). GD police officers are usually not forensically trained and forensic scientists feel that they should not be left to make assessments on their own about whether a crime scene is likely to yield forensic evidence (e.g. Tilley & Ford 1996).

Sending forensic evidence for analysis

If trace material that could contain a DNA profile is found at the crime scene it is forwarded to the Division of Analytical Laboratories (DAL) for analysis. If a fingerprint is found at the crime scene it is photographed and the roll of film is sent to the Westmead Forensic Laboratory (based in Western Sydney) where all fingerprint photographs are developed. Once developed, the photographs are sent to the fingerprint identification section that services the LAC where the crime was committed. The photographs are then scanned into a computer by fingerprint experts and matched against the images stored on NAFIS2. The time lag between collection of fingerprints and DNA at the crime scene, and dissemination of a positive identification back to the LAC is the third weakness identified in the SOPs (labelled 'C' in Figure 1). Although no objective data were available to estimate

the time taken to disseminate DNA identifications prior to Vendas, front-line police suggested that identifications resulting from high volume crimes like BES and MVT can take months or, in some cases, years before they are sent back to the LAC. Officers also suggested that fingerprint identifications resulting from high volume crimes can take many weeks or months before they are distributed to LACs.

Two factors contribute to the delay in DNA identifications. First, SOCOs sometimes stockpile their samples before sending them to DAL. Second, because DAL have finite resources they have to prioritise their workload and sensibly accord serious crime a much higher priority than high volume crimes like BES and MVT. There are three sources of delay in turnaround times for fingerprint analyses. First, SOCOs often wait until they have completed a number of rolls of film before sending them to the lab for processing. The second source of delay comes from the time it takes to courier the 35mm films to Westmead, have them developed and send them on to the fingerprint identification section to be matched against NAFIS2. The time taken to develop these films varies, but staff at Westmead maintain that films are usually processed and dispatched within 24 hours (Personal Communication, Paul Singh, Westmead Forensic Laboratory, 20/6/02). The third source of delay comes from the time taken to match the fingerprints against NAFIS2 and disseminate that identification back to the LAC.

Dissemination of forensic identification and allocation of an investigating officer

Once a suspect has been identified on the basis of DNA or fingerprint evidence, the information, including the suspect's name, address and CNI number[6] is sent back to the LAC. Each LAC has its own procedures specifying how this notification is to be disseminated to relevant staff. Most often, however, it is sent back to the Crime Manager or Crime Coordinator, who heads up the Crime Management Unit. This officer then allocates an investigator to follow up on the notification. As mentioned earlier, because LACs have limited specialist investigators they cannot always afford to give these less serious crimes a high priority and the allocated investigator is therefore often the GD officer who attended the original crime scene. GDs usually do not have the time or the investigative experience to conduct these investigations as efficiently as a specialist investigator. As a result, it has become commonplace for these files to be neglected and not followed up. The identified suspect is usually circulated as 'wanted' and no further investigative action is taken. If they are arrested and charged for an offence later, it is often because they come to the attention of the police on unrelated matters. If the suspect is not caught committing other criminal acts, and does not come to the attention of police, the case is suspended and no further action is taken. The low priority given to forensic cases is the fourth weakness of the SOPs and is labelled 'D' in Figure 1.

5. PROPOSED CHANGES TO STANDARD OPERATING PROCEDURES

Over a series of monthly meetings, the Deputy Commissioner (Support), in collaboration with all of the groups involved in the operation, identified several procedural changes to address the weaknesses outlined above. These procedural changes were detailed in the Operation Vendas User Information Pack, which was distributed to representatives of all groups and to the evaluators at the launch of the operation. The complete SOPs for the operation are presented diagrammatically in Figure 2.

SOCOs aimed to attend 100 per cent of BES and RSMV crime scenes

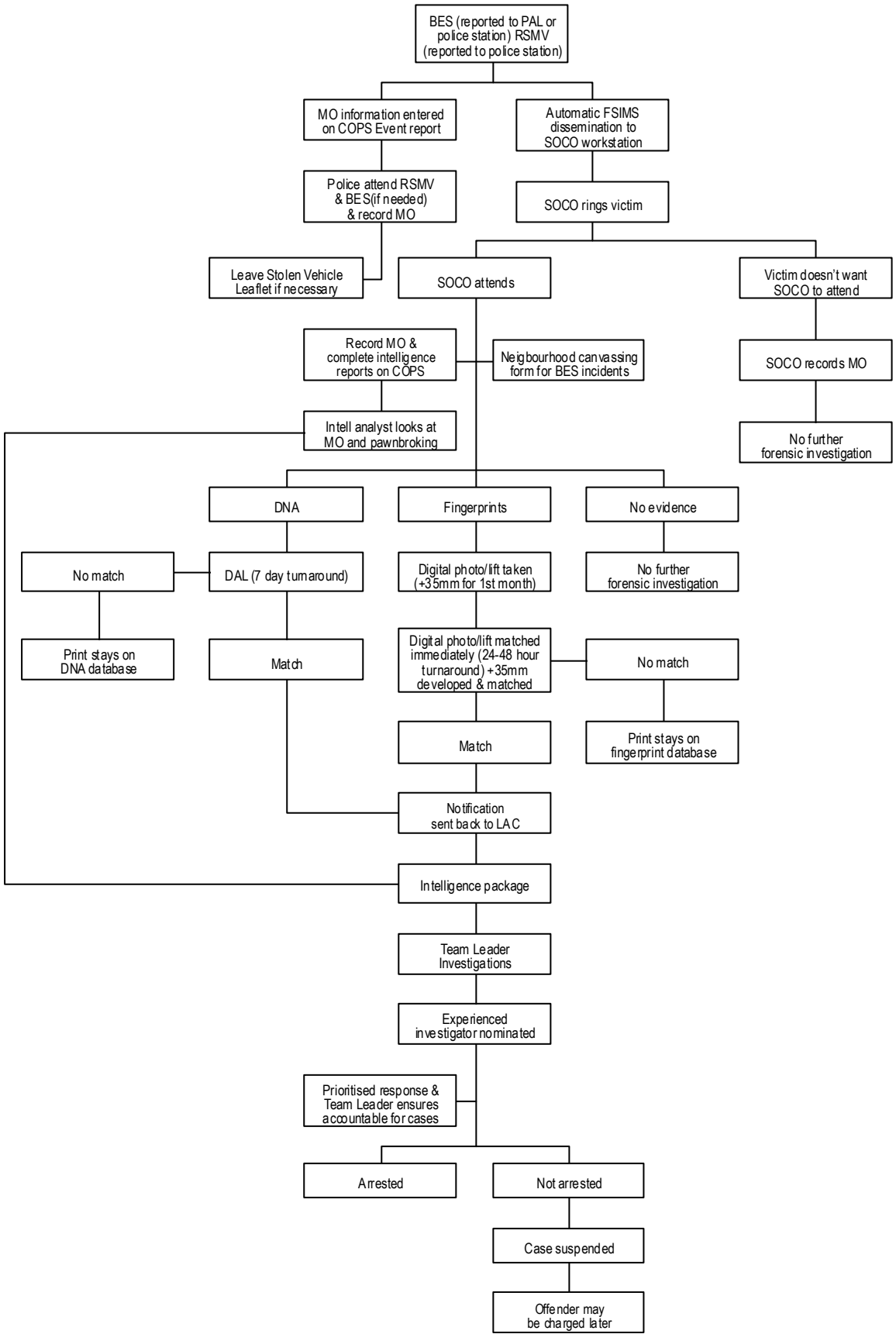
Weaknesses 'A' and 'B' in Figure 1 were addressed by encouraging SOCOs to attend 100 per cent of BES[7] and RSMV crime scenes. This increase in attendance was intended to increase the amount of forensic evidence collected, the number of suspects identified on the basis of that evidence and the number of people arrested. Procedural changes were made in both the LACs involved and in relation to PAL to help SOCOs achieve this objective. Under Vendas procedures, the COPS system was changed so that the PAL operator would see a unique series of pop-up screens giving them instructions about what to say to victims of BES crimes in the Operation Vendas LACs. The operators were instructed to record the Event on COPS as usual, but to inform the victim that a SOCO would contact them to arrange a time to attend the crime scene. The operators were also instructed to give the victim advice about how to preserve the scene to enhance the quality of the scene assessment conducted by the SOCO. Changes were also made to the procedures for disseminating forensic jobs to SOCOs in order to facilitate their ability to attend 100 per cent of BES and RSMV crime scenes. Irrespective of whether the victim wanted SOCOs to attend the scene, a job was automatically created requesting SOCO attendance every time a new Vendas Event was created on COPS. This job was disseminated to the SOCOs' workstations so that they could see all of the new jobs that had appeared overnight. Each morning SOCOs would contact these victims to organise a suitable time to attend. This method of job dissemination allowed SOCOs to be automatically notified of all BES jobs in their LAC, effectively taking fingerprint assessments out of the hands of GD police officers.

Because PAL only receives one per cent of located stolen motor vehicle reports and because all located vehicles must be attended by police to be recovered, PAL operators were prompted not to take these reports but to direct the caller to the LAC instead. About one-third of BES incidents are also reported to the police station, so the COPS system had to be altered to allow automatic dissemination of jobs to the SOCOs' workstations when these incidents were reported to the LAC. Again, this was designed to help rectify weaknesses 'A' and 'B' in Figure 1.

Reducing turnaround times on fingerprint and DNA evidence

All Fingerprint Identification Sections undertook to return the results of fingerprint examinations to the LACs within 24-48 hours. The DNA laboratory (DAL) undertook to return DNA identifications within seven days. To reduce the time between collection of fingerprint evidence and dissemination of a suspect identification (weakness 'C' in Figure 1), the Forensic Services Group planned for SOCOs at the three trial LACs to use digital

Figure 2: Forensic SOPs during Operation Vendas



cameras to photograph fingerprints at crime scenes. SOCOs were to be equipped with laptop computers so that digital images could be burned to compact disc immediately after they were taken. The image on the compact disc could then be transferred electronically and matched against NAFIS2, eliminating the time-consuming processes of sending films by courier and having them processed at the Westmead lab. However these plans were altered prior to the start of Vendas. Due mainly to the costs involved with implementing the digital technology (Personal Communication, Phil Flogel, FSG, 19/12/02), SOCOs at Brisbane Waters LAC were instructed to use a 'lifting' medium[8] to collect fingerprints for the first three months of the operation, after which they were to consider transferring to the digital technology. SOCOs from the other two LACs received the digital cameras and were provided with a two-day training session at the beginning of the operation to give them a working understanding of the digital cameras.

Brisbane Waters and Lake Illawarra had access to their own fingerprint identification sections so they were able to bring the compact disc or 'lift' back and have it matched immediately. Miranda were instructed to send their digital images to the fingerprint identification section at Parramatta via the police electronic memo system. All SOCOs were still required to take the conventional 35mm photographs as back-up for the duration of the operation but were encouraged to send the film for processing at the end of each day to expedite the process.

Prioritising investigations, allocating work, and ensuring accountability

In order to address weakness 'D' in police standard operating procedures, Operation Vendas also aimed to increase the investigative priority given to forensic identifications by LACs. To achieve this, each LAC was asked to allocate a core group of investigators to the investigation of fingerprint and DNA identifications. These investigators were encouraged by Crime Managers to arrest and charge suspects as soon as possible and within 48 hours of receiving the suspect identification wherever practicable. The operational procedures also called for more effective coordination of cases by Crime Managers and Team Leaders of Investigations and an effort by Team Leaders and Crime Managers to ensure that nominated investigators took personal responsibility for the cases that had been allocated to them.

Other supporting initiatives

Analysis of MO data

In order to improve the recording of MO information at the point when a BES or RSMV incident was reported to police, the Event creation process was streamlined to ease the burden on General Duties police and PAL operators. It was hoped that this would increase the volume of MO data entered on the COPS system to allow more meaningful analysis by intelligence officers. SOCOs and general duties police were also encouraged to formally and informally communicate MO information to intelligence analysts and investigators. In turn, intelligence analysts were directed to use all available MO information and to monitor the pawnbroker database[9] to search for possible links between suspects and crime scenes and between separate crime scenes. They were required to provide a 'timely and useful' intelligence package on identified suspects within 48 hours of receiving the suspect identification which was to include relevant information on known associates, pawnbroking history and modus operandi history.

Stolen Vehicle Leaflets

If, for any reason, a SOCO could not attend the scene of a RSMV immediately, GD police were instructed to leave a 'stolen vehicle leaflet' with the vehicle advising the victim that a SOCO will examine the vehicle. The leaflet gave advice and precautions about how to preserve the crime scene (Appendix A).

Neighbourhood canvassing forms

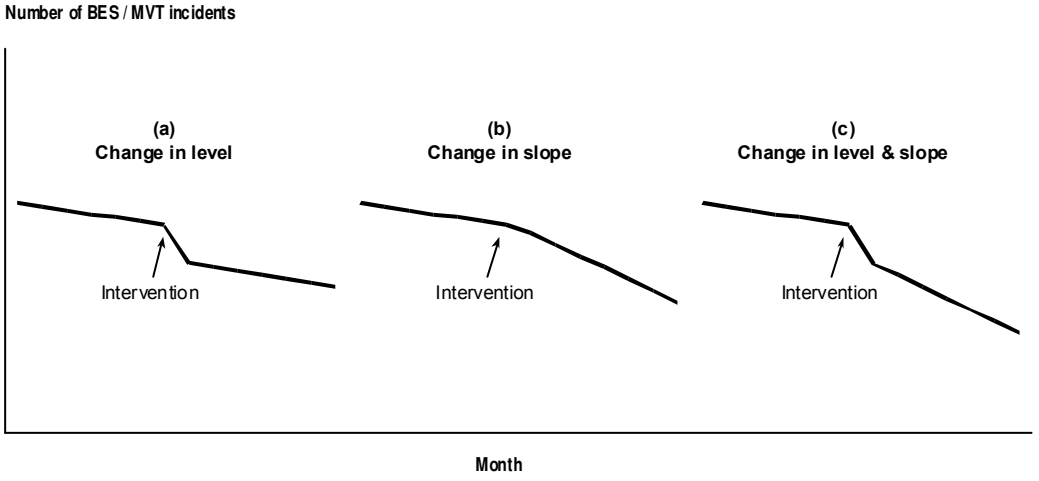
SOCOs were also instructed to provide victims with 'neighbourhood canvassing forms' and prepaid envelopes when they attended a BES crime scene. These canvassing forms (Appendix B) were designed to capture any details of an offender that might become available subsequent to SOCOs attending the crime scene.

6. RESULTS

Did crime decrease?

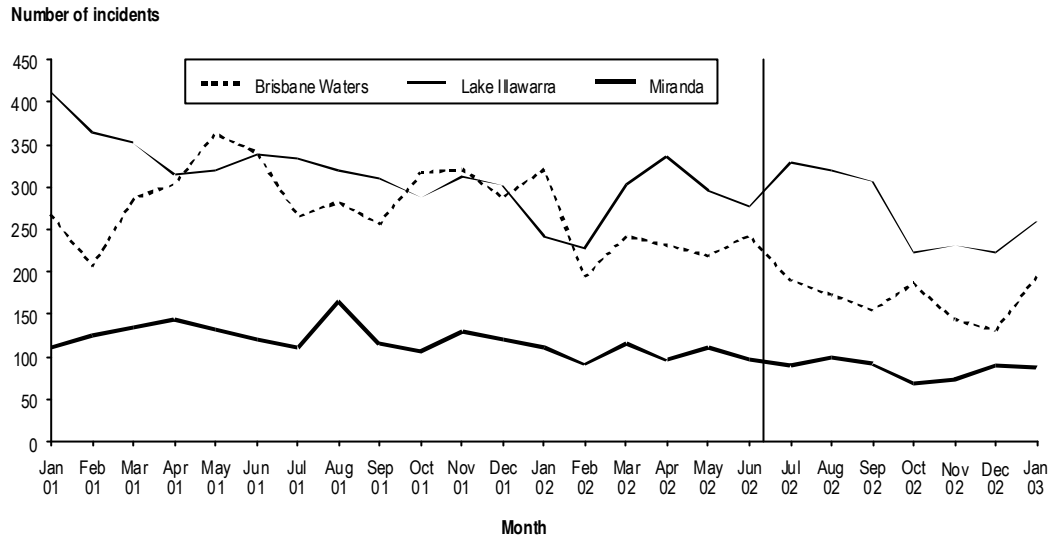
The ultimate aim of Operation Vendas was to reduce the number of BES and MVT incidents in the three LACs involved in the trial. Operation Vendas could have had three possible effects on crime trends. It could have reduced the level of crime in the target patrols (Figure 3(a)), it could have altered the trend or slope of any pre-existing downward trend (Figure 3(b)) or it could have altered both the level and slope of the crime data (Figure 3(c)). The analysis of the impact on crime trends was complicated by two considerations. Firstly, rates of BES and MVT had been falling across the State (and in the target LACs) for 18 months prior to the introduction of Vendas (Doak, Fitzgerald & Ramsay 2003). Secondly, the follow-up period over which changes to BES and MVT could be assessed was very short (i.e. seven months). The second of these considerations meant that it was impossible to apply interrupted time series analysis to the crime data to check whether there had been a change in the level, slope or both following the start of the operation (see Figure 3). The general strategy adopted, therefore, was to test for any change in the level of the series using a Mann-Whitney U test and, if the result suggested a significant change, then to test for a change in the slope of the series using linear regression. This method of analysis would detect changes such as those depicted in Figures 3(b) and 3(c). If the linear regression test failed to show evidence of a change in slope it was concluded that the drop in crime was simply part of the overall downward trend observed in the remainder of the State, except where visual inspection of the trend showed a clear drop in level but no change in trend (as in Fig 3(a)).

Figure 3: Possible Vendas effects on BES and MVT



Data were obtained from the COPS database bearing on the number of BES and MVT incidents recorded at the three Vendas LACs from January 1, 2001 to January 31, 2003. This provided 18 months of baseline data and seven months of post-intervention data. While 18 months of baseline data is presented in Figures 4 and 5, statistical analyses only compared the seven months immediately prior to the operation with the seven-month intervention period. Nonparametric Mann-Whitney U tests were initially conducted to

Figure 4: Monthly trends in recorded BES incidents, by LAC, January 2001 - January 2003



determine whether there was any decrease in the level of recorded criminal incidents in the seven months following the start of the trial relative to the seven months before it began.

As already noted, to test whether there was any significant change in the slope of the crime trends following the start of the operation, linear regression was used to calculate the slope coefficients and associated 95 per cent confidence intervals (CI) for each LAC before and after the operation. If the CI for the trend before the intervention overlaps with the CI after the intervention, we cannot conclude that the slope of the series changed following the start of the operation. Because there were only seven months of post-intervention data, the variability inherent in the time series was very large, as was the breadth of the 95 per cent CI. The analyses therefore lacked power to detect small effects. A longer pre-intervention time period of 18 months was also analysed but did not alter the interpretation of the analyses reported below.

Figure 4 displays the number of BES[10] incidents recorded at the three trial LACs from January 2001 to January 2003 while Table 1 displays the mean number of BES incidents recorded per month at each LAC in the seven months before and the seven months during the operation. The Mann-Whitney U test indicated that the means displayed in Table 1 were lower at Brisbane Waters ($z=-3.0$, $p<0.01$) and at Miranda ($z=-2.7$, $p<0.01$) during the operation relative to before. There was no significant change in the mean number of

Table 1: Mean number of BES incidents per month before and during the operation

	Mean number of incidents per month before	*Mean number of incidents per month during*
Brisbane Waters BES	248	168
Lake Illawarra BES	283	270
Miranda BES	106	86

incidents recorded at Lake Illawarra LAC following the start of the operation (z=-0.4, p=0.71). Although Table 1 shows lower rates of BES in Brisbane Waters and Miranda after the introduction of Vendas, a visual inspection of Figure 4 clearly indicates that there was no decrease in the level of BES immediately following the start of the operation at any of the three LACs nor any evidence of a change to the slope of the crime trend following the start of the operation. Instead an overall downward trend in BES is evident throughout the observation period.

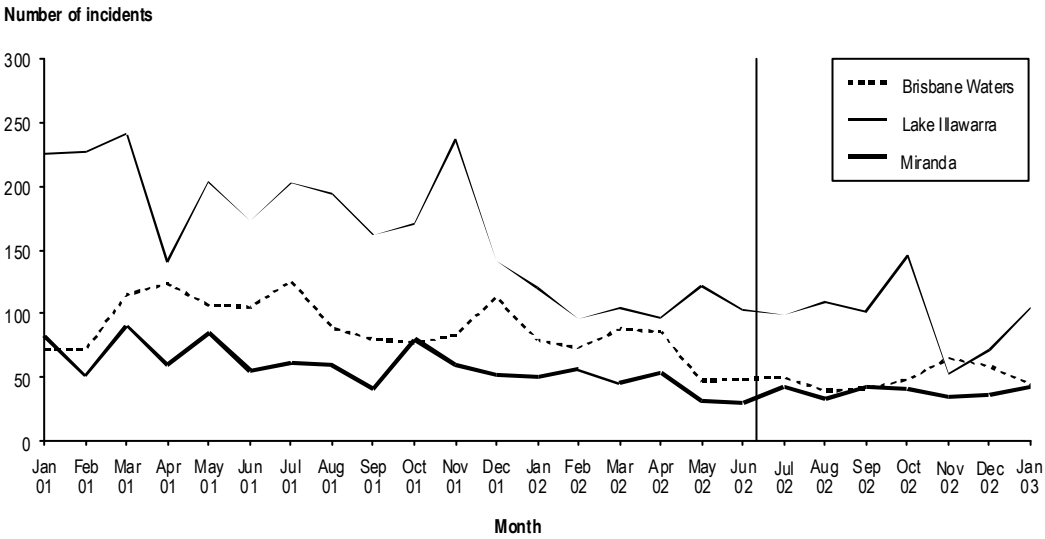
Table 2: Estimated slope coefficient and 95% CI for trends in BES incidents recorded at the three trial LACs before and during the operation

	Slope coefficient before (95% CI)	*Slope coefficient during (95% CI)*
Brisbane Waters BES	-10.8 (-29.9 to 8.4)	-2.9 (-15.7 to 10.0)
Lake Illawarra BES	5.0 (-14.1 to 24.2)	-17.0 (-32.7 to -1.3)
Miranda BES	-2.3 (-7.6 to 3.0)	-1.7 (-7.1 to 3.8)

Table 2 shows the estimated slope coefficients and associated CIs for the BES trends before and after the operation started at each LAC. In each case the confidence intervals for the slope coefficient after the operation began overlap with the confidence intervals for the slope of the series before the operation began. There was no evidence, therefore, to indicate that the rate of BES fell more sharply after Vendas started.

Figure 5 displays the number of MVT incidents recorded at the three trial LACs from January 2001 to January 2003 and Table 3 shows the mean number of incidents recorded per month before the operation began and the mean number recorded during Vendas. The Mann-Whitney tests indicated that, of the means displayed in Table 3, only the difference apparent at Brisbane Waters LAC was statistically significant (z=-2.2, p<0.05).

Figure 5: Monthly trends in recorded MVT incidents, by LAC, January 2001 - January 2003



There was no significant difference at Lake Illawarra (z=-0.8, p=0.46) or Miranda LACs (z=-1.3, p=0.21). Visual inspection of Figure 5 does not indicate that there was any decrease in the level of MVT immediately following the start of the operation at any of the three LACs, nor does there appear to have been any change to the slope of the crime trend following the start of the operation. As with BES, a downward trend in MVT is evident across the observation period.

Table 3: Mean number of MVT incidents per month before and during the operation

	Mean number of incidents per month before	*Mean number of incidents per month after*
Brisbane Waters MVT	76	50
Lake Illawarra MVT	112	98
Miranda MVT	46	39

Table 4: Estimated slope coefficient and 95% CI for trends in MVT incidents recorded at the three trial LACs before and during the operation

	Slope coefficient before (95% CI)	*Slope coefficient during (95% CI)*
Brisbane Waters MVT	-8.8 (-16.0 to -1.6)	1.8 (-2.9 to 6.4)
Lake Illawarra MVT	-4.1 (-11.7 to 3.5)	-3.8 (-18.8 to 11.3)
Miranda MVT	-3.7 (-7.4 to -0.1)	-0.0 (-2.1 to 2.0)

Table 4 shows the estimated slope coefficients and associated CIs for the MVT trends before and during the operation at each LAC. The results confirm the impression found from Figure 5. The confidence intervals for the slope coefficients overlap indicating that there was no evidence for a change in slope at any of the LACs after the operation started.

Neither BES nor MVT trends, then, provide any reason to believe that the introduction of Vendas reduced crime. Given this lack of effect it is pertinent to ask why there were no decreases in recorded crime. The operation was designed to reduce crime in one (or both) of two ways: by increasing the number of people arrested for these types of crime or by reducing the time between committing the offence and arresting an offender. The analysis now turns to the question of whether these goals were achieved.

Was there an increase in the number of people arrested and charged?

Data were obtained from the COPS database bearing on the number of people proceeded against for BES and MVT for the three Vendas LACs and for the rest of NSW. There are a number of ways in which suspects can be proceeded against by police. They could be charged, given a Court Attendance Notice, Field Court Attendance Notice, a summons,

Figure 6: Monthly charge rates for BES offences, by LAC, December 2001 - January 2003

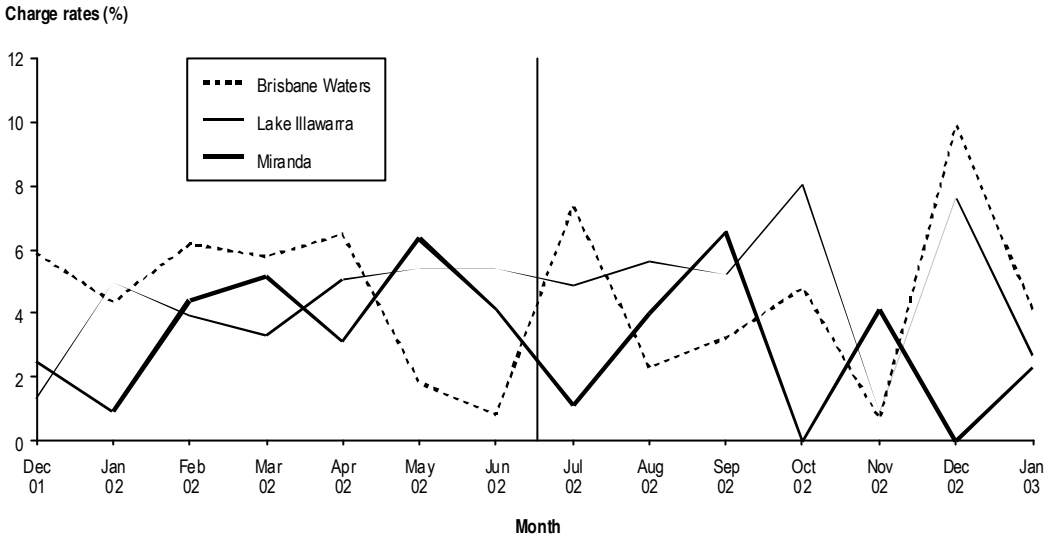
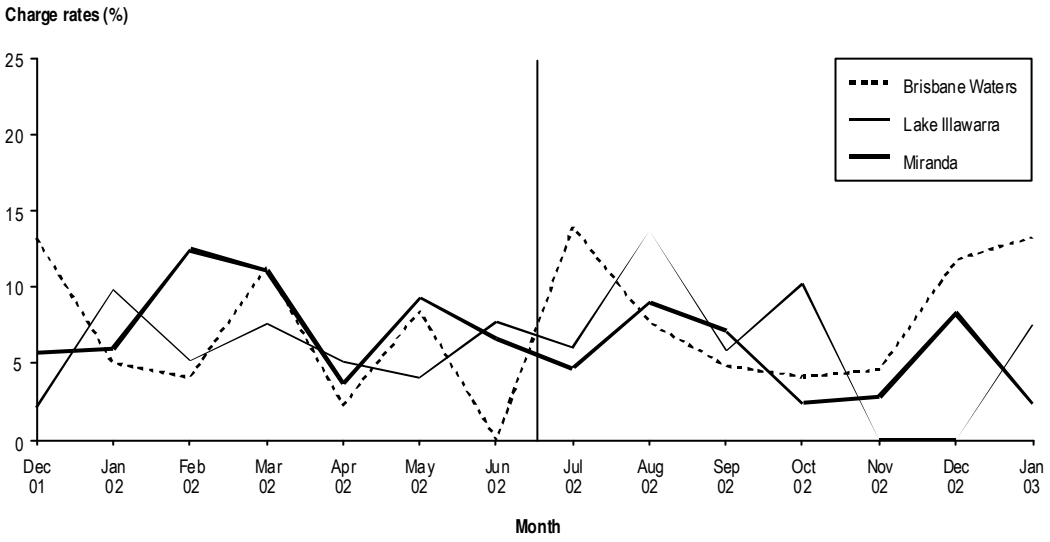


Figure 7: Monthly charge rates for MVT offences, by LAC, December 2001 - January 2003



a youth conference, cautioned under the Young Offenders Act (1997), warned, or given an infringement notice. Only suspects who were charged are presented in this report although the trends for all 'other' proceedings grouped together were similar to the trends for charges.[11] On the basis of the available data it is impossible to isolate charges that have been brought against someone entirely as a result of Operation Vendas. However, we can identify whether there has been an increase in the overall level of BES and MVT charges laid following the start of the operation. Note, however, that if the number of charges remained constant after Vendas began, but the level of crime decreased, the risk of apprehension would be higher. Similarly, if the level of crime stayed constant but the number of charges increased, the likelihood of apprehension would be higher. We therefore examine the charge data for BES and MVT offences as a proportion of the number of these offences recorded in each LAC.[12]

Figure 6 shows the charge rates for BES incidents at the three LACs from December 2001 to January 2003 while Figure 7 shows the charge rates for MVT over this period.[13] There does not appear to have been any increase in either the BES or MVT charge rates following the start of the operation. In fact, the proportions appear to be low and variable over the entire observation period. Mann-Whitney tests confirmed that there was no increase in the rate of BES charges following the start of the operation at any of the three LACs (Brisbane Waters z=-0.2, p=0.90; Lake Illawarra z=-0.7, p=0.54; Miranda z=-1.2, p=0.26). Mann-Whitney tests also confirmed that there was no increase in MVT charge rates at any of the LACs following the start of the operation (Brisbane Waters z=-1.1, p=0.32; Lake Illawarra z=-0.3, p=0.81; Miranda z=-1.5, p=0.17). Trends in the absolute number of charges were also analysed and the results are presented in Appendices C and D. As with the proportions presented above, there were no significant increases in the absolute number of charges for either BES or MVT offences at any of the three LACs.[14]

Why were there no increases in charge rates?

The absence of an increase in charge rates might have resulted from the failure to:

(1) Rigorously evaluate MO and pawnbroking data (and provide victims with stolen vehicle leaflets and neighbourhood canvassing forms)

(2) Prioritise the investigation of forensic identifications; or

(3) Increase the rate at which suspects were identified on forensic evidence.

The qualitative interviews shed considerable light on the degree to which features (1) and (2) were implemented. In relation to (1), some respondents commented that, while they were more focused on MO during the first three months of the operation, systems for inputting MO data were not adequate to get any meaningful information out of the COPS database. Most respondents suggested that GD police officers and PAL operators, despite the streamlined Event creation screens, often failed to input sufficient information at the time the Event was created to meaningfully analyse MO data:

> "…the way the police put in the information…obviously because they don't have the time to spend any more time and effort on it, they just do the closest match rather than going that extra step to put in a bit of extra information so that we can use it." (Intelligence)

> "We want more information in our COPS narratives … but General Duty people, they just do what they've got to do and then move onto the next one, and they don't look behind the scenes". (Crime Management)

The means by which MO data was extracted were also thought to be very laborious and time consuming. None of the respondents reported focusing much on the pawnbroker database, on the other hand, because they felt the utility of that data source was not as good as it once was. Furthermore, there was no indication that stolen vehicle leaflets and neighbourhood canvassing forms were used regularly. Any or all of these problems may have made it harder to increase the rate of arrest for BES and MVT.

Prioritising the investigation of forensic identifications (feature (2) above) was implemented quite well in two of the three Commands. Both Miranda and Brisbane Waters LACs allocated the forensic files to qualified teams of investigating officers who specialised in the investigation of theft matters and both LACs suggested that they had moved away from the passive charging of suspects only when they came to police notice on other

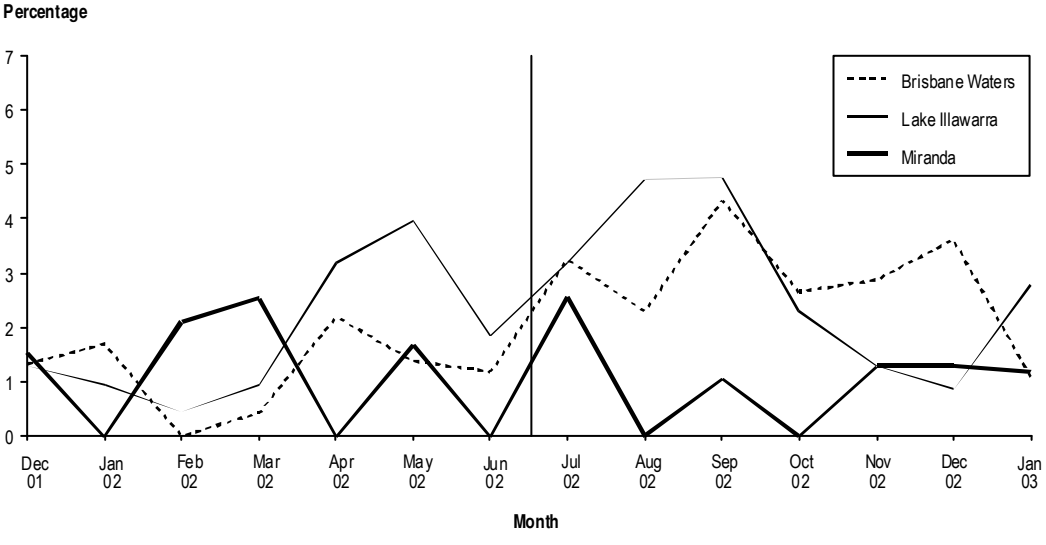
matters. Lake Illawarra LAC, however, allocated the Vendas files to their Target Action Group who, as a rule, had fairly limited investigative experience. Crime Management informants at Lake Illawarra said that they did not have the investigative resources to allocate more senior detectives to Vendas and this lack of more skilled human resources may have made it harder to increase the arrest rate in that Command. In addition to this, Lake Illawarra investigators felt that they did not have enough time to prepare briefs of evidence for court cases. According to some informants, half way through the intervention period Lake Illawarra investigators were forced to change their focus from rapid arrest and charging of suspects to preparing good quality briefs of evidence against arrestees in order to improve the court outcome:

> "… I've basically said 'stop' until we can get rid of what we've got on our back. Back-capture, clear it up and then we can start again. Meanwhile the time-lag is pushing out and, ah, so that it's slipping exponentially…you can only do so much." (Investigations)

To assess the extent to which the LACs increased the identification of suspects (feature (3), above), data were extracted from the FSIMS database bearing on the volume of people identified on the basis of fingerprint information.[15] The forensic database used to capture this information only commenced operation in October 2001, and data from that month may not be reliable due to the changeover from the old recording system to the new FSIMS system. To be consistent with analyses of recorded crime and charge rates, then, the starting date for the observational period was taken from December 2001 and ended at the close of the operation in January 2003. Given the nature of the data and the short observation period, identification rates were low and variable, which made it very difficult to interpret the trends over time. Any conclusions reached on the basis of these data should therefore be regarded as tentative.

Figure 8 displays the identification[16] rate (i.e. identifications as a proportion of recorded incidents) from BES incidents at the three trial LACs from December 2001 to January 2003. Mann-Whitney tests indicate that the mean identification rate during the operation

Figure 8: Identifications made on fingerprints at BES crime scenes per month as a proportion of all BES incidents recorded, by LAC, December 2001 - January 2003



was higher than the mean before the operation for Brisbane Waters LAC ($z=-2.5$, $p<0.05$) but not for Lake Illawarra ($z=-1.3$, $p=0.21$) or Miranda ($z=-0.3$, $p=0.81$). Subsequent analyses revealed that the increase in identification rate at Brisbane Waters was related more to the fall in crime at this Command than to an increase in identifications (see Appendix E). The small increase from a mean of 3 to 4.6 identifications per month at this Command was not statistically significant ($z=-1.6$, $p=0.13$). Figure 8, moreover, suggests that the increase in identification rate at Brisbane Waters appears to have begun from a low baseline around February 2002 and steadily increased over the observation period, before falling away after September 2002. The increase was relatively small and would not have been substantial enough to bring about a large scale increase in arrests. The likelihood of identifying a suspect following the onset of Vendas only increased from 1.2 persons per 100 incidents to 2.9 persons per 100 incidents at these types of crimes.

Figure 9: Identifications made on fingerprints at RSMV crime scenes per month as a proportion of all RSMV incidents recorded, by LAC, December 2001 - January 2003

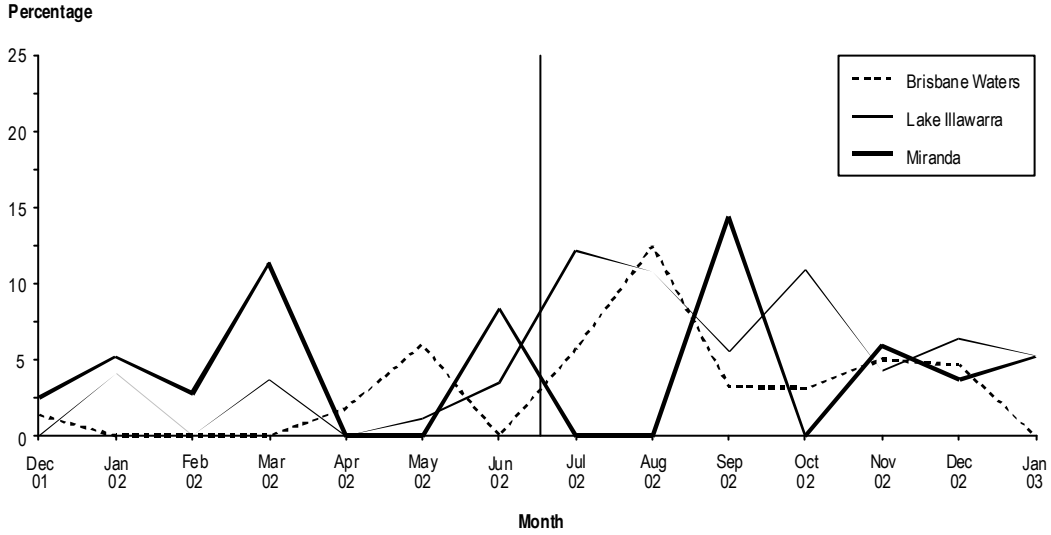


Figure 9 shows the identification rate from RSMV incidents at the three trial LACs from December 2001 to January 2003.[17] Mann-Whitney tests indicated that Lake Illawarra was the only LAC to show any significant increase in identification rate during the operation, from a mean of 1.4 identifications per 100 RSMV crime scenes to a mean of 6.3 per cent ($z=-3.1$, $p<0.01$). The increase in identification rates at Lake Illawarra was caused both by an increase in identifications (from a mean of 1.6 per month to 6.7 per month [$z=-2.4$, $p<0.05$]) and a small (and not statistically significant) fall in RSMV incidents at that Command (Appendix F). Again, however, the relative increase in identification rates at Lake Illawarra was probably not large enough to bring about any significant increase in arrests. It should be remembered, after all, that some people who have been identified on forensic evidence will not be able to be located and charged. Some forensic identifications, moreover, will never proceed to the investigative stage because the evidence is insufficient to warrant a charge. Given that approximately 100 RSMV incidents were recorded at this LAC during each month of the operation and the increase in identifications was only five for every 100 crime scenes, the increase in arrests could not have exceeded five per month.

In summary, then, while Brisbane Waters and Miranda LACs prioritised the investigation of forensic cases, the failure to implement the supporting measures and the lack of any sizable increase in identifications worked against the possibility of any major change in arrest and recorded crime rates. Although there was an increase in identifications at RSMV crime scenes for Lake Illawarra LAC, they appear to have lacked the investigative resources required to focus on arresting and charging identified suspects. However even if they had had the resources required to fully investigate forensic cases, the corresponding increase in arrest rates was always likely to be small. The maximum increase in charges could not have been larger than the extra five identifications they recorded each month.

What explains the low rate of identifications?

To investigate this question, data were drawn from the FSIMS database bearing on the volume of fingerprint evidence collected from crime scenes. If there were no large increases in the collection of fingerprints from BES and RSMV crime scenes, then an increase in identifications would not be expected. Again, rates are presented in the text and raw numbers are presented in Appendices G and H. As with the earlier trends we examined, the short baseline and intervention periods render the data variable and difficult to interpret.

Figure 10: Useable fingerprints collected from BES crime scenes per month as a proportion of all BES incidents recorded, by LAC, December 2001 - January 2003

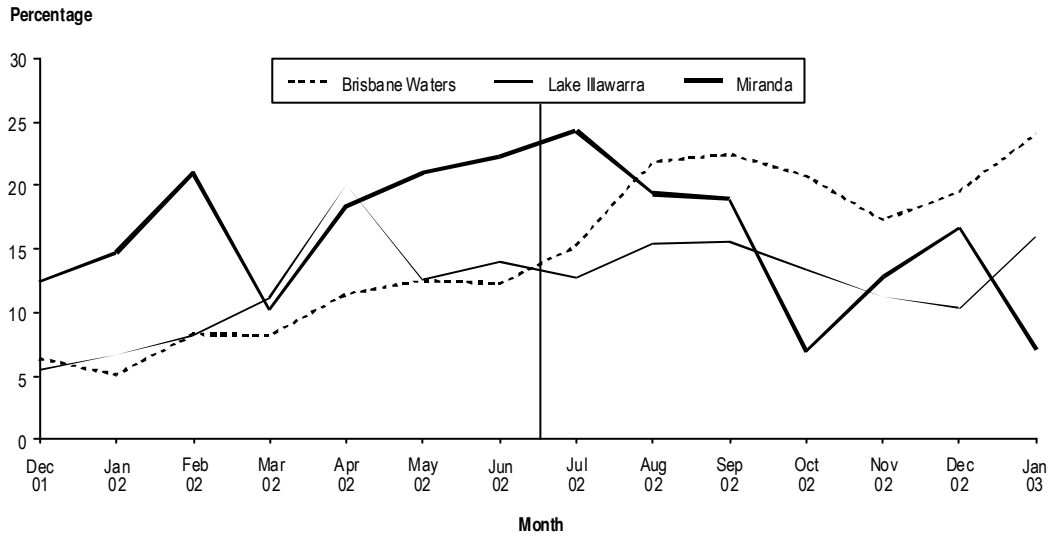


Figure 10 shows the rate at which fingerprints were gathered from BES crime scenes. There was a significant increase in the mean fingerprint collection rate at Brisbane Waters LAC ($z=-3.1$, $p<0.01$) but not at Lake Illawarra ($z=-1.3$, $p=0.21$) or at Miranda ($z=-0.6$, $p=0.62$). The rate of fingerprint collections increased from an average of nine per 100 crime scenes before the operation to 20 per 100 crime scenes during the operation at Brisbane Waters LAC. Subsequent analyses revealed that the increase at Brisbane Waters was a result of both an increase in the collection of fingerprints and a reduction of BES incidents in the LAC (Appendix G). Inspection of Figure 10 reveals that the increase at Brisbane Waters had begun prior to the start of the operation, indicating that something

other than the operation was contributing to the increase at that Command or, possibly, that officers in that LAC were increasing their workload in anticipation of the operation. The increase in fingerprint collections is consistent with the pattern of identification rates for BES incidents at Brisbane Waters LAC shown in Figure 8.

Figure 11: Useable fingerprints collected from RSMV crime scenes per month as a proportion of all RSMV incidents recorded, by LAC, December 2001 - January 2003

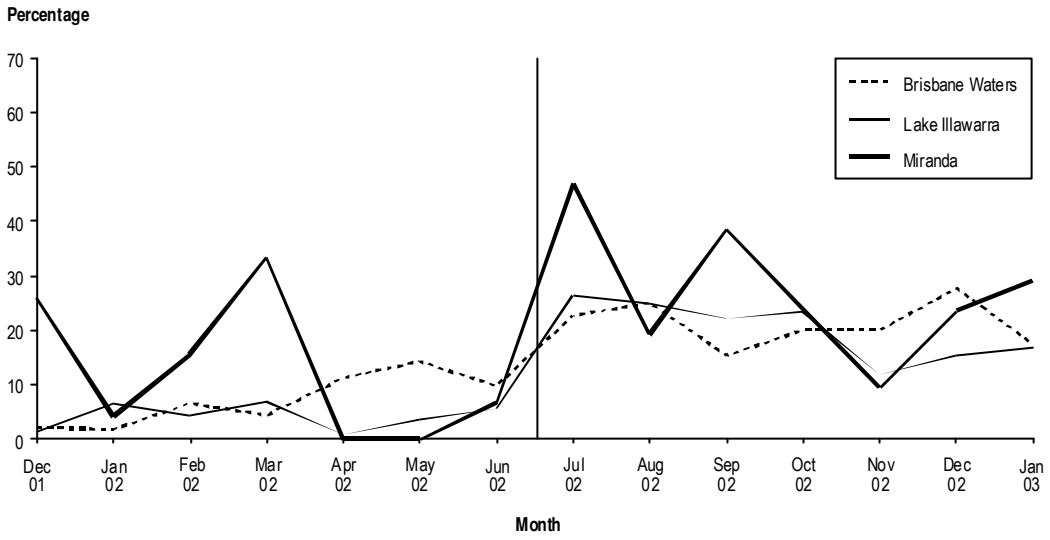


Figure 11 shows the rate at which fingerprints were gathered from RSMV crime scenes for the three LACs from December 2001 to January 2003. There were increases in the collection of fingerprints from RSMV crime scenes at Brisbane Waters (mean before = 7%, mean after = 21%; $z=-3.1$, $p<0.01$) and Lake Illawarra (mean before = 4%, mean after = 20%; $z=-3.1$, $p<0.01$), but not at Miranda (mean before = 12%, mean after = 27%; $z=-1.9$, $p=0.07$). Analyses revealed that the increase at Brisbane Waters was caused by both an increase in the collection of evidence and a reduction in recorded incidents. The increase at Lake Illawarra, on the other hand, was brought about more by increases in the collection of fingerprints than by reductions in criminal incidents (Appendix H). A closer inspection of Figure 11 reveals that the increase at Brisbane Waters pre-dates Vendas, again indicating that anticipation effects or some other factor was contributing to the increase. Only in relation to Lake Illawarra does the change in fingerprints coincide with the start of Vendas.

The results are relatively consistent with the findings for identification rates. The best evidence for an increase in fingerprint collections which could be directly attributed to Operation Vendas was that observed at Lake Illawarra for RSMV crime scenes and this fits well with the pattern of identifications observed in Figures 8 and 9. Brisbane Waters and, to a lesser extent, Miranda both showed some increase in fingerprint collections from RSMV crime scenes, yet no corresponding increase in identifications. Some clues to the reason for this can be found in the raw counts of fingerprint collections. The increase at Brisbane Waters was approximately five fingerprints per month following the start of the operation and the increase at Miranda was approximately three per month. Given the fact that, across the State over the entire observation period, about one identification was made off every seven useable fingerprints collected, it is not surprising that there was no increase in identifications. The increase at Lake Illawarra, on the other hand, was approximately 16 extra fingerprints per month.

What explains the lack of change in fingerprint collection rates?

Data bearing on the attendance rates of SOCOs were obtained from the FSIMS database to investigate this question. Mann-Whitney tests suggested that mean attendance rates were higher during the seven months of the operation than the prior seven months at all LACs for both BES and RSMV crime scenes (all p-values <0.05). The increases at Brisbane Waters were due both to an actual increase in the number of crime scenes attended and a significant decrease in crime for both BES and RSMV incidents, while the increase at Lake Illawarra was due mainly to a large increase in attendance at crime scenes (see Appendices I and J). The increase in attendance rates at BES crime scenes for Miranda LAC was clearly a result of the lower level of BES incidents because attendances actually fell slightly during the operation. The small increase in attendance at RSMV crime scenes at Miranda LAC was due more to a small but not statistically significant increase in crime scenes attended.

Figure 12: Percentage of BES crime scenes attended by SOCOs per month, by LAC, December 2001 - January 2003

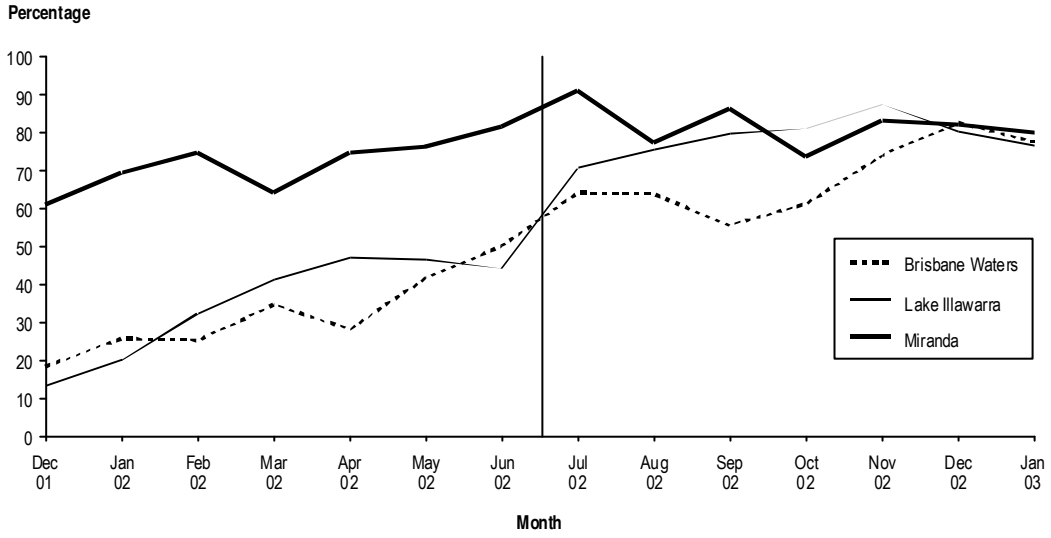
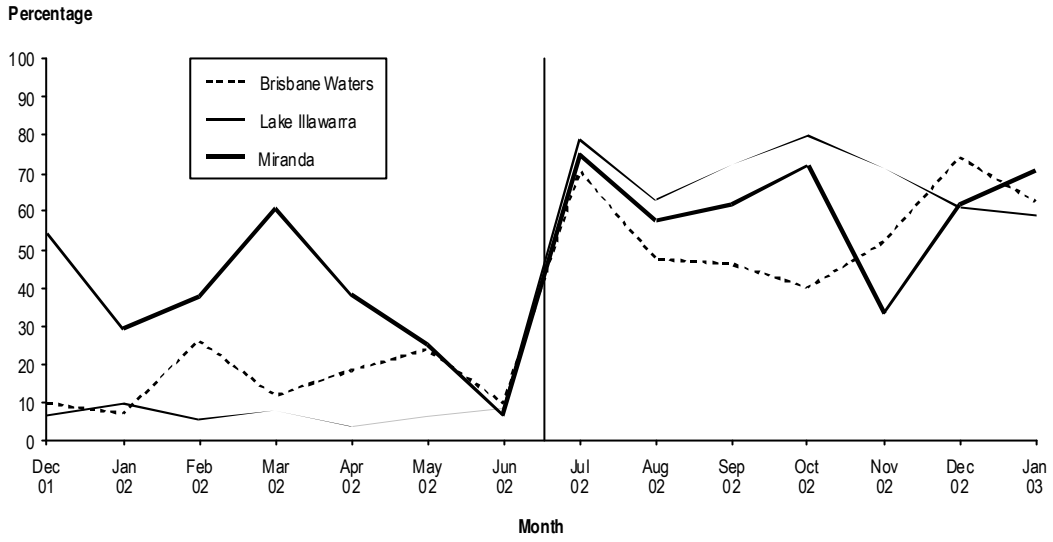


Figure 12 displays the percentage of BES crime scenes attended[18] by SOCOs in the three commands from December 2001 to January 2003. The trend for BES shown in Figure 12 suggests that there was a progressive increase in attendance rates over time at all three LACs. The trend for Lake Illawarra suggests that the level of attendance jumped significantly immediately after the operation began. The reasons for the general increase in attendance at BES crime scenes over time are not immediately apparent. Clearly, though, given that most of the increase across each LAC occurred before the operation began, they can not be attributed to the start of the operation itself.

Figure 13 displays the percentage of RSMV crime scenes attended by SOCOs over this time period. It is quite clear from the large increase in the level of attendance at RSMV crime scenes evident across all three trial LACs that the increase was a direct result of the operation. Note that the increase in attendance at Miranda LAC after Vendas was smaller for RSMV because the baseline rates were much higher in that Command. Note also that the lack of any increase in attendance at BES scenes is probably also because of the high baseline rates of attendance rates at these scenes in that LAC. This is not surprising. The 2001 ACE report for Miranda LAC indicated that SOCOs were already considering attending 100 per cent of high volume crime scenes.

Figure 13: Percentage of RSMV crime scenes per month attended by SOCOs, by LAC, December 2001 - January 2003



The final point to note from Figures 12 and 13 is that none of the LACs achieved their target of attendance at 100 per cent of BES and RSMV crime scenes . All three LACs attended between 60 and 80 per cent for BES crime scenes, and between 50 and 70 per cent for RSMV incidents. It is unclear whether reaching the target of 100 per cent attendance would have resulted in more positive results in terms of fingerprint collection rates and identification rates. Most respondents were of the opinion that 100 per cent attendance was never a realistic expectation because victims often don't want them to attend and because some crime scenes are unlikely to yield forensic evidence. Attending these scenes, they argued, would potentially detract from their ability to attend more 'worthwhile' scenes. Some informants commented that SOCOs should be focusing on attending crime scenes based on the likely quality of the evidence, rather than increasing the quantity of evidence gathered:

> We consider every break and enter. That is, we read the Event and then we decide whether we will attend that Event. If it's an Event such as…'the person walked…through an unlocked back door, and took my wallet off the table and exited' we ring the victim and we do not attend because there is no chance that you are going to get fingerprints there…Under Vendas we still do not attend every break and enter." (SOCO)

It is also important to point out that the attendance rates were limited, at least in part, by the fact that SOCOs were not being informed about every BES and RSMV during the operation. It was quite clear that forensic jobs were not being generated for all BES and RSMV incidents reported to the station, particularly during the early months of the operation:

> "…probably the first six weeks, we received very few requests for stolen motor vehicles because the General Duties officers weren't aware that this was what the aim of the operation was…I think it was still at their discretion whether we attended." (SOCO)

> "I went to the station summary the other day. There were three break and enters and only two jobs had been generated…something's gone amiss and it coincides with a whole bunch of probationary constables who've started." (SOCO)

Subsequent discussions revealed that a programming anomaly and the fact that some officers were unaware of the operation aims contributed to the failure to achieve 100 per cent SOCO attendance at crime scenes. It appears that an indeterminate number of FSIMS jobs were not automatically created when BES and RSMV incidents were reported to PAL or the station (Personal Communication, Colin Quirk, Business and Technology Services, 14/4/03). There was also some indication from informants that GDs may have been changing the status of FSIMS requests for SOCO attendance to 'cancelled' in situations where they felt the likelihood of retrieving physical evidence was low. In such instances, the job would not appear on SOCOs' workstations and they would not attend that scene (Personal Communication, Colin Quirk, Business and Technology Services, 14/4/03). The actual extent to which this was occurring throughout the operation is unclear, but it does appear to have caused some problems. Some interviewees felt that the nature of the operation had not been communicated very well to the GDs at the outset:

> "The problem is the GDs not being well informed. I think if you're going to have an operation in a Local Area Command, the whole Local Area Command needs to be more aware of it because the GDs didn't even know what Vendas was coming into the second month of the operation and I had a few victims get quite hostile because they actually requested fingerprint attendance and were told 'no' we wouldn't [attend]." (SOCO)

Several methods were incorporated to try and communicate information to GDs, including electronic memos and communication of the aims of the operation at shift briefings. According to many officers, however, this communication was insufficient to draw the attention of GDs until the operation had been running for some time. It should be emphasised that these concerns about a lack of communication were raised at the start of the operation. Most of them appear to have been allayed by the end of the third month of the trial period.

Was there a decrease in the time taken to arrest and charge suspects?

Although one of the aims of Vendas was to reduce the time between arrest and charge for persons suspected of having committed a BES or MVT offence, the Bureau did not have access to data which could be used reliably to assess such a change. The Bureau does maintain a database on court appearances that provides information on the time between offence and first court appearance. However, changes to the Bail Act (1978) which came into force on the day Vendas began, would have had the effect of reducing the time between offence and first court appearance even if there had been no change in the time between offence and arrest. Under the Bail Amendment (Repeat Offenders) Act 2002 the presumption of bail was removed for repeat offenders in some circumstances. Where police refuse bail to someone charged with an offence, they are obliged to bring the person before a court as soon as practicable. Thus any increase in bail refusal rates will tend to reduce the average time between arrest and first court appearance.

Although it proved impossible to establish whether the time between offence and arrest declined, it was possible, for two LACs[19], to measure the mean, median, minimum and maximum number of days between the date of an offence and the date of dissemination of a forensic identification after the introduction of Vendas. The relevant data for two of the study LACs are presented in Table 5[20].

Table 5: Mean, median, minimum and maximum days between turnaround of fingerprint and DNA identifications for two of the three trial LACs, July 2002 – January 2003

	LAC and evidence type					
	Brisbane Waters		***Lake Illawarra*** [+]		***Miranda***	
	FP	***DNA***	***FP***	***DNA***	***FP***	***DNA***
Number of identifications	63	6	-	-	20	5
Mean lag (days)	15.8	42.2	-	-	9	39.6
Median lag (days)	12	34	-	-	2	37
Minimum lag (days)	<1	27	-	-	<1	24
Maximum lag (days)	88	64	-	-	46	71
% within planned timeframe*	10	0	-	-	55	0

* *This was calculated by counting the number of occasions where an identification was disseminated within 2 or fewer days for fingerprints and within seven days for DNA.*

[+] *Data was not available for Lake Illawarra LAC.*

Three conclusions can be drawn from Table 5. First, Miranda almost certainly achieved a quicker turnaround on fingerprint identifications during Operation Vendas than they had prior to the operation. We know this because more than half of Miranda's identifications were disseminated within the planned 48-hour timeframe. Because of the lags involved in having film developed, sent to the fingerprint identification section, matched and sent back to the LAC this would have been impossible had they been using 35mm film rather than the digital technology. A 48-hour turnaround time would have been possible at Brisbane Waters prior to the start of the operation because SOCOs had access to their own fingerprint identification section and were taking lifts prior to the start of the operation. Whether, or how often, Brisbane Waters SOCOs were actually achieving this turnaround prior to the operation is not clear.

The second conclusion that can be drawn from Table 5 is that DNA identifications were taking much longer than the 7-day turnaround guaranteed prior to the start of the operation. DNA links were still taking a median of 34 days to be returned to Brisbane Waters and 37 days at Miranda. Those spoken to as part of this study were unanimously of the view that this was caused by a lack of resources at the DNA laboratory (DAL):

> "I certainly don't think [DAL have] got the resources to cope with this sort of thing. I think that the individual…chemist or biologist that work at DAL…certainly aren't in a position where they're going to say 'listen, I'll just turf that murder job that I've been working on to see if this ten dollar break and enter comes off'" (Crime Management)

The third important conclusion is that Brisbane Waters' identifications were clearly returned much more slowly than were those at Miranda. Notifications took a median of 12 days to be sent back to Brisbane Waters; six times longer than the median for Miranda. SOCOs interviewed at the Brisbane Waters LAC claimed that they had reduced the turnaround time on fingerprint identifications but argued that their effectiveness in this regard was constrained by lack of access to digital cameras:

> "…if you're talking about quick turnaround times you've got to go digital. There's no question in my mind about that." (SOCO)

SOCOs at Brisbane Waters were supposed to receive digital cameras three months into the operation if they proved to be successful in the other LACs. In the meantime, as they had done prior to the start of the operation, SOCOs performed 'lifts' of fingerprint images where possible so that they could be matched against NAFIS2. Lifts cannot, however, be taken from every surface because they can smudge. One SOCO reported that only about 20 per cent of lifts were suitable for scanning. As a result, SOCOs at Brisbane Waters LAC often failed to take lifts:

> "As far as the lifts are concerned, I'll collect them if I feel that…I'm going to get a good lift, a decent lift. If it's something like a timber surface, I know that I'm going to get back here and just waste [the fingerprint experts'] time, because I know it's not going to be suitable for scanning…" (SOCO)

Another source of delay for Brisbane Waters LAC stemmed from their failure to mark the courier bags containing film to be processed with the word 'Vendas' before sending them to the laboratory for development. As a result, the lab failed to prioritise the processing of these films. For reasons that are not entirely clear, they were also only sending their films two times each week after this.

7. DISCUSSION

No evidence emerges from this study which would support the claim that Vendas produced a reduction in BES or MVT, above and beyond that which occurred in LACs in the rest of the State. It does not follow from this conclusion, however, that high volume offences cannot be reduced by increasing the quantity and quality of forensic evidence collected at crime scenes by police, or that the NSW Police were unwise to try and reduce high volume crime through improvements in the collection and analysis of forensic evidence. As the process evaluation component of this report reveals, many of the intermediate outcomes required to achieve a reduction in crime either did not occur or were occurring before the advent of Vendas. This makes it hard to draw definite conclusions about the value of further investment in forensic evidence collection and analysis in reducing high volume crime.

There were significant increases in attendance rates at RSMV crime scenes at each of the LACs following the start of Operation Vendas. However the only LAC that showed any evidence of an increase in attendance rates at BES crime scenes as a result of Vendas was Lake Illawarra LAC. There was no significant increase in the collection rate of fingerprint evidence at any LAC, other than at Brisbane Waters (for BES and RSMV) and Lake Illawarra (for RSMV). However, the increase in collection rates for RSMV at Brisbane Waters began before the introduction of Vendas. The only increases in identification rates that occurred were at Brisbane Waters (for BES) and Lake Illawarra (for RSMV). And while the increase in identification rates at Lake Illawarra LAC was quite substantial (i.e. five additional identifications per month), this did not result in any increase in the rate at which offenders were arrested and charged with BES or MVT offences. In fact none of the LACs that participated in Vendas succeeded in increasing either the absolute number of arrests or the ratio of arrests to crimes for BES and MVT. It is possible that there were increases in the speed of arrest, particularly at the two LACs with digital cameras. If suspects were being arrested and incapacitated more quickly, however, the improvements were certainly insufficient to produce a reduction in crime.

These conclusions are based, as they must be, on a comparison of what happened over a few months prior to the introduction of Vendas, with what happened over a period of several months after. The limited observation period and the fact that some of the key changes required as part of Vendas had begun before its formal introduction made it hard to detect Vendas-related changes in operational procedures after the date on which Vendas was formally implemented. There is no way of knowing whether the changes which occurred were anticipatory, or whether they reflected general improvements in the collection and analysis of forensic evidence across the State. From an experimental point of view, however, Vendas was not implemented in a way that would have maximised the chances of observing beneficial effects, had they occurred. This is not said in criticism of the officers involved in Vendas, all of whom were thoroughly committed to the project. Vendas was a complex set of initiatives involving more than 500 officers from three Local Area Commands and a large number of civilian staff from Forensic Services and other areas of the NSW Police. In any complex operation, it is inevitable that some part of the plan will either fail to be implemented or will end up being implemented in ways other than intended. Whenever this happens it will always be difficult to tell whether the failure to achieve desired outcomes stemmed from a defect in the strategy or flaws in its implementation.

Should strategies like Vendas continue to be pursued? There is no doubt that the chances of evidence contamination are much lower when the crime is responded to rapidly by police (e.g. Greenwood, Chaiken & Petersilia 1977; Peterson, Mihajlovic & Gilliland 1984). On the other hand, some studies have found that higher rates of attendance at crime scenes, even where they lead on to higher fingerprint collection rates, do not necessarily lead to an increase in offender identification rates (Greenwood, Chaiken & Petersilia 1977; Tilley & Ford 1996). More recently, the UK Pathfinder project found an 8.9 per cent increase in attendance at crime scenes, a 4.3 per cent decline in fingerprint collections and an increase in identifications of 2.3 per cent (Burrows et al. 2002). Results such as these serve to underline the complex relationship between the evidence collection and analysis process and offender identification and arrest.

Perhaps the most authoritative review of applied forensic science in recent years is that conducted by the Home Office in London (Blakey 2000). This study found that, beyond a certain level of attendance, there was no relationship between the level of attendance at crime scenes and the amount of DNA evidence collected, again suggesting that there may be a point of diminishing return. The results of that investigation were less stark for fingerprints, although the positive relationship between attendance and collection of evidence was not strong. The author of the report suggested that appropriate crime scene attendance levels should be determined by the geography of a particular area, the level of crime in that area and the available resources if maximum benefits are to be achieved for that area. This research is concordant with the views of some informants in the present study who felt that systems should be established to ensure that SOCOs collect higher quality evidence, rather than a higher quantity of evidence.

These findings suggest a need for caution in judging the utility of forensic evidence collection and analysis in the management of high volume crime. However it would be a mistake to dismiss their potential out of hand. The potential value of forensic evidence in controlling any particular form of crime depends upon a host of other factors; such as the relative contribution of repeat versus novice offenders to the crime rate, the speed with which forensic evidence can be processed, the ease and speed with which suspected offenders can be apprehended, the rate at which they are successfully prosecuted and the deterrent or incapacitation value of any punishment imposed by the courts. Problems in any one of these areas can attenuate or even break the link between evidence collection and crime control. Furthermore, even if the law of diminishing returns operates to limit the effectiveness of increased investment in evidence collection, individual police forces can still only discover by trial and error whether the benefits of increased investment in evidence collection in their particular case, happen to outweigh the costs.

Much has been learned from this study which should be of assistance to police in NSW and other States in managing and evaluating complex police operations such as Vendas. In closing we summarise the most important of these lessons.

Firstly, where it is intended through some strategy to reduce crime it is worth carefully thinking through the mechanisms or causal chain through which the strategy is expected to produce its effects. This helps ensure that any impediments to success are removed before the strategy is implemented. Just as importantly, it helps identify the measures that are required to measure success and diagnose and respond to problems of implementation if they start to occur. In the present case the strategy of attending all BES and RSMV crime scenes could probably only ever have worked if it (a) led to an increase in the volume of evidence collected (b) led to an increase in identifications, (c) led to an increase in arrests

and (d) led to an increase in successful prosecutions. This suggests the need to identify and remove any pre-existing impediments to the achievement of (a) – (d). It also suggests the need to set up baseline measures so as to be able to monitor on a regular basis whether (a) – (d) were being achieved.

Secondly, where there is some doubt about the potential power of a policing strategy to reduce a particular category of crime (as there always is with any new strategy) it is always wise to avoid evaluating the strategy in sites where that category of crime is not very prevalent or where the strategy under evaluation is already being pursued, in however rudimentary a fashion. Even strategies that exert quite sizable effects may not succeed in reducing a particular form of crime in an area where that form of crime is already uncommon. Strengthening a strategy already being pursued, on the other hand, is probably less likely to produce a measurable effect on crime than implementing one in an area where it does not exist at all.

These observations have some salience in the present study because, compared to the other two LACs, Miranda had a low volume of crime and a pre-existing practice of prioritising attendance at high volume crime scenes. This had been highlighted in their 2001 ACE report and explains why their baseline crime scene attendance rates were much higher than the other two Commands. The effect of the intervention would have been more noticeable in an LAC with a high volume of crime and a low pre-existing attendance at crime scenes, as was the case at Lake Illawarra. It is not surprising, therefore, that Lake Illawarra LAC was able to significantly increase their attendance at RSMV crime scenes or that this, in turn, raised their offender identification rate by approximately five per cent.

The third key point is that, where a complex strategy or intervention is being considered, there is much to be gained through development of a detailed project plan. There are many approaches to the development of such plans but the Project Evaluation and Review Technique (PERT) is perhaps the best known and most widely used approach. A good summary of this type of analysis can be found in Stoner and colleagues' excellent book Management (Stoner et al. 1994). Basically it involves systematically identifying what needs to happen for a project to be fully and properly implemented, determining which of these activities can be carried out concurrently and which ones need to be done in sequence, estimating the time required for each task and then developing a plan for action based on this analysis. The adoption of such an approach to the implementation of Vendas would have been of assistance in avoiding problems such as the lack of digital cameras in Brisbane Waters LAC, the lack of experienced investigators in the Lake Illawarra LAC or the inability to measure changes over time in the number of people identified on the basis of DNA evidence.

While the use of PERT would help identify all steps required to successfully implement and manage a project it is worth emphasising the point that complex police operations depend critically on good information and training. This was well understood in the present case and yet a lack of effective training still occasionally led to problems. GDs, on occasion, for example, failed to request SOCO attendance or failed to distribute stolen vehicle leaflets. Education days, which may have mitigated or eliminated these problems, had been planned but were not in the event delivered. It is impossible to say what part these problems played in preventing the success of Vendas but lack of training and lack of feedback can easily undermine commitment to a project. The value of regular scheduled meetings and staff feedback to discuss the aims, successes/failures and outcomes of police operations has recently been highlighted by Jacobson, Maitland & Hough (2003).

Finally, it cannot be overemphasised that effective evaluation cannot be tacked onto the end of an anti-crime initiative or policing strategy which has already been designed. The time and resources required to establish a suitable baseline and follow-up period or identify suitable comparison sites, are very much affected by the nature of the intervention. To put the matter more directly, decisions about the scale, duration and location of an intervention or strategy can make all the difference as to whether a program can be evaluated or not. In the present case, the evaluators were brought in very early in the process but not early enough to influence the length of the baseline period, the establishment of baseline measures, the choice of Vendas sites or the length of the follow-up period. This made it impossible to identify factors that compromised the capacity of the evaluation to identify that success, such as the short follow-up period or the progressive increase in attendance at crime scenes which had begun prior to the formal implementation of Vendas.

8. CONCLUSION

While Operation Vendas did not produce a drop in MVT and BES it is, nonetheless, an important step on the road to developing evidence-based best practice in policing. Evaluation of criminal justice initiatives is critical if police and policy makers are to advance knowledge of what works and what doesn't work in policing and other criminal justice domains. Police operations in Australia have only rarely been subjected to any form of outcome evaluation, let alone an evaluation which allows police to diagnose factors that influence their success or failure. The current operation may not have been successful in achieving its goal, but by systematically working through the means by which the operation might have brought about these changes, we get a much clearer picture of the reasons for failure and the areas for improvement in the future. The process may sometimes be painful and disappointing. However the alternative – investing heavily in new strategies without evaluating them – is hardly worth considering. After all, if rigorous research is necessary in evaluating new drugs before making them publicly available, similar research can hardly be said to be unnecessary when evaluating strategies intended to enhance public safety at taxpayers' expense.

Finally, while the evaluation served to highlight many areas of weakness in the operation, it would be unfair and incorrect to suggest that there were, or will be, no benefits as a result of Vendas. Increasing victim satisfaction and reducing fear of crime in the community are important goals in their own right. The fact that SOCOs did achieve an increase in attendance rates, particularly at RSMV crime scenes, would have resulted in more interaction with victims of crime and may have had a corresponding effect on their satisfaction and fear of re-victimisation (Hirschel, Lumb & Johnson 1998). Furthermore, while the modest increase in identifications at Lake Illawarra LAC did not produce any measurable effect on arrest or recorded crime, it may well have assisted in bringing more offenders to court. That is an outcome worth having from the vantage-point of justice, even if not from the vantage-point of crime control.

NOTES

1 These numbers were current as at 21/3/03.

2 Prepared by the Projects and Change Management Client Services arm of Business and Technology Services.

3 These ratings were calculated as rates of BES and MVT per 100,000 population. Data were not available for rates of BES and MVT by LAC. Only populations greater than 3000 were selected for comparison because LGA's with populations less than 3000 give a biased estimate of recorded crime rates. Sydney LGA was also excluded due to inaccuracies associated with calculating rate per 100,000 resident population for an area with a largely transient population. These data were accurate as at February 2003.

4 The other major LGA constituent of Lake Illawarra LAC, Kiama, ranked 33rd highest out of 154 LGA's in terms of MVT, 56th highest in terms of BES – Dwelling, and 63rd highest for BES – Non-Dwelling in 2001. These data were accurate as at February 2003.

5 Although the scope exists for SOCOs to make their own assessments of whether they should attend the crime scene by checking the station summary and phoning victims themselves, it is not common practice (Personal Communication, Karen Frizelle, Operation Vendas Manager, 29/1/03). The station summary is a hub that houses all recent Events that have been recorded in the LAC.

6 A unique CNI, or Central Names Index, number is allocated to each person charged with a criminal offence.

7 Both 'attempted' and 'actual' BES incidents were to be attended under Vendas orders. Attempted BES refers to instances where tool marks have been found near points of entry to a business or property, and it appears that there was an intention to gain entry to the premises. Any damage to the premises is recorded as Malicious Damage.

8 This technique 'lifts' the dusted print from the surface with tape. This image on the tape is then scanned into the computer and matched immediately against the NAFIS2 database.

9 The pawnbroking database holds a record of all recent pawn transactions that have taken place across NSW, property pawned, and the details of the person completing the pawn transaction.

10 BES dwelling and non-dwelling offences have been combined for ease of presentation in this and subsequent analyses. There was no noticeable difference in trends between dwelling and non-dwelling incidents.

11 These data are available from the author on request.

12 The authors are grateful to reviewers from the NSW Police Service for pointing this out.

13 The months refer to the date of the incident rather than the date of arrest or charge. For example, someone arrested in February for an incident that occurred in January would appear as a charge under the month of January.

14 Data subsequently provided by FSG indicated that, while there were no increases in total charges, there were significant increases in the number of people charged as a result of being identified on fingerprint evidence at Lake Illawarra for both BES and MVT offences. There were no such increases at the other two LACs. This data has not been included in the current report due to inconsistencies between the new data and that originally provided by FSG, because the data were not available as time series, and because it was unclear what proportion of the arrests were effected during the Vendas period and what proportion were made after Vendas had been brought to a close.

15 Unfortunately, time series data bearing on the number of suspects identified on DNA evidence were not available, so this and all subsequent analyses were limited to fingerprint evidence only. While pre- and during-Vendas comparisons of DNA identifications indicate that Lake Illawarra may have had an increase in DNA links during Vendas, overall the numbers are quite small and there does not appear to have been any corresponding increase in arrest or reduction in recorded crime rates as a result. In saying this, the DNA database is still relatively small and its effectiveness will likely increase as it grows in magnitude.

16 Only crime scenes classified as 'fully identified' are presented in this report. This excludes crime scenes where more than one fingerprint was found but not all offenders were identified. A comparison with data measuring both fully and partially identified jobs did not alter the outcome of the analyses reported here.

17 Note that the denominator for these and all subsequent analyses of stolen motor vehicle data is the volume of *recovered* vehicles rather than the volume of *stolen* vehicles.

18 Each 'attendance' is a count of a forensic job updated by SOCOs on the forensic database. Some scenes that were attended but not examined for fingerprints are not included in these counts. Overall, however, very few attendances will be excluded (personal communication, Craig Steel, Forensic Services Group, 2/5/03). It is also possible to have more than one job recorded against one crime scene but, again, this is the exception rather than the rule. Monthly counts of BES and recovered stolen motor vehicle used to calculate attendance rates were taken from the police Enterprise Data Warehouse, rather than the accepted and verified incidents recorded in the *New South Wales Recorded Crime Statistics* published by the Bureau. The discrepancy between data sources is usually between 1 and 2 percentage points for any one month.

19 Lake Illawarra LAC did not regularly return these data.

20 Note that it was not possible to differentiate between those identifications made from digital images, 35mm images or lifts. The time lags are therefore averaged over the three types of fingerprinting mediums used in the operation. These data are quite limited and must be interpreted cautiously. Some of the longer time lags included in the data may result from offenders not being on the NAFIS2 database at the time the prints were submitted, but who appeared on the system later in the study period. Also, the turnaround times are recorded as the time between Event creation on COPS and the identification being received at the LAC. The Event will not always be created on the day that the incident occurred or on the day that the SOCO attended. For example it is possible that someone reported a BES on Friday night, at which time the Event would have been created, but the SOCO may not have attended the crime scene until Monday. The Event will almost always be created at the time the incident is reported to PAL or to police.

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GLOSSARY OF TERMS

ACE reports
Analysis of the Crime Environment reports are compiled annually by each LAC to describe the status of the crime environment within that LAC, and the procedures planned to address crime in the following 12 month period.

BES
Break, enter and steal.

CI
Confidence Interval. Confidence intervals are used in statistics when estimating some unknown value, such as a population average or the slope of a trend line. In the present report we use them when estimating the slope of trends in crime. Instead of a single estimate for the slope, a confidence interval generates a lower and upper limit and the width of the interval gives an indication of how much uncertainty there is in our estimate of the true slope. The narrower the interval, the more precise is our estimate. If crime fluctuates a lot from month-to-month and we are only looking at a short period of time, the interval is likely to be quite wide suggesting that there is a lot of uncertainty in our estimate. Likewise if crime is quite stable and we are looking at a long period of time, the interval is likely to be quite narrow and we can be very certain of our estimate.

CMU
Crime Management Unit. The CMU is responsible for coordinating all investigations within the Local Area Command. The CMU is headed by the Crime Manager and includes, among others, the Crime Coordinator, Investigations Manager, Investigators, SOCOs, Intelligence Analysts, Field Intelligence Officers, Youth Liaison Officer, Crime Prevention Officer, Domestic Violence Liaison Officer, Volunteers In Policing and Licensing Officers.

COPS
Computerised Operational Policing System. COPS is the database where all police crime data is recorded and stored.

DAL
Division of Analytical Laboratories. DAL is a division of the NSW Department of Health which is responsible for the analysis of DNA trace material sent from the NSW Police LACs.

Event Report
This report is held on COPS and contains a record of all of the relevant details of an incident reported to the police.

FSIMS
Forensic Services Information Management System. FSIMS is the database where all forensic data is stored. Information can be exchanged and updated by all parties involved in the forensic process. The types of information exchanged include requests for job attendance, evidence collected from crime scenes, and results of fingerprint analyses.

GD officer
General Duties officer. GDs respond to a broad range of incidents in the LAC including road accidents, break and enters, located motor vehicles and domestic violence.

LAC
Local Area Command. Geographically, NSW is divided into 5 'regions', each consisting of a number of LACs. There are 80 LACs in NSW, and each LAC contains one or more police stations. One LAC can cover several suburbs, postcodes or Local Government Areas.

Latent Fingerprints
Fingerprints left at a crime scene.

LGA
Local Government Area. The geographical area under the jurisdiction of a given Local Government.

Lift
This fingerprinting technique involves dusting the print, sticking tape to that image and 'lifting' the tape from the surface, taking the fingerprint image with it. This image is then scanned into the computer and matched against the database of stored fingerprint files.

LiveScan
These terminals are used at some charging stations in NSW as a replacement for ink-and-roller fingerprinting procedures. LiveScan electronically codes fingerprints using laser technology and provides superior quality prints to the ink method. LiveScan is also linked to the national fingerprint database (NAFIS2) allowing real-time matching of fingerprints at the station.

MO
Modus Operandi. This term is used to describe the typical pattern of offender behaviour and, for BES offences, includes information such as point of entry to the premises, types of goods stolen and activities conducted while inside the premises.

MVT
Motor Vehicle Theft.

NAFIS(2)
National Automated Fingerprint Identification System. This is a national database of stored offender fingerprint files and latent prints from both solved and unsolved crime scenes.

NSW
New South Wales.

PAL
Police Assistance Line. PAL is a call centre designed to take reports of non-serious crime where police presence is not necessary.

Pawnbroker database
The pawnbroking database holds a record of all recent pawn transactions that have taken place across NSW, property pawned, and the details of the person completing the pawn transaction.

Regions
NSW is divided into 5 broad geographic regions: Northern, Southern, Western, Inner Metro, and Greater Metro. Brisbane Waters LAC is part of the Northern Region, Lake Illawarra LAC is part of the Southern Region and Miranda is part of the Inner Metro Region.

RSMV
Recovered Stolen Motor Vehicle. A stolen motor vehicle is considered to be 'recovered' when a police officer attends the scene.

SOCO
Scene of Crime Officer. These officers are responsible for gathering physical evidence from crime scenes.

SOPS
Standard Operating Procedures. These procedures define standard police practice and can be redefined to meet the requirements of special operations, such as Vendas.

Westmead Forensic Laboratory
This lab is responsible for analysing forensic exhibits collected at crime scenes, and developing fingerprint films.

APPENDIX A

NSW Police

Stolen Vehicles

Preserving the Scene

After your vehicle has been stolen, and it is recovered by police, it is understandable that you would like to collect it and clean it as soon as possible. However valuable evidence may be lost when you do this. Scene of Crime Officers (SOCOs) are now attending the majority of recovered stolen motor vehicles in this area. Your assistance will aid the SOCOs in their duty.

Please keep these few points in mind:

- Do not touch or adjust your mirrors.
- Do not wind your windows up or down.
- Do not remove any foreign objects you may find in your vehicle – i.e. food wrappers, drink bottles, cigarette butts etc.
- Do not touch any broken steering column parts.
- If you see blood-like stains anywhere, don't touch them. If possible, cover the stain, to prevent light degrading the evidence.
- It is best to place your vehicle undercover as soon as possible or practicable after the recovery of your vehicle to avoid rain or dew spoiling any prints.
- Try not to touch the outside panels of your vehicle, and use the door handles only. If it is necessary for you to drive your vehicle, avoid touching the interior windows and other smooth surfaces.

To arrange a date, time and place for your vehicle to be examined please call .....

APPENDIX B

NSW Police

LOCAL AREA COMMAND

There has recently been a break, enter and steal offence committed in your immediate area. Police are requesting your assistance to help curb repeat offences. This questionnaire may assist police to solve this crime. Please take the time to fill out this document and hand it to the Scenes of Crime Officer prior to their departure. We thank you for your assistance.

Break, Enter & Steal Details

Date: ..... Time: ..... am/pm Event No: .....

Your Details **(Confidential Information – For Police Operational Use Only)**

Address:.....

Surname: ..... Given Name/s: .....

Phone No. (H): ..... (W):..... (M):.....

Did you see any of the following in your immediate area at the above time?

1. Any person/s not local to your area: YES / NO (Please circle one)

	Person 1	Person 2
Height:	.....	.....
Build:	.....	.....
Clothing:	.....	.....
Sex:	.....	.....
Racial Appearance:	.....	.....

2. Unfamiliar vehicles parked in your street around the time of the offence:YES/NO(Please circle)

CarMake/Model:.....

Colour: ..... Registration No.....

Other relevant information:

.....

.....

.....

.....

.....

.....

.....

SOCO Report (Police Use Only)

Key Words

Other Case References

SOCO Details: Name: ..... Reg./Ser. No. .....

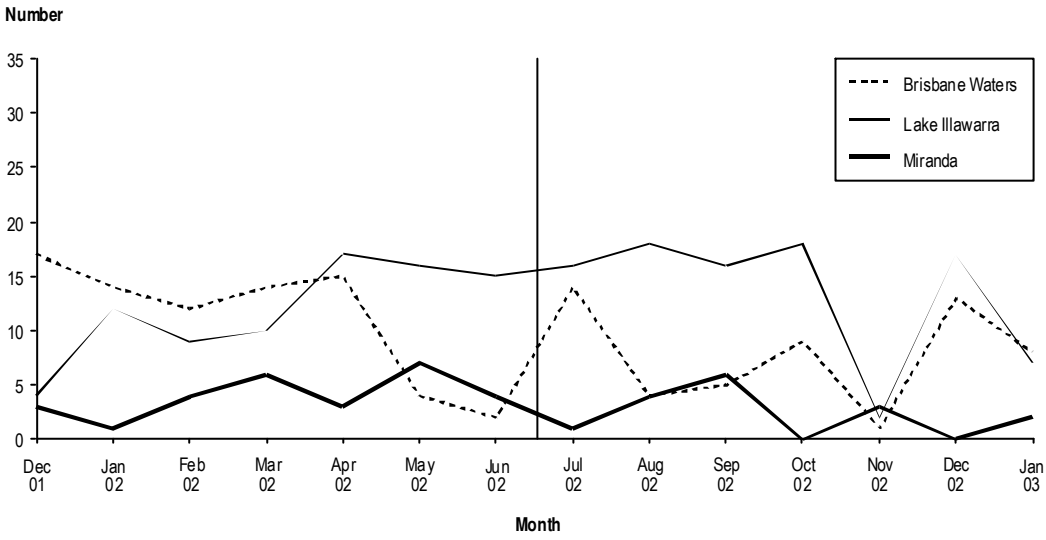
LAC ..... Date: .....

APPENDIX C

Appendix C: Mean number of charges per month for BES and mean number of BES incidents recorded at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	Charges	***Incidents***	***Charges***	***Incidents***	***Charges***	***Incidents***
Mean before	11.1	248	11.9	283	4.0	106
Mean during	7.7	168	13.4	270	2.3	86
p-value	0.21	<0.01	0.32	0.71	0.17	<0.01

Appendix C: Number of charges per month for BES offences, by LAC, December 2001 - January 2003

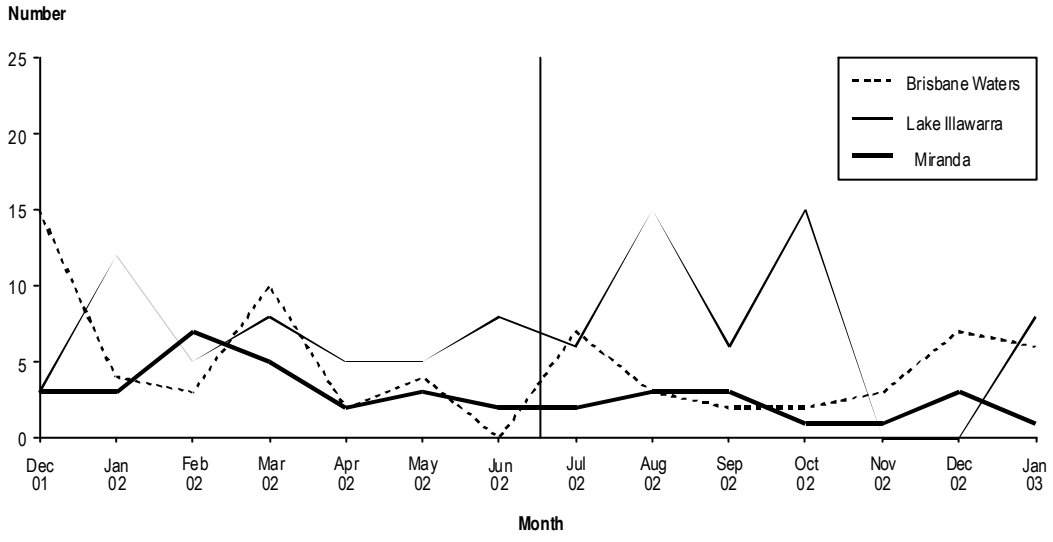


APPENDIX D

Appendix D: Mean number of charges per month for MVT and mean number of MVT incidents recorded at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	Charges	***Incidents***	***Charges***	***Incidents***	***Charges***	***Incidents***
Mean before	5.4	76	6.6	112	3.6	46
Mean during	4.3	50	7.1	98	2.0	39
p-value	0.90	<0.05	0.81	0.46	0.10	0.21

Appendix D: Number of charges per month for MVT offences, by LAC, December 2001 - January 2003

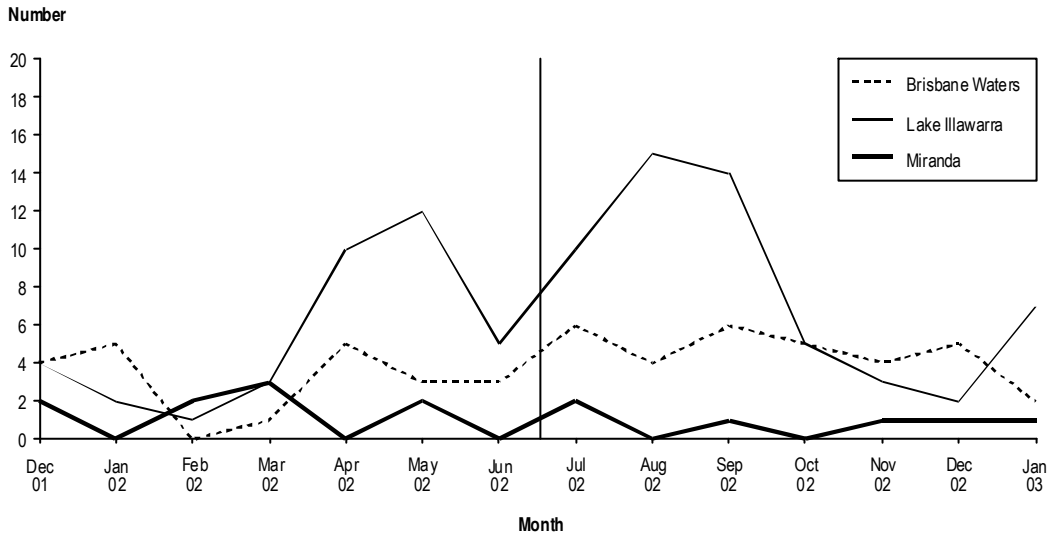


APPENDIX E

Appendix E: Mean number of identifications per month from BES crime scenes and mean number of BES incidents recorded per month at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	IDs	***Incidents***	***IDs***	***Incidents***	***IDs***	***Incidents***
Mean before	3.0	248	5.3	283	1.3	106
Mean during	4.6	168	8.0	270	0.9	86
p-value	0.13	<0.01	0.32	0.71	0.54	<0.01

Appendix E: Number of identifications made on fingerprints at BES crime scenes per month, by LAC, December 2001 - January 2003

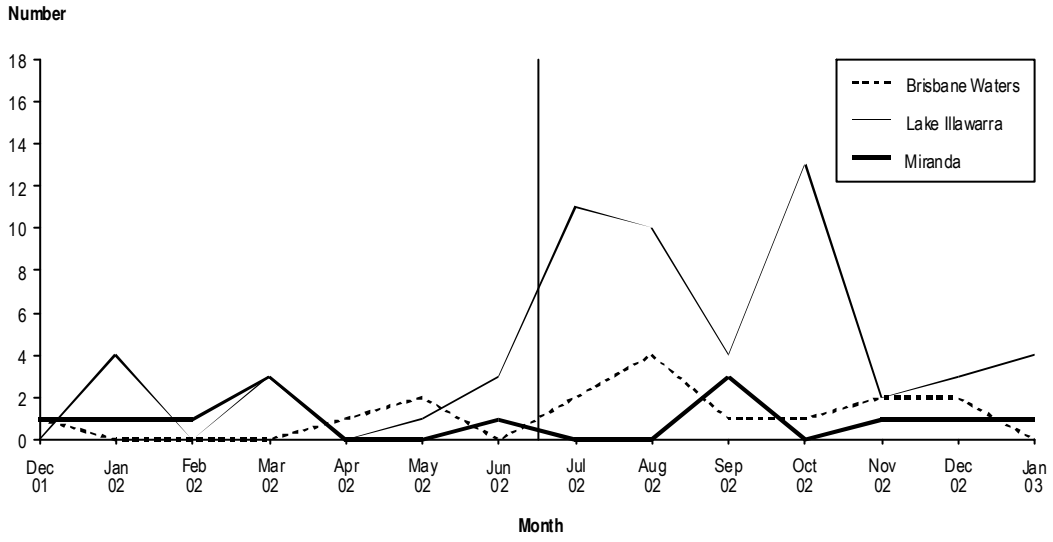


APPENDIX F

Appendix F: Mean number of identifications per month from RSMV crime scenes and mean number of RSMV incidents recorded per month at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	IDs	***Incidents***	***IDs***	***Incidents***	***IDs***	***Incidents***
Mean before	0.6	62	1.6	112	1.0	29
Mean during	1.7	44	6.7	97	0.9	27
p-value	0.07	<0.05	<0.05	0.46	0.71	0.81

Appendix F: Number of identifications made on fingerprints at RSMV crime scenes per month, by LAC, December 2001 - January 2003

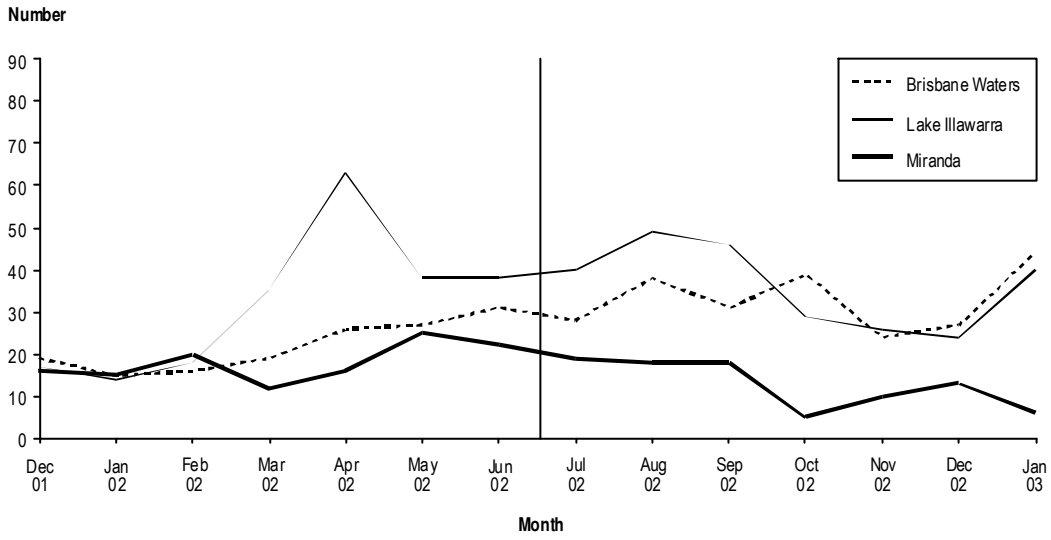


APPENDIX G

Appendix G: Mean number of fingerprints collected per month at BES crime scenes and mean number of BES incidents recorded per month at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	FPs	***Incidents***	***FPs***	***Incidents***	***FPs***	***Incidents***
Mean before	21.9	248	31.9	283	18.0	106
Mean during	33.0	168	36.3	270	12.7	86
p-value	<0.05	<0.01	0.32	0.71	0.17	<0.01

Appendix G: Number of useable fingerprints found at BES crime scenes per month, by LAC, December 2001 - January 2003

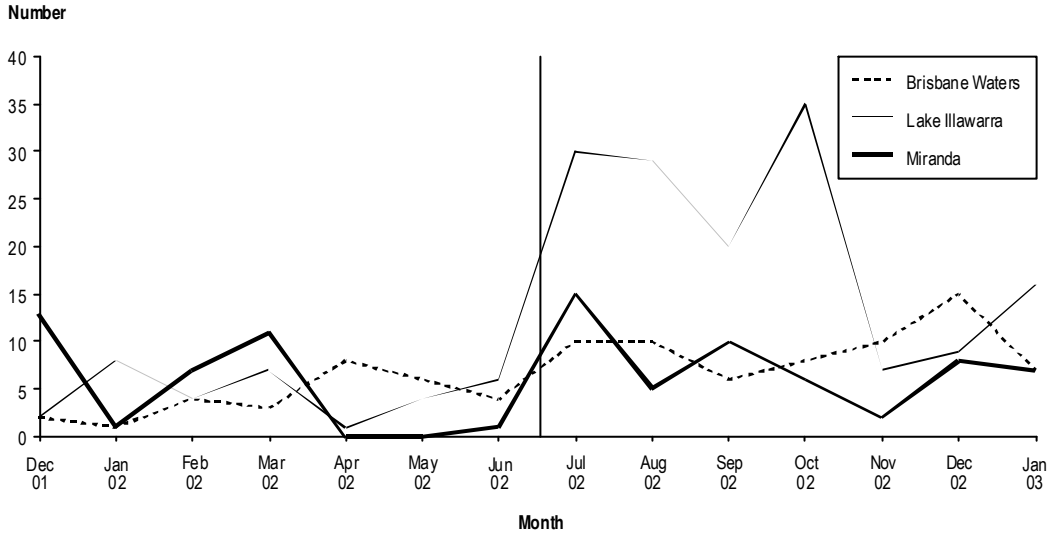


APPENDIX H

Appendix H: Mean number of fingerprints collected per month at RSMV crime scenes and mean number of RSMV incidents recorded per month at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	FPs	***Incidents***	***FPs***	***Incidents***	***FPs***	***Incidents***
Mean before	4	62	4.6	112	4.7	29
Mean during	9.4	44	20.9	97	7.6	27
p-value	<0.01	<0.05	<0.01	0.46	0.26	0.81

Appendix H: Number of useable fingerprints found at RSMV crime scenes per month, by LAC, December 2001 - January 2003

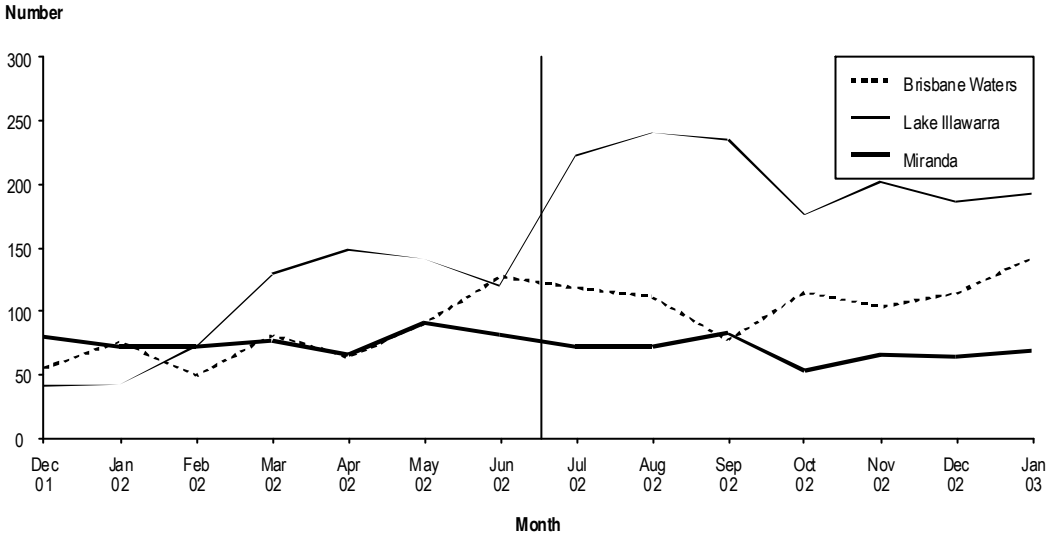


APPENDIX I

Appendix I: Mean number of BES crime scenes attended per month and mean number of BES incidents recorded per month at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	Attended	***Incidents***	***Attended***	***Incidents***	***Attended***	***Incidents***
Mean before	77	248	99	283	76	106
Mean during	111	168	208	270	68	86
p-value	<0.05	<0.01	<0.01	0.71	0.13	<0.01

Appendix I: Number of BES crime scenes attended by SOCOs per month, by LAC, December 2001 - January 2003



APPENDIX J

Appendix J: Mean number of RSMV crime scenes attended per month and mean number of RSMV incidents recorded per month at the three trial LACs before and during the operation

	Brisbane Waters		*Lake Illawarra*		*Miranda*	
	Attended	***Incidents***	***Attended***	***Incidents***	***Attended***	***Incidents***
Mean before	9	62	8	112	12	29
Mean during	25	44	69	97	17	27
p-value	<0.01	<0.05	<0.01	0.46	0.38	0.81

Appendix J: Number of RSMV crime scenes attended by SOCOs per month, by LAC, December 2001 - January 2003